

Graduate & Professional University Catalog 2019-2020



University of
Pittsburgh

Academic Calendar



University of Pittsburgh

ACADEMIC CALENDAR • 2019–20

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

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

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

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

☒ All Campus WIP

☒ Main Campus WIP

Mix-in: All, None

July 2019

Begins	Date	Ends	Campus
7/4/2019	Thursday Independence Day (University closed)	7/4/2019 Thursday	All Campuses
7/10/2019	Wednesday Fall Term deadline for continuing students to register	7/10/2019 Wednesday	Pittsburgh Campus
7/17/2019	Wednesday Staff Council	7/17/2019 Wednesday	Pittsburgh Campus

August 2019

Begins	Date	Ends	Campus
8/12/2019	Monday Office of International Services (OIS) Graduate and Professional Student Orientation	8/12/2019 Monday	Pittsburgh Campus
8/17/2019	Saturday International Undergraduate Student Orientation	8/19/2019 Monday	Pittsburgh Campus
8/19/2019	Monday New and Transfer Undergraduate Student Orientation	8/25/2019 Sunday	Pittsburgh Campus
8/19/2019	Monday Residence halls open	8/19/2019 Monday	Pittsburgh Campus
8/20/2019	Tuesday New Graduate and Professional Student Orientation	8/20/2019 Tuesday	Pittsburgh Campus

8/21/2019	Wednesday	New and Transfer Undergraduate Student Convocation	8/21/2019	Wednesday	Pittsburgh Campus
8/21/2019	Wednesday	Staff Council	8/21/2019	Wednesday	Pittsburgh Campus
8/22/2019	Thursday	New Faculty Orientation	8/22/2019	Thursday	Pittsburgh Campus
8/23/2019	Friday	New Teaching Assistant Orientation	8/23/2019	Friday	Pittsburgh Campus
8/26/2019	Monday	Fall Term classes begin	8/26/2019	Monday	All Campuses
8/26/2019	Monday	Fall Term enrollment period ends for all students	8/26/2019	Monday	All Campuses

September 2019

Begins		Date	Ends		Campus
9/2/2019	Monday	Labor Day (University closed)	9/2/2019	Monday	All Campuses
9/6/2019	Friday	Fall Term add/drop period ends	9/6/2019	Friday	All Campuses
9/7/2019	Saturday	Fall Term extended drop period begins (Undergraduate Students Only)	9/7/2019	Saturday	All Campuses (Guidelines)
9/10/2019	Tuesday	Faculty Assembly	9/10/2019	Tuesday	Pittsburgh Campus
9/13/2019	Friday	Fall Term extended drop period ends (Undergraduate Students Only)	9/13/2019	Friday	All Campuses
9/17/2019	Tuesday	Constitution Day	9/17/2019	Tuesday	Pittsburgh Campus
9/18/2019	Wednesday	Senate Council	9/18/2019	Wednesday	Pittsburgh Campus
9/27/2019	Friday	Family Weekend	9/28/2019	Saturday	Pittsburgh Campus

October 2019

Begins		Date	Ends		Campus
10/8/2019	Tuesday	Faculty Assembly	10/8/2019	Tuesday	Pittsburgh Campus
10/16/2019	Wednesday	Senate Council	10/16/2019	Wednesday	Pittsburgh Campus
10/25/2019	Friday	Homecoming Activities	10/27/2019	Sunday	Pittsburgh Campus
10/25/2019	Friday	Fall Term deadline for students to submit Monitored	10/25/2019	Friday	

		Withdrawal forms to Dean's Office			All Campuses
10/25/2019	Friday	Final Exam Conflict Form Submission Deadline	10/25/2019	Friday	All Campuses (Guidelines)
10/25/2019	Friday	Spring Term enrollment appointments begin (Veteran Students)	10/25/2019	Friday	All Campuses
10/28/2019	Monday	Spring Term enrollment appointments begin (Non-Veteran Students)	10/28/2019	Monday	All Campuses

November 2019

Begins		Date	Ends		Campus
11/5/2019	Tuesday	Faculty Assembly	11/5/2019	Tuesday	Pittsburgh Campus
11/8/2019	Friday	Last day for Spring Term enrollment appointments	11/8/2019	Friday	All Campuses
11/9/2019	Saturday	Spring Term open enrollment begins	11/9/2019	Saturday	All Campuses
11/13/2019	Wednesday	Senate Council	11/13/2019	Wednesday	Pittsburgh Campus
11/24/2019	Sunday	Thanksgiving Recess for students (no classes), all schools	12/1/2019	Sunday	All Campuses
11/28/2019	Thursday	Thanksgiving Recess for faculty and staff (University closed)	11/29/2019	Friday	All Campuses

December 2019

Begins		Date	Ends		Campus
11/24/2019	Sunday	Thanksgiving Recess for students (no classes), all schools	12/1/2019	Sunday	All Campuses
12/2/2019	Monday	Classes resume (all schools)	12/2/2019	Monday	All Campuses
12/3/2019	Tuesday	Faculty Assembly	12/3/2019	Tuesday	Pittsburgh Campus
12/6/2019	Friday	Fall Term: Last day for undergraduate day classes	12/6/2019	Friday	All Campuses
12/6/2019	Friday	Spring Term deadline for continuing students to register	12/6/2019	Friday	All Campuses
12/7/2019	Saturday	CGS, Saturday Only, graduate, and evening classes meet during this period; final exams held during last scheduled class	12/14/2019	Saturday	Pittsburgh Campus
12/7/2019	Saturday	Reading Day	12/7/2019	Saturday	All Campuses
12/9/2019	Monday	Final examination period for undergraduate day classes	12/14/2019	Saturday	Pittsburgh Campus
12/11/2019	Wednesday	Senate Council	12/11/2019	Wednesday	Pittsburgh Campus

12/14/2019	Saturday	Fall Term Ends: Official date for degrees awarded in Fall Term	12/14/2019	Saturday	All Campuses
12/15/2019	Sunday	Residence halls close	12/15/2019	Sunday	Pittsburgh Campus
12/15/2019	Sunday	Winter Recess for students (no classes), all schools	1/5/2020	Sunday	All Campuses
12/17/2019	Tuesday	Fall Term grades must be approved by instructors by 11:59 p.m.	12/17/2019	Tuesday	Pittsburgh Campus
12/23/2019	Monday	Winter Recess for faculty, staff, & designated offices. Responsibility centers & research projects staffed as necessary*	1/1/2020	Wednesday	All Campuses

January 2020

Begins	Date	Ends	Campus
12/15/2019	Sunday	Winter Recess for students (no classes), all schools	1/5/2020 Sunday All Campuses
12/23/2019	Monday	Winter Recess for faculty, staff, & designated offices. Responsibility centers & research projects staffed as necessary*	1/1/2020 Wednesday All Campuses
1/2/2020	Thursday	All University offices and buildings reopen	1/2/2020 Thursday All Campuses
1/4/2020	Saturday	Residence halls reopen	1/4/2020 Saturday Pittsburgh Campus
1/6/2020	Monday	Spring Term classes begin	1/6/2020 Monday All Campuses
1/6/2020	Monday	Spring Term enrollment period ends for all students	1/6/2020 Monday All Campuses
1/17/2020	Friday	Spring Term add/drop period ends	1/17/2020 Friday All Campuses
1/18/2020	Saturday	Spring Term extended drop period begins (Undergraduate Students Only)	1/18/2020 Saturday All Campuses (Guidelines)
1/20/2020	Monday	Dr. Martin Luther King's birthday observance (University closed)	1/20/2020 Monday All Campuses
1/24/2020	Friday	Spring Term extended drop period ends (Undergraduate Students Only)	1/24/2020 Friday All Campuses

February 2020

Begins	Date	Ends	Campus
2/7/2020	Friday	Summer Term enrollment appointments begin (Veteran Students)	2/7/2020 Friday All Campuses
2/10/2020	Monday	Summer Term enrollment appointments begin (Non-Veteran Students)	2/10/2020 Monday All Campuses
2/28/2020	Friday	Honors Convocation	2/28/2020 Friday All Campuses

March 2020

Begins	Date	Ends	Campus
3/6/2020	Friday	Final Exam Conflict Form Submission Deadline	3/6/2020 Friday

					All Campuses (Guidelines)
3/6/2020	Friday	Spring Term deadline for students to submit Monitored Withdrawal forms to Dean's Office	3/6/2020	Friday	All Campuses
3/8/2020	Sunday	Spring Recess for students (no classes); offices and buildings remain open, except on Friday, Spring Holiday	3/15/2020	Sunday	All Campuses
3/13/2020	Friday	University's observance of Spring Holiday (University closed)	3/13/2020	Friday	All Campuses
3/20/2020	Friday	Fall Term enrollment appointments begin (Veteran Students)	3/20/2020	Friday	All Campuses
3/23/2020	Monday	Fall Term enrollment appointments begin (Non-Veteran Students)	3/23/2020	Monday	All Campuses

April 2020

Begins	Date		Ends		Campus
4/3/2020	Friday	Last day for Fall Term enrollment appointments	4/3/2020	Friday	All Campuses
4/4/2020	Saturday	Fall Term open enrollment period begins	4/4/2020	Saturday	All Campuses
4/17/2020	Friday	Spring Term: Last day for undergraduate day classes	4/17/2020	Friday	All Campuses
4/18/2020	Saturday	CGS, Saturday Only, graduate, and evening classes meet during this period; final exams held during last scheduled class	4/25/2020	Saturday	Pittsburgh Campus
4/18/2020	Saturday	Reading Day	4/18/2020	Saturday	All Campuses
4/20/2020	Monday	Final examination period for undergraduate day classes	4/25/2020	Saturday	Pittsburgh Campus
4/23/2020	Thursday	Annual Graduate Commencement Convocation	4/23/2020	Thursday	Pittsburgh Campus
4/25/2020	Saturday	Spring Term Ends: Official date for degrees awarded in Spring Term	4/25/2020	Saturday	All Campuses
4/26/2020	Sunday	Annual Undergraduate Commencement Convocation	4/26/2020	Sunday	Pittsburgh Campus
4/26/2020	Sunday	Residence halls close (except for graduating seniors)	4/26/2020	Sunday	Pittsburgh Campus
4/29/2020	Wednesday	Spring Term grades must be approved by instructors by 11:59 p.m.	4/29/2020	Wednesday	Pittsburgh Campus

May 2020

Begins	Date		Ends		Campus
5/3/2020	Sunday	Summer Term: Residence halls open	5/3/2020	Sunday	Pittsburgh Campus
5/4/2020	Monday	Summer Term enrollment period ends and classes begin	5/4/2020	Monday	All Campuses

5/11/2020	Monday	Summer 12-WEEK, 6-WEEK-1, 4-WEEK-1 sessions enrollment period ends and classes begin	5/11/2020	Monday	All Campuses
5/13/2020	Wednesday	Summer 4-WEEK-1 and 6-WEEK-1 sessions add/drop period ends	5/13/2020	Wednesday	All Campuses
5/15/2020	Friday	Summer Term add/drop period ends	5/15/2020	Friday	All Campuses
5/18/2020	Monday	Summer 12-WEEK session add/drop period ends	5/18/2020	Monday	All Campuses
5/23/2020	Saturday	Official date for degrees awarded in the School of Law and School of Dental Medicine	5/23/2020	Saturday	Pittsburgh Campus
5/25/2020	Monday	Memorial Day (University closed)	5/25/2020	Monday	All Campuses
5/27/2020	Wednesday	Summer 4-WEEK-1 session deadline for students to submit Monitored Withdrawal forms to Dean's Office	5/27/2020	Wednesday	All Campuses

June 2020

Begins	Date	Ends	Campus
6/5/2020	Friday	Summer 6-WEEK-1 session deadline for students to submit Monitored Withdrawal forms to Dean's Office	6/5/2020 Friday All Campuses
6/6/2020	Saturday	Summer 4-WEEK-1 session ends: Final examinations scheduled during last class meeting	6/6/2020 Saturday All Campuses
6/8/2020	Monday	Summer 4-WEEK-2 session enrollment period ends and classes begin	6/8/2020 Monday All Campuses
6/10/2020	Wednesday	Summer 4-WEEK-1 session grades must be approved by instructors by 11:59 p.m.	6/10/2020 Wednesday Pittsburgh Campus
6/10/2020	Wednesday	Summer 4-WEEK-2 session add/drop period ends	6/10/2020 Wednesday All Campuses
6/20/2020	Saturday	Official date for awarding of degrees	6/20/2020 Saturday All Campuses
6/20/2020	Saturday	Summer 6-WEEK-1 session ends: Final examinations scheduled during last class meeting	6/20/2020 Saturday All Campuses
6/22/2020	Monday	Summer 6-WEEK-2 session enrollment period ends and classes begin	6/22/2020 Monday All Campuses
6/24/2020	Wednesday	Summer 6-WEEK-1 session grades must be approved by instructors by 11:59 p.m.	6/24/2020 Wednesday Pittsburgh Campus
6/24/2020	Wednesday	Summer 4-WEEK-2 session deadline for students to submit Monitored Withdrawal forms to Dean's Office	6/24/2020 Wednesday All Campuses
6/24/2020	Wednesday	Summer 6-WEEK-2 session add/drop period ends	6/24/2020 Wednesday All Campuses

July 2020

Begins	Date	Ends	Campus
7/2/2020	Thursday	Summer 4-WEEK-2 session ends: Final examinations scheduled during last class meeting	7/2/2020 Thursday All Campuses
7/2/2020	Thursday	Summer Term and 12-WEEK session deadline for students to submit Monitored Withdrawal forms to Dean's Office	7/2/2020 Thursday All Campuses

7/3/2020	Friday	Independence Day (University Closed)	7/4/2020	Saturday	All Campuses
7/6/2020	Monday	Summer 4-WEEK-3 session enrollment period ends and classes begin	7/6/2020	Monday	All Campuses
7/8/2020	Wednesday	Fall Term deadline for continuing students to register	7/8/2020	Wednesday	Pittsburgh Campus
7/8/2020	Wednesday	Summer 4-WEEK-2 session grades must be approved by instructors by 11:59 p.m.	7/8/2020	Wednesday	Pittsburgh Campus
7/8/2020	Wednesday	Summer 4-WEEK-3 session add/drop period ends	7/8/2020	Wednesday	All Campuses
7/17/2020	Friday	Summer 6-WEEK-2 session deadline for students to submit Monitored Withdrawal forms to Dean's Office	7/17/2020	Friday	All Campuses
7/22/2020	Wednesday	Summer 4-WEEK-3 session deadline for students to submit Monitored Withdrawal forms to Dean's Office	7/22/2020	Wednesday	All Campuses

August 2020

Begins	Date	Ends	Campus
8/1/2020	Saturday	Summer 12-WEEK, 6-WEEK-2, 4-WEEK-3 sessions end: Final examinations scheduled during last class meeting	8/1/2020 Saturday All Campuses
8/5/2020	Wednesday	Summer 12-WEEK, 6-WEEK-2, 4-WEEK-3 sessions grades must be approved by instructors by 11:59 p.m.	8/5/2020 Wednesday Pittsburgh Campus
8/8/2020	Saturday	Official date for awarding degrees	8/8/2020 Saturday All Campuses
8/8/2020	Saturday	Summer Term Ends: Final examinations scheduled during last class meeting	8/8/2020 Saturday All Campuses
8/9/2020	Sunday	Residence halls close	8/9/2020 Sunday Pittsburgh Campus
8/12/2020	Wednesday	Summer Term grades must be approved by instructors by 11:59 p.m.	8/12/2020 Wednesday Pittsburgh Campus
8/17/2020	Monday	Residence halls open	8/17/2020 Monday Pittsburgh Campus
8/24/2020	Monday	Fall Term classes begin	8/24/2020 Monday All Campuses
8/24/2020	Monday	Fall Term enrollment period ends for all students	8/24/2020 Monday All Campuses

September 2020

Begins	Date	Ends	Campus
9/4/2020	Friday	Fall Term add/drop period ends	9/4/2020 Friday All Campuses
9/5/2020	Saturday	Fall Term extended drop period begins (Undergraduate Students Only)	9/5/2020 Saturday All Campuses (Guidelines)
9/7/2020	Monday	Labor Day (University closed)	9/7/2020 Monday All Campuses

9/11/2020	Friday	Fall Term extended drop period ends (Undergraduate Students Only)	9/11/2020	Friday	All Campuses
9/17/2020	Thursday	Constitution Day	9/17/2020	Thursday	Pittsburgh Campus

October 2020

Begins	Date	Ends	Campus
10/23/2020	Friday	Fall Term deadline for students to submit Monitored Withdrawal forms to Dean's Office	10/23/2020 Friday All Campuses
10/23/2020	Friday	Final Exam Conflict Form Submission Deadline	10/23/2020 Friday All Campuses (Guidelines)
10/23/2020	Friday	Spring Term enrollment appointments begin (Veteran Students)	10/23/2020 Friday All Campuses
10/26/2020	Monday	Spring Term enrollment appointments begin (Non-Veteran Students)	10/26/2020 Monday All Campuses

November 2020

Begins	Date	Ends	Campus
11/6/2020	Friday	Last day for Spring Term enrollment appointments	11/6/2020 Friday All Campuses
11/7/2020	Saturday	Spring Term open enrollment period begins	11/7/2020 Saturday All Campuses
11/22/2020	Sunday	Thanksgiving Recess for students (no classes), all schools	11/29/2020 Sunday All Campuses
11/26/2020	Thursday	Thanksgiving Recess for faculty and staff (University closed)	11/27/2020 Friday All Campuses
11/30/2020	Monday	Classes resume (all schools)	11/30/2020 Monday All Campuses

December 2020

Begins	Date	Ends	Campus
12/4/2020	Friday	Spring Term deadline for continuing students to register	12/4/2020 Friday Pittsburgh Campus
12/4/2020	Friday	Fall Term: Last day for undergraduate day classes	12/4/2020 Friday All Campuses
12/5/2020	Saturday	CGS, Saturday Only, graduate, and evening classes meet during this period; final exams held during last scheduled class	12/12/2020 Saturday Pittsburgh Campus
12/5/2020	Saturday	Reading Day	12/5/2020 Saturday All Campuses
12/7/2020	Monday	Final examination period for undergraduate day classes	12/12/2020 Saturday Pittsburgh Calendar
12/12/2020	Saturday	Fall Term Ends: Official date for degrees awarded in Fall Term	12/12/2020 Saturday All Campuses
12/13/2020	Sunday	Residence halls close	12/13/2020 Sunday Pittsburgh Campus

12/13/2020	Sunday	Winter Recess for students (no classes), all schools	1/10/2021	Sunday	All Campuses
12/15/2020	Tuesday	Fall Term grades must be approved by instructors by 11:59 p.m.	12/15/2020	Tuesday	Pittsburgh Campus
12/24/2020	Thursday	Winter Recess for faculty, staff, & designated offices. Responsibility centers & research projects staffed as necessary*	1/3/2021	Sunday	All Campuses

January 2021

Begins	Date	Ends	Campus
12/13/2020	Sunday	Winter Recess for students (no classes), all schools	1/10/2021 Sunday All Campuses
12/24/2020	Thursday	Winter Recess for faculty, staff, & designated offices. Responsibility centers & research projects staffed as necessary*	1/3/2021 Sunday All Campuses
1/4/2021	Monday	All University offices and buildings reopen	1/4/2021 Monday All Campuses
1/9/2021	Saturday	Residence halls open	1/9/2021 Saturday Pittsburgh Campus
1/11/2021	Monday	Spring Term classes begin	1/11/2021 Monday All Campuses

Events calendar powered by 25Live

Printed: Tuesday, April 23, 2019 at 2:15 PM EDT

Calendar events displayed in Eastern Daylight Time/Eastern Standard Time

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Catalog Home

Search Programs, Courses & Policies

Whether you are interested in attending the University of Pittsburgh, or are already enrolled, you can search the Catalog to obtain campus information, academic programs, policies, and courses. For any questions, Contact us!

University of Pittsburgh Nondiscrimination Policy Statement

The University of Pittsburgh, as an educational institution and as an employer, values equality of opportunity, human dignity, and racial/ethnic and cultural diversity. Accordingly, as fully explained in Policy 07-01-03, the University prohibits and will not engage in discrimination or harassment on the basis of race, color, religion, national origin, ancestry, sex, age, marital status, familial status, sexual orientation, gender identity and expression, genetic information, disability, or status as a veteran. The University also prohibits and will not engage in retaliation against any person who makes a claim of discrimination or harassment or who provides information in such an investigation. Further, the University will continue to take affirmative steps to support and advance these values consistent with the University's mission. This policy applies to admissions, employment, access to and treatment in University programs and activities. This is a commitment made by the University and is in accordance with federal, state, and/or local laws and regulations.

For information on University equal opportunity and affirmative action programs, please contact: University of Pittsburgh, Office of Diversity and Inclusion, Cheryl Ruffin, Institutional Equity Manager, 4415 Fifth Avenue, 2nd Floor Webster Hall, Pittsburgh, PA 15260 (412) 648-7860.

For complete details on the University's Nondiscrimination Policy, please refer to Policy 07-01-03. For information on how to file a complaint under this policy, please refer to Procedure 07-01-03.

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Catalog Help

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About the University of Pittsburgh

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

Mission

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

The University's mission is to:

- Provide high-quality undergraduate programs in the arts and sciences and professional fields, with emphasis upon those of special benefit to the citizens of Pennsylvania;
- Offer superior graduate programs in the arts and sciences and the professions that respond to the needs of Pennsylvania, as well as to the broader needs of the nation and the world;
- Engage in research, artistic, and scholarly activities that advance learning through the extension of the frontiers of knowledge and creative endeavor;
- Cooperate with industrial and governmental institutions to transfer knowledge in science, technology, and health care;
- Offer continuing education programs adapted to the personal enrichment, professional upgrading, and career advancement interests and needs of adult Pennsylvanians; and
- Make available to local communities and public agencies the expertise of the University in ways that are consistent with the primary teaching and research functions and contribute to social, intellectual, and economic development in the Commonwealth, the nation, and the world.

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

History

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

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

In 1906, new rules were formulated for graduate study, requiring students to be in residence and requiring the completion of one year of study or 30 credits for the master's degree and three years or 90 credits for the doctoral degree. The catalogs of 1908 and 1909 announced the establishment of the Graduate School with five departments offering courses for the Doctor of Philosophy degree. These departments, plus five others, offered courses for the Master of Arts degree.

In 1910, a faculty committee drafted proposals, adopted by the board of trustees in 1913, making the Graduate School an independent administrative unit of the University and authorizing the selection of a Graduate Council. The Graduate School was grouped into three divisions (Humanities, Social

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

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

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

Accreditation

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

Web Address

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

Organization of Graduate and Professional Education at the University

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

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

Administrative Officers, Schools, and Campuses

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Schools And Campuses-University of Pittsburgh

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UNIVERSITY HONORS COLLEGE

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UNIVERSITY OF PITTSBURGH at GREENSBURG
UNIVERSITY OF PITTSBURGH at JOHNSTOWN
UNIVERSITY OF PITTSBURGH at TITUSVILLE

Academic Regulations

Advising

The quality of education that graduate students receive is greatly enhanced with good academic advising at all stages of their program. Given the diversity of these needs, each school and program must determine the best way to provide these services. Each program should have a document describing its view of good graduate advising practices and a clear policy on how good graduate advising is assessed and rewarded. For more information on academic advising at the graduate level, see Elements of Good Academic Advising. Students are encouraged to consult with the individual school for school-specific advising services.

Allowable Credits

There are certain limitations on the credits that can be earned toward a graduate degree at the University of Pittsburgh. Those limitations are detailed below.

Acceptance of Transfer Credits

Students who have completed graduate courses in degree-granting graduate programs at other appropriately accredited institutions prior to admission to the University of Pittsburgh should submit official transcripts from those institutions at the time they apply so that the courses can be evaluated for transfer credit. In no case may the total number of credits transferred exceed the maximum number stated in the sections of this bulletin pertaining to advanced degree requirements. For more detail, see credit requirement information in the sections on Regulations Pertaining to Master of Arts and Master of Science Degrees, Professional Master's Degrees, or Doctoral Degrees as well as the relevant program information in Schools, Departments, and Programs. Grades (and grade points) are not recorded for credits accepted by transfer.

Transfer credits will not be accepted for courses in which a grade lower than B (GPA=3.00) or its equivalent has been received. No credit will be granted toward an advanced degree for work completed in extension courses, correspondence courses, courses delivered electronically, or those offered in the off-campus center of another institution unless those courses are approved for equivalent graduate degrees at that institution and the institution has an accredited program.

The completion of requirements for advanced degrees must be satisfied through registration at the Pittsburgh campus of the University of Pittsburgh. Graduate students already enrolled may, when approved in advance by their department and the dean, spend a term or more at another graduate institution to obtain training or experience not available at the University of Pittsburgh and transfer those credits toward the requirements for an advanced degree at the University of Pittsburgh. In such instances, neither the University nor any of its components are responsible for providing any financial assistance to the graduate student.

Course Work Acceptable as Graduate Credit

A substantial proportion of courses acceptable toward a graduate degree should be designed explicitly for graduate students. Introductory graduate-level (master's-level) courses are numbered 2000-2999, and those at an advanced graduate-level (doctoral-level) are numbered 3000-3999. To be eligible for a master's degree, a student must have completed at least four courses (12 credits) or one-half the total number of credits submitted for the degree, whichever is greater, at the graduate level (2000 or 3000 series). Doctoral students must complete additional graduate-level courses as determined by their department or school. No lower-level undergraduate courses numbered 0001-0999 may be applied toward a graduate degree.

Credit by Course Examination

Some schools at the University offer credit by course examination. Each school authorized to offer graduate courses clearly specifies whether or not students may obtain credit toward a degree in this fashion and, if so, for which courses. A school granting graduate credit for life or work experience will do so only through the option of credit by examination.

Cross-Registration

Cross-registration provides students with the opportunity to enroll in courses at member institutions of the Pittsburgh Council on Higher Education (PCHE). The designated colleges and universities at which undergraduate students may cross-register include Carlow University, Carnegie Mellon University, Chatham University, Community College of Allegheny County, Duquesne University, La Roche College, Pittsburgh Theological Seminary, Point Park University, and Robert Morris University. Only full-time students may cross-register. Only full-time students may cross-register. Please note that students must maintain a full-time course load (at least 9 credits as a graduate student) at Pitt while cross-registered. Students who cross-register do not pay tuition to the host institution; however, they are responsible for any additional fees associated with the course such as laboratory fees, books, and the like. Students normally may register for only one course off campus in a given term. The grades and credits earned at the host institution are transferred to the home school. The academic policies of the host institution prevail.

Cross-registration is only available in the fall and spring terms. During the summer, students may attend one of the above colleges as guest students, but they must pay that institution's tuition and fees. Students are discouraged from cross-registering during their term of graduation to avoid any delays in the receipt of course credit needed to graduate. Students should meet with their advisors or a school representative before they cross-register. For more information on cross-registration, visit www.pchea.org.

Enrollment in Graduate Courses as an Undergraduate

University of Pittsburgh undergraduate students with sufficient preparation are permitted to enroll in certain graduate courses at the University following procedures determined by each school. The graduate credits earned may be counted toward the undergraduate degree if approved by the student's school. These may not be counted as credits toward a graduate degree except as noted below.

Undergraduate students who need fewer than 15 credits to complete requirements for the baccalaureate degree and who intend to continue study toward an advanced degree may be permitted during their final term to register for graduate courses that will later apply toward a graduate degree. The student must obtain written permission from the school of proposed graduate study that the courses may count when and if the student is admitted into the graduate degree program. This privilege should not be granted if the proposed total program exceeds a normal full-time load. Although these credits will appear on the undergraduate transcript, they will not count toward fulfilling undergraduate degree requirements. They will be posted as advanced standing credits on the graduate transcript.

Registration (Enrollment)

Registering for Classes

After being admitted to a graduate program, students may register for classes during the enrollment period. The enrollment period for a term or session is published in the University's Academic Calendar.

Students registering for the first time are advised to complete the enrollment process well before the beginning of the term. Typically, the first day of classes is the last day for students to enroll. Students who enroll after the first day of the term will be assessed a late registration fee.

Most students have the ability to utilize self-service enrollment tools available through the Student Portal or Pitt PS Mobile. Continuing students with the ability to utilize self-service enrollment will be assigned an enrollment appointment during the first two weeks of the enrollment period.

Once students have enrolled they may view their class schedules online via the Student Portal or Pitt PS Mobile.

Full-Time and Part-Time Study

Students must be officially admitted to the University to be eligible to register for classes. Graduate students who register for 9 to 15 credits in the fall or spring term are full-time students and are assessed the tuition rate for their school (for detail, see www.ir.pitt.edu/tuition). A school may require students enrolled in a degree program to register for more than 9 credits. Students who register for fewer than 9 credits are part-time students and are billed on a per-credit basis. During the summer term and summer sessions, most students are billed on a per-credit basis regardless of the number of credits taken. At the Joseph M. Katz Graduate School of Business, full-time MBA students are billed a flat rate in the summer term (since this is a one-year program, tuition is spread over three terms).

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

Maximum Credits Per Term

No student is permitted to register for more than 15 graduate credits without written permission from the dean of the academic center in which the student is pursuing a degree. Graduate students who register for more than 15 credits will be billed for each additional credit that exceeds their full-time tuition rate. Exceptions include the following:

- The Joseph M. Katz Graduate School of Business allows its full-time MBA students to register for up to 18 credits in the fall and spring terms before additional per-credit tuition charges apply.
- The School of Law has no maximum number of credits in its first-professional programs for billing purposes, but permission of the associate dean is required to register for more than 15 credits per term.
- The Graduate School of Public Health allows students pursuing the Master of Health Administration or the Master of Public Health in environmental and occupational health to take up to 16 credits during their first year of study.
- The School of Social Work allows its students to register for 16 credits in the fall term before additional per-credit tuition charges apply.

Individual schools and departments may restrict the maximum credit load for programs of any or all of their graduate students.

Registration Status at Graduation

All graduate students must register for at least 1 credit or full-time dissertation study during the 12-month period preceding graduation (that is, must be on active status). Waivers may be requested by submitting a written request to the University Registrar from the dean of the school. The request should be based on extenuating circumstances, e.g., inability of the student's dissertation committee to meet during the final term when a student has given reasonable notice or the student has completed all degree requirements in a previous term. Waivers will not be granted to students who are inactive.

Inactive Status

Students who have not registered for at least 1 credit or full-time dissertation study (eligible doctoral students) during a 12-month period are transferred to inactive status and must file an application for readmission to graduate study (application fee required) before being permitted to register again. Students on inactive status cannot apply to graduate or take preliminary or comprehensive examinations. Also, students on inactive status are not eligible to use University facilities and should not expect to receive counseling from the faculty or active supervision by their advisor and committee.

Adding and Dropping Courses

Students may add and drop courses only during the add/drop period. The dates for the add/drop period are listed in the University's Academic Calendar. Students who no longer wish to remain enrolled in a course after the add/drop period has ended may withdraw from the course or resign from the University. See Monitored Withdrawal from a Course or Resigning from the University.

Auditing Courses

With the consent of the school and instructor, students may choose to audit a course. To audit a course, a student must register and pay tuition for the course. The audit grade (N) is not counted toward graduation or the GPA.

Registering for Two Independent Degree Programs Simultaneously

Students may pursue two independent graduate degrees simultaneously in two different schools within the University (joint degree) or two different departments within the same school (dual degree). Normally, such students should be enrolled for no more than a total of 15 credits per term. Special approvals and regulations apply before a student is allowed to register for courses in pursuit of two independent graduate degrees. See discussion in Special Academic Opportunities for further detail.

Registering for Cooperative, Dual-Degree, and Joint-Degree Programs

Dual- and joint-degree programs result in two degrees being awarded. Requirements for these programs include all or most of the requirements of two distinct academic degree programs. Dual programs exist within a single school; joint programs exist between two or more schools; cooperative programs are administered by two or more institutions. Before registering for courses in pursuit of a cooperative, dual-degree, or joint-degree program, a student must be admitted to both programs. See discussion in Special Academic Opportunities for further detail.

Monitored Withdrawal from a Course

After the add/drop period has ended, students may withdraw from a course that they no longer wish to attend by completing a Monitored Withdrawal Request form in the office of the school offering the course. Students must process the Monitored Withdrawal Request form within the first nine weeks of the term in the fall and spring. Because summer sessions vary in length, students should check the University's Academic Calendar for those deadlines. Students should check with the school offering the course for the last day to submit a Monitored Withdrawal Request form. The grade **W** will appear on the student's transcript. There is no financial adjustment to students' tuition or fee obligations involved in withdrawing from courses, but withdrawing may jeopardize satisfactory academic progress, financial aid, and assistantships or fellowships.

Resigning from the University for a Specific Term

If students decide to drop all of their courses after the add/drop period has ended and before 60 percent of the term or session has been completed, they must resign from the University for that term. Official resignation from the University requires students to contact the Student Appeals Office. Students have several options. They may resign in person, by mail, or by calling 412-624-7585, where students may leave a message 24 hours a day, including weekends and holidays. An R grade will appear on the student's academic transcript. Tuition is prorated from the date of the student's notification to the Student Appeals Office of the student's desire to resign, unless 60 percent of the term has been completed, in which case there is no refund.

After the 60 percent point of the term or session has passed, students who wish to terminate their registration may withdrawal from all classes only with the permission of their academic dean. If the reason for withdrawal is medical or psychological in nature, the academic dean may consult with the director of the Student Health Service prior to making a determination. There is no financial adjustment associated with this procedure, which results in the assignment of W grades for the courses.

Grading and Records

GPA

The Grade Point Average (GPA) is the numeric indication of a student's academic achievement based on a 4.00 grade point scale. The value averages the total letter grades earned and is available by term or career. Some academic centers may also maintain degree and/or major/departmental GPA values.

Academic Standards

An average of at least B (GPA=3.00) is required in the courses that make up the program for any graduate degree. Students with full graduate status are automatically placed on probation whenever their cumulative GPA falls below 3.00. Each school determines the restrictions placed on a student on probation. See Probation, Suspension, and Dismissal for further detail.

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

Grading System

The University of Pittsburgh has a standard letter grade system (see Letter Grades below). Some additional grading options are available in some courses as determined by the school and the instructor (see sections below on University Grading Options and Other Grades). Students are subject to the grading system of the school in which they are taking the course.

University Grading Options

Individual schools may elect to offer one of the following grade options for its courses:

LG Letter Grade

H/S/U Honors/Satisfactory/Unsatisfactory

H/HS/S/LS/U Honors/High Satisfactory/Satisfactory/Low Satisfactory/Unsatisfactory*

S/NC Satisfactory/No-Credit (Formerly the S/N Option)

LG and H/S/U Letter Grade and Honors/Satisfactory/Unsatisfactory

LG and S/NC Letter Grade and Satisfactory/No-Credit

*This option is available for professional students in the School of Medicine only.

From among the grading options approved by the school, each department identifies those it deems acceptable for its courses. Furthermore, course instructors may specify, within the grading options approved by the school and department, which grading options may be selected by students taking their course.

Students should choose a grading option from those listed with the course in the Class Search function within the University's Student Information system. Grade Option/Audit Request forms for graduate courses are not required. Schools establish their own deadlines and procedures for processing grade option and audit requests.

Students receive the grade H or S for satisfactory work and U for unsatisfactory work. The grades H and S are counted toward graduation but not the student's GPA. The grades NC and U are not counted toward graduation or the GPA. The S grade indicates adequate graduate attainment; in evaluating thesis or dissertation research, an instructor may only use the S/NC grading option.

Students may audit a course and receive an N grade with the consent of the instructor and school offering the course. However, to audit a course, a student must register and pay tuition for the course. The N grade is not counted toward graduation or the GPA.

Letter Grades

The University's letter grade system for graduate and professional courses is as follows:

Grade Quality Points

A+ =4.00

A =4.00 Superior Attainment

A- =3.75

B+ =3.25

B =3.00 Adequate graduate-level attainment

B- =2.75

C+ =2.25

C =2.00 Minimal graduate-level attainment

C- =1.75

D+ =1.25

D =1.00

D- =0.75

F 0.00 Failure

Courses in the first-professional programs in law, dental medicine, medicine, and pharmacy may use different attainment standards.

Other Grades: Incomplete, Withdraw, Resign

Upon a student's completion of a course, one of the grades listed below may appear on the student's transcript in lieu of one of the options selected by the student and/or instructor under University Grading Options. None of these grades carries quality points. Students should consult with their individual school for information on any school-specific regulations regarding these grades.

G Grade

The G grade signifies unfinished course work due to extenuating personal circumstances. Students assigned G grades are required to complete course requirements no later than one year after the term in which the course was taken. After the deadline has passed, the G grade will remain on the record, and the student will be required to reregister for the course if it is needed to fulfill requirements for graduation.

I Grade

The I grade signifies incomplete course work due to nature of the course, clinical work, or incomplete research work in individual guidance courses or seminars.

W Grade

The W grade signifies that a student withdrew from the course. See Monitored Withdrawal from a Course for more information.

R Grade

The R grade indicates that a student has resigned from the University. See Resigning from the University for more information.

Repeating Courses

A student may repeat any course in which a grade of B- or lower is received if an authorization to repeat the course is given by the student's advisor and/or department. A school may restrict the type and/or number of different courses that may be repeated during one degree program. The grade earned by repeating a course is used in lieu of the grade originally earned, although the original grade is not erased from the transcript. No course may be repeated more than twice. No sequence course may be repeated for credit after a more advanced course in that sequence has been passed with a B or higher grade. The repeated course must be the same as that in which the original grade was earned. In extenuating circumstances, a department chair, with the dean's approval, may substitute another course of similar content. Grades of W, R, or N reported for the repeated course will not be counted as a course repeat. To initiate only the last course grade being computed in the GPA, a Course Repeat form must be filed with the dean's office.

Grade Changes

The instructor of a course may change a student's grade by submitting a Grade Change Request Form which can be found on the Faculty Portal. All grade changes require the authorization of the dean of the school from which the original grade was issued. Students can verify grade changes for the terms available online via Student Portal at my.pitt.edu or via Pitt PS Mobile.

Transcripts

An academic transcript serves as a permanent record of a student's academic progress. The transcript is a cumulative record of the student's GPA, as well as a record of the department, title, and grade for each course in which the student has enrolled and summary advanced standing information. Students may request an official transcript that bears the seal and signature of the University registrar. Upon graduation, the transcript reflects a student's degree and date, major, minor, or certificate, and, if applicable, honors, area of concentration.

Academic Record

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

Grade Report

Students can access their grades online via the Student Center at my.pitt.edu or via Pitt PS Mobile. Grade submission deadlines can be found in the University's Academic Calendar.

Academic Honors

Schools and programs may recognize academic achievement by students through fellowships, scholarships, and other awards. Students should consult with their individual school and/or program for more information.

Probation, Suspension, and Dismissal

Students who fail to make satisfactory progress may be subject to academic probation and/or suspension and dismissal. Students who have completed at least 9 quality point credits and whose GPA falls below 3.00 will be placed on academic probation by the dean of their school. After a certain period of time on academic probation (the period is determined by the student's school), a student is subject to academic suspension and restricted from registering for classes in that school. Details of the school's probation system are available through that school. Students on probation are not eligible to take the PhD preliminary evaluation or the MA, MS, or PhD comprehensive examination, or to be graduated.

Effect on Financial Aid and Scholarships

Conditions for loan eligibility and many scholarships (including those for teaching assistants, teaching fellows, graduate student assistants, and graduate student researchers) usually require students to complete a specified number of credits each year and maintain a specified grade point average (GPA: credits counted toward the degree). Questions about the effect of unsatisfactory academic standing on loans should be directed to the Office of Admissions and Financial Aid in Alumni Hall (4227 Fifth Avenue) at 412-624-7488. Questions about the effect of unsatisfactory academic standing on scholarships, including teaching and research assistantships, should be directed to the particular graduate school.

Editorial Assistance and Publication of Theses/Dissertations

All graduate students must follow University regulations regarding editorial assistance and publishing of theses and dissertations as detailed below.

Editorial Assistance

A student preparing a dissertation or other written work as part of academic requirements may, when appropriate, use the assistance of professional editors, provided that the following rules are observed:

1. The student receives the approval of the research advisor or professor of the course in which written work is being submitted.
2. The student receives assistance only in use of language and not in the subject matter of the written work.
3. The student acknowledges and describes all editorial assistance in the report.

Publication of Theses and Dissertations

Any thesis or dissertation may be published, either by the University or through an outside agency, provided due credit is given the University. No form of publication, however, will relieve the student of his or her responsibility to fulfill the University's electronic theses or dissertation (ETD) requirements. Refer to the sections on Thesis Option or Dissertation and Abstract for specific requirements and to the ETD website at www.pitt.edu/~graduate/etd.

The doctoral candidate is required to execute an agreement with Proquest University Microfilms Inc. for the publication of the dissertation in the Proquest/UMI repository.

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

Regulations Pertaining to Master of Arts and Master of Science Degrees

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

MA and MS Requirements

The Master of Arts and Master of Science degrees normally require the satisfactory completion of approximately 30 credits of graduate study approved by the department or school. No Master of Arts or Master of Science degree program may require fewer than 24 course credits. No more than 6 credits may be granted toward the completion of the requirements for a master's degree for work completed at another accredited graduate institution or for work previously completed at the University of Pittsburgh. See Acceptance of Transfer Credits section for further information.

At least four courses (12 credits) or one-half the master's degree program, whichever is greater, must be at the graduate-level (the 2000 or 3000 series) and must be completed with an average grade of B (3.00). No course numbered below 1000 may be applied toward graduate degree requirements.

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

Master's degrees are conferred only on those students who have completed all courses required for the degree with an average grade of B (i.e., a 3.00 GPA).

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

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

Comprehensive Examination

MA or MS degrees are conferred only upon those students who, in one or more comprehensive examinations or the equivalent, show that they have mastered the general field of their graduate study. Each department or similar unit is responsible for specifying the content and procedure for administration of the comprehensive examination and will specify for each candidate the field of his or her examination, which may vary from student to student. When a program substitutes an equivalent requirement for the comprehensive examination, the department should notify the University Council on Graduate Study and describe the substitution.

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

Thesis Option

The requirement of a thesis or its equivalent is at the discretion of individual departments, programs, or schools. If a thesis is submitted, its form must be in accord with specifications stipulated in the ETD Format Guidelines. Each candidate must provide a suitable number of copies of the thesis for review and use as designated by the thesis examining committee, consisting of at least three members of the faculty recommended by the major advisor and approved by the department chair. The final oral examination in defense of the master's thesis is conducted by the thesis committee, and a report of this examination signed by all members of the committee must be filed in the office of the dean. After the examination, the approved ETD must be deposited to the ETD Online System where it will be reviewed by the ETD Student Services Staff in the dean's office of the student's school and submitted for microfilming by Compucom and deposit in the University Library System. A receipt for the ETD processing/microfilming fees and any necessary paperwork must be submitted to the appropriate ETD Student Services Staff in the Office of the Dean.

Non-Thesis Option

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

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

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

Regulations Pertaining to Professional Master's Degrees

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

Professional Master's Degree Requirements

Professional master's degrees are conferred upon those students who demonstrate comprehensive mastery of their general field of study. The professional master's degrees normally require the satisfactory completion of more than 30 credits of graduate study approved by the department. No professional master's degree program may require fewer than 30 credits. No more than one-third of the total number of required credits may be granted to a student as transfer credit for work done at another accredited graduate institution. (See Acceptance of Transfer Credits section for further detail.) At least one-half of the credits earned in a master's degree program must be at the graduate level (the 2000 or 3000 series). No courses numbered below 1000 may be applied toward graduate degree requirements. Master's degrees are conferred only on those students who have completed all course requirements with at least a 3.00 GPA.

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

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

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

Regulations Pertaining to Doctoral Degrees

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

Admission to Doctoral Study

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

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

Programs of Study

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

The overall form and content of each student's program is the responsibility of the Graduate Faculty of the department or program. To carry out this responsibility, the departments or programs must ensure that each student has a major advisor who, in consultation with the student, plans a program

of study and research in accord with school and departmental guidelines. The advisor may prescribe additional courses both within and outside the department that are essential and/or appropriate to the student's program.

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

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

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

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

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

Credit Requirements

The minimum 72-credit requirement for the PhD degree is met by six terms of registration as a graduate student for 12 or more credits per term or the equivalent number of credits taken in a reduced load over a longer period of time. If the school requires completion of its master's degree program prior to admission into its doctoral program, at least four terms of registration for 12 or more credits per term or the equivalent number of credits in a reduced load are required as a minimum for the PhD degree. No more than 30 credits may be accepted for a master's degree awarded by another institution to meet the minimum credit requirement; some schools have more stringent requirements, including the Dietrich School of Arts and Sciences and the Graduate School of Public Health, both of which will accept only 24 credits for a master's degree awarded by another institution.

In recognition of graduate study beyond the master's degree successfully completed elsewhere, no more than 12 additional credits may be accepted at the time of admission to meet the minimum credit requirement. (See also Acceptance of Transfer Credits section.) No more than 30 credits may be accepted for a previously earned PhD degree in recognition of master's degree work, though some schools have more stringent requirements.

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

Residency Requirement

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

Preliminary Evaluation

The preliminary evaluation should be designed to assess the breadth of the student's knowledge of the discipline, the student's achievement during the first year of graduate study, and the potential to apply research methods independently. The form and nature of the evaluation should be approved at the school level and described in the school bulletin. It should be conducted at approximately the end of the first year of full-time graduate study. The evaluation is used to identify those students who may be expected to complete a doctoral program successfully and also to reveal areas of weakness in the student's preparation. Evaluation results must be reported promptly to the dean's office, but no later than the last day of the term in which the evaluation occurs. A student on provisional, inactive, or special status or on probation is not eligible to take the preliminary evaluation.

Comprehensive Examination

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

Doctoral Committee

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

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

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

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

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

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

Overview or Prospectus Meeting

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

Admission to Candidacy for the Doctor of Philosophy Degree

Admission to candidacy for the Doctor of Philosophy degree constitutes a promotion of the student to the most advanced stage of graduate study and provides formal approval to devote essentially exclusive attention to the research and the writing of the dissertation. To qualify for admission to candidacy, students must fulfill the following requirements:

- Be in full graduate status
- Have satisfied the requirement of the preliminary evaluation
- Have completed formal course work with a minimum grade point average of 3.00
- Have passed the comprehensive examination
- Have received approval of the proposed subject and plan of the dissertation from the doctoral committee following an overview or prospectus meeting of the committee

In some schools, admission to candidacy is a prerequisite to registration for dissertation credits. Students are informed of admission to candidacy by written notification from the dean, who also states the approved doctoral committee's composition.

Registering for Full-Time Dissertation Study

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

Dissertation and Abstract

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

A dissertation should demonstrate the following characteristics:

- The establishment of an historical context for the presentation of an innovative and creative approach to the problem, analysis, and solution
- A clear understanding of the problem area as revealed by analysis and synthesis of a broad literature base
- A well-defined research design
- Clarity in composition and careful documentation
- Results of sufficient merit to be published in refereed journals or to form the basis of a book or monograph
- Sufficient detail so that other scholars can build on it in subsequent work
- The preparation of the author to assume a position within the profession

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

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

Candidates for the doctoral degree must provide a suitable number of copies of the dissertation, as determined by the doctoral committee and school policy, for review and use during the final oral examination. The general format of the dissertation and the abstract is determined by the Office of the Provost and is set forth in the ETD Format Guidelines. Specific instructions should be available in the office of the dean of the school. After the final oral examination is successfully completed, the candidate must deposit the approved ETD to the ETD Online System where it will be reviewed by the ETD Student Services Staff in the dean's office of the student's school. At least two additional copies of the dissertation abstract, a receipt for payment of the dissertation processing/microfilm fees and any necessary paperwork must be submitted to the appropriate ETD Student Services Staff

in the office of the dean of the student's school. The candidate is also required to execute an agreement with Proquest Information and Learning for the publication of the dissertation on microform and in an electronic format and submit the Survey of Earned Doctorates (Forms are available in the dean's office). Students should check with their school for any additional supporting documents and/or requirements.

Language of the Doctoral Dissertation

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

Final Oral Examination

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

Interdisciplinary Doctoral Programs

A student may be admitted into one of two types of interdisciplinary doctoral programs, generic and individualized.

Generic Programs

Generic programs are ongoing, formally structured, and approved doctoral programs. Admission to these programs follows the same procedures as those of departmental programs.

Individualized Programs

Individualized programs are specially designed to permit an exceptionally able student who has earned a master's degree or the equivalent to pursue an interdisciplinary doctoral program structured to satisfy his or her unique goals. Such students should apply to the dean of the school if the departments involved in the proposed program are organized within one school or to the Provost if the departments are organized within more than one school. The student must satisfy the admission requirements of each of the departments or schools involved in the proposed program.

If the request is approved, the dean or the Provost, in consultation with the departments concerned, will designate five members from these departments to serve as an advisory committee. After these advisors meet with the student, a chief advisor is selected to assume responsibility for general guidance to the student. These advisors continue their responsibility until the student is admitted to candidacy for the PhD degree and may, if it is appropriate, continue as the doctoral committee for this student.

Other Research Doctoral Degrees

The University of Pittsburgh, through its professional schools, offers the following doctoral degrees in professional fields of study: Doctor of Education and Doctor of Public Health.

These doctoral degree programs are similar to those for the PhD in the degree of rigor required; the minimum total credit requirements and permissible transfer credits; the requirements for the successful completion of a preliminary evaluation and a comprehensive examination; the admission to doctoral candidacy; the nomination of a doctoral committee; the preparation of the dissertation and abstract; the publication of the dissertation; and the successful completion of the final oral examination. These doctoral dissertations are usually based on an in-depth empirical

research project by the student and are intended to permit the student to apply relevant theory and knowledge as well as to demonstrate skills in analysis of a major problem and to contribute to the improvement of practice in the student's area of specialization.

Other Professional Doctoral Degrees

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

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

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

Statute of Limitations/Leaves of Absence

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

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

From the student's initial registration for graduate study, all requirements for the PhD degree must be completed within a period of 10 years, or within eight years if the student has received credit for a master's degree appropriate to the field of study. A student who is unable to complete all degree requirements within a five-year period after passing the comprehensive examination may be re-examined at the discretion of the department or school. Programs for professional doctoral degrees, for which the majority of candidates pursue part-time study while working full-time within their chosen disciplines, may be granted a longer statute of limitations by the schools offering the degrees.

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

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

Graduation

Requirements for Graduation

Graduation requirements for MA, MS, professional master's, and doctoral degrees are described earlier in this bulletin under the relevant sections detailing the regulations pertaining to each degree. In order to graduate from the University of Pittsburgh, a graduate student must be an active University of Pittsburgh student registered for at least 1 credit or full-time dissertation study within the past 12 months. See specific schools and programs for detailed information on degree and graduation requirements.

Application to Graduate

Students must file an application for graduation in the dean's office of their school early in the term in which graduation is expected. Each school establishes its own deadline by which students must apply for graduation. Students should check with their dean's office for the deadline. As noted above, students must be active. In exceptional circumstances, students who complete all the degree requirements at the end of a term but graduate in the next term may petition the dean of the school for a waiver of this registration requirement. The requirement that a student be on active status cannot be waived.

Prior to the end of the term in which they graduate, all doctoral candidates must submit to the dean's office a completed Survey of Earned Doctorates.

Certification for Graduation

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

Commencement

Candidates for graduation are encouraged to appear in person at the Annual Commencement Convocation, usually held the Sunday after the spring term ends. Although the degree is officially conferred at commencement, diplomas are mailed to graduates several weeks later.

Rights and Responsibilities

The University has a number of official policies affecting students. For complete and current text on all University policies, please see www.provost.pitt.edu/information-on/guidelines.html.

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

Academic Integrity Policy

Students have the right to be treated by faculty in a fair and conscientious manner in accordance with the ethical standards generally recognized within the academic community (as well as those recognized within the profession). Students have the responsibility to be honest and to conduct themselves in an ethical manner while pursuing academic studies. Should a student be accused of a breach of academic integrity or have questions regarding faculty responsibilities, procedural safeguards including provisions of due process have been designed to protect student rights. These general procedures may be found in Guidelines on Academic Integrity: Student and Faculty Obligations and Hearing Procedures at www.provost.pitt.edu. Individual schools have their own academic integrity policies, and students are encouraged to review these school-specific guidelines as well.

Affirmative Action and Non-Discrimination Policy

The University of Pittsburgh, as an educational institution and as an employer, values equality of opportunity, human dignity, and racial/ethnic and cultural diversity. Accordingly, the University prohibits and will not engage in discrimination or harassment on the basis of race, color, religion, national origin, ancestry, sex, age, marital status, familial status, sexual orientation, disability, or status as a disabled veteran or a veteran of the Vietnam era. Further, the University will continue to take affirmative steps to support and advance these values consistent with the University's

mission. This policy applies to admissions, employment, and access to and treatment in University programs and activities. Additional information on this policy is available at <http://cfo.pitt.edu/policies/documents/policy07-01-03web.pdf>.

For information on University equal opportunity and affirmative action programs, please contact: University of Pittsburgh, Office of Diversity and Inclusion, Cheryl Ruffin, Institutional Equity Manager, 4415 Fifth Avenue, 2nd Floor Webster Hall, Pittsburgh, PA 15260 (412) 648-7860.

Computing Use Policy

Every member of the University community has two basic rights regarding computing: privacy and a fair share of resources. It is unethical for another person to violate these rights. All users, in turn, are expected to exercise common sense and decency with regard to the campus computing resources. Please read Acceptable Computing Access and Use, available in campus computing labs or online at technology.pitt.edu/security/acceptable-computing-access-and-use for details.

Students should realize that any misuse of computing resources may result in the suspension of their computing privileges.

Copyright Policy

The University of Pittsburgh affirms that, except as specifically exempted by this policy, faculty, staff, and students are entitled to claim copyright ownership, including worldwide rights, in the following works authored by them: books, articles, educational course work, similar works that are intended to disseminate the results of academic research or scholarly study, popular fiction or nonfiction works, poems, musical compositions, and other works of artistic imagination.

The University has no proprietary interest in copyrightable materials produced by faculty, staff, or students under contract with entities external to the University (in which the faculty, staff, or students have no controlling or majority interest), except as specifically exempted by this policy.

Additional information on this policy is available at <http://cfo.pitt.edu/policies/documents/policy11-02-02.pdf>.

Drug-Free School and Workplace Policy

The University of Pittsburgh prohibits the unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance on University property or as part of any University activity. Faculty, staff, and students of the University must also comply with the laws of the Commonwealth of Pennsylvania on the possession and consumption of alcohol.

Violation of this policy will result in disciplinary action within 30 days, including, but not limited to, a warning, written reprimand, suspension, dismissal, expulsion, and/or mandatory participation and successful completion of a drug abuse assistance or rehabilitation program approved by an appropriate health or law enforcement agency.

Any University employee paid from federally funded grants or contracts, or any students participating in any federally funded or Guaranteed Student Loan program, must notify the University of any criminal drug statute conviction for a violation occurring at the University or while engaged in University activities.

For complete text on this policy, see <http://www.hr.pitt.edu/sites/default/files/uploads/DFW/DFW-FY2014.pdf>.

E-mail Communication Policy

The University of Pittsburgh has established e-mail as an official means of communication with students. For more information, visit <http://www.cfo.pitt.edu/policies/policy/09/09-10-01.html>.

Faculty-Student Relationships

The University's educational mission is promoted by professional relationships between faculty members and students. Relationships of an intimate nature (that is, sexual and/or romantic) compromise the integrity of a faculty-student relationship whenever the faculty member has a professional

responsibility for the student. The University prohibits relationships between a faculty member and a student whose academic work, teaching, or research is being supervised or evaluated by the faculty member.

If an intimate relationship should exist or develop between a faculty member and a student, the University requires the faculty member to remove himself or herself from all supervisory, evaluative, and/or formal advisory roles with respect to the student.

Definition Note: In this policy, the definition of "faculty member" refers to anyone appointed by the University as a teacher, researcher, or academic administrator, including graduate and undergraduate students so appointed. For complete text on this policy, see <http://www.cfo.pitt.edu/policies/policy/02/02-04-03.html>.

Family Educational Rights and Privacy Act

In compliance with the Family Educational Rights and Privacy Act of 1974, the University guarantees that students have the right to inspect all personally identifiable records maintained by the institution and may challenge the content and accuracy of those records through appropriate institutional procedures. It is further guaranteed by the University that student records containing personally identifiable information will not be released except as permitted by the Family Educational Rights and Privacy Act. See www.registrar.pitt.edu/ferpa.html for more information.

Statement of Compliance Regarding VA Educational Beneficiaries - 38 US Code Section 3679(e)

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

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

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

Graduate Student Researcher Policy Statement

Graduate student researchers (GSRs) at the University of Pittsburgh are graduate students who are receiving financial support from research funds in return for duties performed to meet the goals for which the funds were awarded. The research performed is also normally an integral part of the student's research practicum experience, thesis, or dissertation. A primary goal of the appointment, from the point of view of both the University and the student, is to provide financial support to the graduate student. For additional Graduate Student Researcher Policy information see www.pitt.edu/~graduate/gsr.html.

Harassment Policies

Harassment

No University employee, student, or individual on University property may intentionally harass or abuse a person (physically or verbally) with the purpose or effect of unreasonably interfering with such person's work or academic performance, or of creating an intimidating, hostile, or offensive work or academic environment.

Sexual Harassment

The University of Pittsburgh is committed to the maintenance of a community free from all forms of sexual harassment. Sexual harassment violates University policy as well as state, federal, and local laws. It is neither permitted nor condoned.

It is also a violation of the University of Pittsburgh's policy against sexual harassment for any employee or student at the University of Pittsburgh to attempt in any way to retaliate against a person who makes a claim of sexual harassment.

Any individual who, after thorough investigation and an informal or formal hearing, is found to have violated the University's policy against sexual harassment, will be subject to disciplinary action, including, but not limited to, reprimand, suspension, termination, or expulsion. Any disciplinary action taken will depend upon the severity of the offense. For more information, see <http://www.cfo.pitt.edu/policies/documents/policy06-05-01web.pdf>.

Human Research Subjects: Institutional Review Board

The University of Pittsburgh is guided by the ethical principles regarding all research involving humans as subjects, as set forth in the report of the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research (entitled *Ethical Principles and Guidelines for the Protection of Human Subjects for Research* [the "Belmont Report"]).

All research at the University involving interventions or interactions with living individuals or the obtaining of their identifiable private information must be reviewed and approved by an Institutional Review Board (IRB) before the research will be allowed to proceed. For complete text of the IRB's policies and practices, see www.irb.pitt.edu or contact the IRB at 412-578-3424.

Patent Policy

A University student, during the student's period of enrollment, may be responsible for new discoveries and inventions that could have commercial value and contribute to scientific, technological, social, and cultural progress. Those accomplishments should be patented in the best interest of the student, the University, the public, and the government. The University's policy on patents determines the rights and obligations of the student and the University in any technology the student may invent while enrolled in the University. Details of this University policy are available from the Office of Technology Transfer and Intellectual Property at 200 Gardner Steel Conference Center and at <http://www.cfo.pitt.edu/policies/policy/11/11-02-01.html>.

Research Integrity

The University of Pittsburgh seeks excellence in the discovery and dissemination of knowledge. Excellence in scholarship requires all members of the University community to adhere strictly to the highest standards of integrity with regard to research, instruction, and evaluation. Research misconduct carries potential for serious harm to the University community, to the research of science, and to society as a whole. The University's Research Integrity Policy is available online at <http://www.cfo.pitt.edu/policies/policy/11/11-01-01.html>.

Smoking Policy

Smoking is prohibited in all University-owned and leased facilities, including residence halls and off-campus housing facilities, and in all University vehicles, including motor pool vehicles, campus buses, and vans, with explicit limited exceptions described in <http://www.cfo.pitt.edu/policies/policy/04/04-05-03.html>.

Student Code of Conduct

The Student Code of Conduct is an outline of the non-academic rights and responsibilities of University students. The code defines offenses against students. A student or University official may file a complaint of violation of the Student Code of Conduct at the University Student Judicial System Office. For a copy of the code, please contact the Judicial System Office in 738 William Pitt Union at 412-648-7918 or see www.studentaffairs.pitt.edu/studentconduct.

Student Code of Judicial Procedures

The Office of the University Student Judicial System coordinates the Campus Judicial Board. It also receives, previews, and acts upon complaints of violations of the Student Code of Conduct. Its purpose is to provide due process and fair treatment in adjudicating charges filed for violations of the code. All complaints should be filed here.

Judicial Affairs also conducts a Student Mediation Program and screens requests for contact of students.

Student Service Holds Policy

Access to many student services including registration and receipt of grades may be delayed for a number of reasons ranging from financial liability to missing data. Complete information on this policy is available online at <http://www.cfo.pitt.edu/policies/policy/09/09-04-09.html>.

Teaching Assistant/Teaching Fellow/Graduate Student Assistant Policy Statement

Teaching assistants (TAs), teaching fellows (TFs), and graduate student assistants (GSAs) at the University are graduate students who are receiving support in return for specified duties while gaining teaching and teaching-related experience under the guidance of faculty mentors. Their primary objective, from the standpoint of the University and the individual, is to make steady progress toward an advanced degree. TA/TF/GSA appointment status is dependent upon graduate student status. The complete policy statement for TA/TF/GSAs is available at www.pitt.edu/~graduate/tapolicyrev.htm.

Use of Alcohol Policy

The University of Pittsburgh prohibits use and dispensing of alcohol in compliance with the laws of the Commonwealth of Pennsylvania. For more information, visit <http://www.cfo.pitt.edu/policies/policy/04/04-05-02.html>.

Regulations Governing Graduate Study at the University of Pittsburgh

History of Graduate Study at the University of Pittsburgh

The recognition of graduate study at the University of Pittsburgh began with the awarding of Master of Arts degrees—two in 1836, one in 1845, three in 1848, and two in 1849. The record does not distinguish between earned and honorary degrees, but apparently 33 MA degrees had been awarded by 1870. These degrees were conferred for study beyond the Bachelor of Arts degree and before specific programs or minimum requirements for advanced degrees had been established.

This system continued until 1884 when Chancellor Goff set up a two-year professional study program leading to a Master of Philosophy or a Master of Arts degree and a three-year program leading to a Doctor of Philosophy degree. Before admission to these graduate programs, each student was required to show proficiency in three areas of study as tested by written and oral examinations. For admission to the Master of Arts program, each student was required to have completed the four-year Bachelor of Philosophy degree in the Scientific course. The Master of Philosophy degree was, in fact, the predecessor of the Master of Science degree. Students were permitted to study in absentia under the direction of the faculty, but were required to submit annually to a rigorous examination in all prescribed courses. In addition, both master's and doctoral candidates were required to prepare and defend theses.

Between 1885 and 1903, there were 25 Master of Philosophy, 34 Master of Arts, and ten honorary Master of Arts degrees awarded. Apparently, no Master of Philosophy degrees have been awarded since 1903. Three Doctor of Philosophy degrees were awarded in 1886 and a total of 31 had been conferred by 1915. Between 1888 and 1900 ten honorary Doctor of Philosophy degrees were awarded, but apparently none have been awarded since then.

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

The catalogues of 1908 and 1909 announced the establishment of the Graduate School with five departments (Psychology and Education, English Literature, Chemistry, History and Political Science, Economics and Sociology) offering courses for the Doctor of Philosophy degree, and these plus five additional departments (Biblical Literature and Comparative Religion, Greek, Semitic Languages and Literatures, Biology, and Astronomy) offered courses for the Master of Arts degree. The program of studies for the MA degree required one major and a minor subject and the program for the PhD degree required one major and one or two minor subjects, one of which must be from outside the department of the major. A good reading knowledge of at least one modern foreign language was required to receive a graduate degree.

Three Master of Science degrees were awarded in 1907 although the first description of the Master of Science degree appeared in the 1910 catalogue: "The Master of Arts degree will be granted only upon completion of a course mainly literary in character; the degree of Master of Science after one mainly scientific." That catalogue lists 16 departments offering courses for master's degrees and ten offering courses for the Doctor of Philosophy degree. The language requirement became more specific: "A good reading knowledge of both French and German and of other modern languages necessary to carry on graduate work is required of each candidate for the PhD" and "of French or German, or both, for Master's degrees."

In 1910, a faculty committee drafted proposals, adopted by the Board of Trustees in 1913, making the Graduate School an independent administrative unit of the University and authorizing the selection of a Graduate Council. This Council was first appointed by the Dean of the Graduate School and later elected by the Graduate Faculty from the departments offering graduate work. It consisted of representatives from the nine departments offering graduate work at the time: education, economics, ancient languages, romance languages, chemistry, botany, mathematics and physics, geology, and physiology. In 1924, a change in procedure for the selection of the Council was instituted so that 13 faculty representatives were drawn from the following groups of departments: English, fine arts, foreign languages, physical sciences, natural sciences, social sciences, psychology, engineering, business administration, medicine, dentistry, and education.

In 1947 the Board of Trustees adopted resolutions recommended by the University Senate and the Graduate Council (1) grouping the schools and departments in the Graduate School into three divisions: the Humanities, the Social Sciences, and the Natural Sciences; (2) establishing criteria for membership in the faculty of the Graduate School; and (3) defining the Graduate Council and its functions as follows: "The Graduate Council shall consist of 12 full members of the faculty of the Graduate School, four from each of the three divisions of the Graduate School, and the Dean of the Graduate School as chairman, ex officio; the faculty members of the Council shall be elected by the full members of the faculty of the Graduate School of their respective divisions for a term of four years; and the Graduate Council representing the faculty of the divisions, shall be the policy-making body of the Graduate School."

Until 1956, the administration of graduate study was the responsibility of the Dean of the Graduate School and the Graduate Council. At that time, the individual schools and the three Divisions of the Academic Disciplines were given direct administrative responsibility for their graduate programs in accord with the regulations established by the University Council on Graduate Study-formerly the Graduate Council.

In 1968, the Dean of the Graduate School retired from his administrative role and the position he had held was discontinued. General responsibility for the University's graduate programs was assigned to the Provost pending reorganization of the University's graduate structure. The University Council on Graduate Study, the University Administration, and members of the Graduate Faculty cooperated in drafting a proposed reorganization of Graduate Study which was approved by written ballot by the entire Graduate Faculty, and in turn, accepted by Chancellor Posvar. This organizational structure became effective July 1, 1971 and is still the official structure. The procedures for nomination and appointment to the Graduate Faculty were approved in 1972 and revised slightly in 1977.

Thus, since the University's founding in 1787, graduate education has grown to encompass the School of Arts and Sciences and all 13 of the professional schools, which share a commitment to meet the nation's need for well educated researchers, scholars, and leaders of professions and the tri-state region's need for trained professionals.

Organization of Graduate Study at the University of Pittsburgh

Objectives

The first objective is to place the responsibility for planning and operating graduate programs in the schools and faculties which offer such programs. This arrangement will put the graduate student and his or her program under the immediate supervision of the teaching staff and administrative officers of his or her field of study.

The second objective is to provide a means of establishing and maintaining basic standards and requirements for graduate work throughout the University. It is believed that the advanced degree programs developed and administered by the various schools and faculties, though differing in details, should conform to certain fundamental principles of good practice.

The third objective is to create effective channels of communication within the graduate community and thus to ensure that all segments of the University are represented in the policy making process.

Definitions

Graduate programs: all programs of study leading to a master's degree, an advanced doctoral degree (e.g. PhD, EdD, DPH), or a graduate certificate.

Advanced degrees: all master's and doctoral degrees awarded upon completion of graduate degree programs as defined above.

Schools: academic units of the University headed by deans, having their own teaching staffs, and offering instructional programs leading to degrees. *Interschool programs:* programs of graduate instruction and research offered cooperatively by Graduate Faculty members from two or more of the academic units defined above.

Graduate Faculty: members of the various schools who have been recognized and approved as qualified: (1) to teach courses carrying graduate credit, (2) to serve on examining committees for advanced degrees, and (3) to advise graduate students and direct their research.

Graduate student: a student who is enrolled in a graduate program as defined above.

Structure

I. Administration of Graduate Programs

1. Although the University Council on Graduate Study, acting for the Graduate Faculty, establishes minimum standards for graduate work throughout the University (III.B.1), the immediate responsibility for developing and administering graduate programs is assigned to the

deans and Graduate Faculty members of the schools. This responsibility applies both to the traditional MA, MS, and PhD programs and to programs leading to advanced professional degrees. Specifically, the deans and Graduate Faculty members shall be responsible in their areas for graduate admission standards and requirements and the admission of graduate students; for advanced certificate and degree requirements; for selecting and maintaining a distinguished graduate faculty; and for recommending the awarding of advanced certificates and degrees.

2. The Provost shall have responsibility for the general supervision of graduate programs throughout the University, giving leadership to the deans and faculties in maintaining high standards of graduate instruction and research.
3. The Provost or a Vice Provost as may be designated shall serve as the administrative officer of the Graduate Faculty (see V.B., below).

II. The Graduate Faculty

FM Members of the graduate faculty have been recognized and approved as qualified to teach courses carrying graduate credit, to serve on examining committees for advanced degrees, and to advise graduate students and direct their research.

1. Membership in the Graduate Faculty shall be of two classes, "Regular" and "Adjunct." Regular membership shall be recommended for full-time faculty members or part-time, tenure stream members of the University faculty who are approved to direct graduate study and research at all levels. Adjunct membership shall be recommended for persons whose primary responsibility is outside the University but who hold a part-time faculty appointment and are approved to direct graduate study and research at all levels. Only Regular members shall be eligible for election to the University Council on Graduate Study, and only Regular members may cast votes in such elections.
2. Members shall be appointed to the Graduate Faculty by the Provost. When a person is recommended for initial appointment to a faculty position, the dean who makes the recommendation will indicate whether, on the basis of an appraisal by a departmental or other appropriate faculty group, the individual should be given Graduate Faculty status. A recommendation for Graduate Faculty membership will carry the implication that the prospective appointee is judged to be: (1) competent in graduate instruction and the supervision of student research and (2) active in advancing knowledge through his or her own research. If approved for Graduate Faculty status, a full-time appointee will become a "Regular" member. A highly qualified part-time appointee whose main employment is outside the University will become an "Adjunct" member. The official contract letter from the Provost to the new faculty member will specify the class of Graduate Faculty membership, if any, that has been awarded.
3. Members shall perform the following functions:
 1. Provide instruction, conduct examinations, and direct student research in graduate programs; and
 2. Serve on faculty committees and councils charged with the development of graduate programs and policies.
4. Prior to Council's taking final action, all legislation must be sent to the deans and the chairs of schools' graduate councils, who will distribute it to appropriate councils and to Graduate Faculty and forward comments back to Council. All members of the Graduate Council shall receive from the chair of the University Council on Graduate Study an annual report of actions taken by Council. On the recommendation of the Council or the Provost or on receipt by the Provost of a request signed by 30 Regular members of the Graduate Faculty, legislation approved by Council which reflects a major change in policy shall be submitted for approval by a mail ballot to all members of the Graduate Faculty. If the proposed legislation is approved by a majority of the members responding within a 30-day period following the mailing of ballots, it will be considered to be approved for recommendation to the Chancellor.
5. All members shall be given notice of meetings of the University Council on Graduate Study through the University Times or other appropriate announcements. They shall be entitled to attend such meetings and to speak, but shall not be permitted to vote unless they are members of the Council.

III. The University Council on Graduate Study

1. Membership
 1. Provost,
 2. Vice Provosts as designated by the Provost, and
 3. Twenty-one Regular members of the Graduate Faculty, distributed according to a formula based on the number of Regular Graduate Faculty members in the schools (one representative for each 100 members and/or fraction of 100). The representation is as follows:
 - School of Arts and Sciences
 - Humanities-one representative
 - Natural Sciences-one representative
 - Social Sciences-one representative
 - At Large-two representatives
 - Joseph M. Katz Graduate School of Business-one representative
 - School of Education-two representatives

- John A. Swanson School of Engineering-two representatives
- School of Information Sciences-one representative
- School of Law-one representative
- Graduate School of Public and International Affairs-one representative
- School of Social Work-one representative
- School of Dental Medicine-one representative
- School of Health and Rehabilitation Sciences-one representative
- School of Medicine-one representative
- School of Nursing-one representative
- School of Pharmacy-one representative
- Graduate School of Public Health-one representative
- Interschool programs-one representative

Faculty FMFM representatives shall be selected, and their terms of office determined, in accordance with procedures established for this purpose within their respective schools. No representative shall serve for more than four consecutive years, except when a school chooses to designate a representative by reason of the official role of that individual in relation to graduate study within that school.

4. A maximum of six graduate students shall be chosen as representatives in accordance with procedures established for that purpose by the Graduate and Professional Student Association. Academic units which are not directly represented by a student with voting rights on the University Council on Graduate Study may choose one student observer to attend Council meetings with the privilege of speaking but not voting.
2. Functions
 1. To develop basic standards, regulations, and policies applicable to all fields for graduate instruction and research;
 2. To transmit to the Chancellor legislation originating in the Council after such legislation has been reviewed by the subordinate faculty councils or committees (see IV.A.), and has been submitted to the Graduate Faculty, or has been approved by a majority of those members responding by a mail ballot (see II.D.);
 3. To review, evaluate, and make recommendations to the Chancellor concerning proposals for new postbaccalaureate degree and certificate programs throughout the University after such proposals have had prior review and approval by the faculty councils or committees in which the proposals originated, or in the case of interschool proposals, by the councils or committees of all the areas involved (see IV.A., B.);
 4. To keep informed regarding the quality of graduate work throughout the University by receiving annual reports from the faculty councils and committees on the current status of all graduate degree and certificate programs within their respective areas, and, when necessary, to conduct its own review of such programs; and
 5. To identify and promote creative new approaches to graduate education, whether in defining fields of study, program structure, course content, behavioral objectives, research goals, or other aspects.
3. Procedures
 1. The Council shall hold eight monthly meetings during the academic year. Additional special meetings may be called by the Provost or a designated Vice Provost.
 2. The Council may appoint ad hoc committees from its own membership or from the Graduate Faculty as a whole to review proposals for new postbaccalaureate degree programs, to evaluate existing programs, or to make such other studies as the Council considers desirable. Each such committee shall include at most two graduate student representatives. The committees may also, at the option of the Council, make use of consultants from outside the University. When formed to evaluate new programs which require substantial library holdings, or computer usage, the review committees shall include one or more representatives of the University Libraries or Computing Services and Systems Development.
 3. Prior to Council's taking final action, all legislation must be sent to the deans and chairs of schools' graduate councils, who will distribute it to appropriate councils and to Graduate Faculty and forward comments back to Council.
 4. All decisions made by the Council shall be communicated to the faculty, students, and administrative officers of the University.

IV. Faculty Councils and Committees on Graduate Study

1. Faculty councils and committees on graduate study in the various schools shall be responsible for standards and requirements in their respective areas and for reporting on programs and policies to the University Council on Graduate Study.
2. Committees may be formed to supervise interdepartmental and interschool graduate programs. If an interdepartmental program is established within a particular school, the committee in charge of that program will perform those functions normally performed by a department. If the program has broader scope than that of a single school, the committee structure and administrative relationships will be those agreed upon by the cooperating units. Graduate programs will be reviewed by the University Council on Graduate Study and by the Provost.

3. The basic standards, regulations, and policies approved by the University Council on Graduate Study shall be regarded as minimal standards by the various councils, committees, and faculties.

V. Functions of Administrative Officers in Relation to Graduate Study

1. Deans of Schools
 1. Provide leadership in the development of programs, standards, policies, and facilities for graduate instruction and research in their areas;
 2. Administer the operation of graduate programs in their areas, including admissions, student counseling, record keeping, enforcement of requirements, and recommendation of candidates for advanced degrees; and
 3. Select and maintain a Graduate Faculty of the first quality and encourage the professional growth of its members.
2. Provost or a Vice Provost as Designated
 1. Serves as administrative officer of the Graduate Faculty and Chair of the University Council on Graduate Study;
 2. Represents the central administration in developing, reviewing, and evaluating graduate programs throughout the University;
 3. Reviews the adequacy of the structure for graduate instruction and research and identifies opportunities for improving the structure;
 4. Observes and reports the extent to which the several faculties are complying with the Graduate Faculty's standards for graduate study;
 5. Encourages the development of graduate programs which involve interschool collaboration;
 6. If a designee, advises the Provost regarding appointments to the Graduate Faculty;
 7. Administers graduate fellowship programs which cannot be assigned to specific schools;
 8. Serves as liaison officer between the University and the various professional organizations and other agencies which are concerned with graduate work on the national level;
 9. Keeps informed of developments in graduate education and postdoctoral study at other graduate institutions;
 10. Fosters research and innovation related to graduate study; and
 11. Sees that bulletins, catalogues, and other materials describing the University's graduate programs are published and distributed.
3. Provost
 1. Represents the Chancellor in developing, reviewing, and evaluating graduate programs throughout the University;
 2. Cooperates with deans and department chairs in maintaining a graduate faculty of superior competence, approves appointments to the Graduate Faculty as recommended by the deans, and observes the quality of graduate instruction and research within the several schools; and
 3. Serves as a member of the University Council on Graduate Study.
4. Chancellor
 1. As chief administrative officer, reviews proposals of the University Council on Graduate Study and is responsible for final decisions regarding the structure of graduate instruction and research;
 2. Recommends University Council on Graduate Study proposals for new degrees to the Board of Trustees for final action; and
 3. Confers graduate degrees recommended by the Graduate Faculty of the several schools and approved by the Board of Trustees.

VI. Amendments

Amendments to this plan of organization may be proposed by the University Council on Graduate Study, by joint action of two or more of the faculty councils or committees, or by petition of 50 Regular members of the Graduate Faculty drawn from two or more schools. A proposed amendment shall be regarded as new legislation and shall be handled in accordance with the procedures outlined in Section II.D.

Nomination and Appointment to the Graduate Faculty

I. Qualifications for Membership in the Graduate Faculty

According to the 1971 reorganization of Graduate Study at the University of Pittsburgh, "membership in the Graduate Faculty shall be of two classes, 'Regular' and 'Adjunct.'" Regular membership shall be recommended for full-time faculty members or part-time, tenure stream members of the University faculty or academic staff with faculty status who are approved to direct graduate study and research at all levels. Adjunct membership shall be recommended for persons whose primary responsibility is outside the University but who hold a part-time faculty appointment and are approved to direct graduate study and research at all levels.

The competence to direct graduate study and research at all levels is the primary qualification for membership in the Graduate Faculty. Hence, each nomination for membership should include documentation of the candidate's experience in research, in the teaching of graduate level courses, in the supervision of graduate research, as well as in scholarly publications and professional employment. The completion of a doctoral dissertation, while highly desirable, is not in itself sufficient evidence of qualification for membership in the Graduate Faculty. At the same time, faculty members without an earned doctorate are not automatically excluded and may be designated if they have exceptional qualifications by virtue of experience and accomplishment.

Appropriately qualified faculty members who are not either Regular or Adjunct members of the Graduate Faculty may be assigned by their department chairs (if approved by the Graduate Faculty of the department) the responsibility for the teaching of graduate courses and the direction of master's level research. In addition, they may serve on doctoral dissertation committees provided that a majority (three or more) of the committee are Regular or Adjunct Graduate Faculty members. These responsibilities provide some of the experience required for later appointment to membership in the Graduate Faculty. Individuals who are candidates for advanced degrees, and especially those seeking a degree from the University of Pittsburgh, do not normally qualify for membership on doctoral dissertation committees and, except in a few professional areas, they should not normally be assigned the responsibility for the teaching of graduate courses.

II. Procedure for Nomination

All FE nominations for Regular or Adjunct membership in the Graduate Faculty must originate in the department or school offering graduate degree programs. All Regular Graduate Faculty members in the department, school, or unit must be polled, and the nomination must be signed by at least six of the Graduate Faculty members, the department chair, and the dean of the school making the nomination. If there are fewer than six Graduate Faculty members in the unit, additional support (including signatures) should be obtained from the Graduate Faculty members in closely related areas of the University.

The Graduate Faculty of any school may determine appropriate discipline sub-clusters to act on nomination procedures, if the total faculty so desire.

If a department or school nominates for Regular membership in the Graduate Faculty, an individual whose primary appointment is in another department, the nomination must include the concurrence of the department of primary appointment.

All nominations for Regular or Adjunct membership in the Graduate Faculty should be submitted on the appropriate form. The required supporting evidence should include a listing of graduate courses taught, service on graduate committees, research supervised, and scholarly publications.

III. Appointment to the Graduate Faculty

Appointment to membership in the Graduate Faculty is made by the Provost of the University.

The Provost utilizes a standard procedure for review of all nominations before final approval and appointment. This review is based upon the qualifications to teach and direct graduate research at all levels in accord with the objectives of the degree programs.

Authority and Responsibility

Authority of the Graduate Faculty

The Graduate Faculty of the University, acting through the University Council on Graduate Study, establishes general regulations and minimal requirements for graduate degrees throughout the University. This responsibility applies to the traditional MA, MS, and PhD degree programs as well as to advanced professional degrees and graduate certificates, except for the first professional degree programs in Medicine, Dental Medicine, Pharmacy and Law. The Provost has final authority in the interpretation and application of the regulations established by the University Council on Graduate Study.

The Graduate Faculty of each department or school establishes the requirements for degrees earned under its jurisdiction provided these requirements are in accord with those established by the University Council on Graduate Study. The dean of each school has final authority in the interpretation and application of these additional requirements and/or regulations.

Responsibility

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

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

Admission and Registration

Application

An inquiry from a prospective student concerning graduate study should receive from the department or school a prompt response that includes a description of the program(s), the necessary application forms or information about applying online, and instructions concerning the completion of all forms, including the Application Data form.

The applicant is expected to:

1. Complete the online application and submit the application fee through the online payment system. If the applicant submits a paper application, he or she should return to the department or school the completed application forms and a check (not cash) for the application fee payable to the University of Pittsburgh. This fee is required of all applicants and is non-refundable. It does not apply toward the payment of tuition.
2. Request the registrars of all undergraduate and any graduate schools attended to send official transcripts of their records to the department or school of intended graduate study.
3. Submit any additional material required by the department or school and, if available, other evidence of academic and personal qualifications for graduate study. These materials may include any or all of the following: scores achieved on standardized examinations such as the Graduate Record Examination or the Miller Analogies Test, letters of recommendation, term papers written during previous study, evidence of relevant work/life experience, evidence of motivation for graduate study, and a statement of career objectives.
4. Arrange for a personal interview if requested by the department or school.

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

Each department or school has the responsibility to establish deadline dates both for receipt of application for admission and for application for fellowships, assistantships, or other forms of aid and to notify prospective applicants of these dates. A department or school may limit admission to a specific term only or may allow admission in any of the three terms. Each department or school is obligated both to act promptly on completed applications, if submitted before the established deadline date, and to give a thorough and fair review of each completed application. Decisions regarding admission should be based on an overall evaluation of all the credentials submitted by the candidate, and be in accord with the availability of faculty, facilities, and student support necessary to meet the applicant's expressed academic and research needs and interests. Applicants should be notified promptly of decisions concerning their applications. Many departments or programs have a limited number of places available. In cases where the number of qualified applicants exceeds the number of places available, applicants should be judged competitively.

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

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

Changing the Field of Graduate Study

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

Admission Status

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

Full Graduate Status: For admission to full graduate status, an applicant must be a graduate of an accredited U.S. college or university and must be considered qualified for advanced study by the department or school. International applicants must meet the admissions guidelines described under "Admission of Students from Other Countries." Qualification for advanced study normally is demonstrated by a B average (a grade point average of 3.00 on a 4.00 scale) or better in the total undergraduate program. If students with less than a B average present alternative evidence (such as completion of an advanced degree or successful relevant work experience) of superior ability, they may be considered for full graduate status on the recommendation of the department of proposed graduate study. Only students with full graduate status may be considered for the award of an advanced degree.

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

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

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

Admission of Students from Other Countries

The University of Pittsburgh welcomes applications from students in other countries. An inquiry from a prospective student from abroad should receive from the department or school a prompt response that includes a description of the program(s), the necessary application forms, including the Application Data form and Supplemental Application for Foreign Students, and instructions concerning the completion of an application, including information about applying online.

When a department or school receives the completed application, including all academic records and letters of reference, it may request an admissions officer in the Office of International Services (OIS) to evaluate the duration of primary, secondary, and university education, the nature of the institution(s) attended, the system of grading in that institution, and to recommend admission or rejection of the candidate. Academic credentials must be originals written in the language in which credentials are normally issued. Certified translations must accompany credentials which are not in English.

Each foreign applicant must provide clear evidence of proficiency in English. (See English Language Proficiency.) In addition, each applicant must provide evidence of adequate financial resources for the estimated length of study at the University of Pittsburgh. The Office of International Services (OIS) will determine whether or not this requirement has been satisfied by the applicant.

When a department or school has completed its evaluation of the credentials of an applicant, it notifies the candidate that he or she is or is not academically qualified for admission. The letter to the applicant must state that the applicant will receive either a visa document or further instructions from the OIS. In all cases, a duplicate copy of the letter of admission and award of financial aid, if any, must be sent to OIS, as must copies of all rejection letters.

Upon satisfaction of all academic and non-academic requirements, the OIS will issue, as appropriate, the Form I-20 Certificate of Eligibility for Non-Immigrant "F-1" Student Status or Form DS-2019 Certificate of Eligibility for Exchange Visitor "J-1" Status. Along with visa documents, OIS will send information concerning arrival and orientation.

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

English Language Proficiency

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

In keeping with the University policy on Certification of English Language Fluency for Teaching, students who are not native-speakers of English and are appointed as teaching assistants or teaching fellows are required to take a test of their spoken English upon arrival. Individuals are given non-teaching assignments and are required to take special course work until they attain passing scores. An unsatisfactory score at the time of reappointment is sufficient cause for nonrenewal.

Readmission

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

Registration

Note: Changes to Policy 09-04-01 to reflect the changes below are in progress.

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

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

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

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

All graduate students are expected to be registered in accordance with the program of study they are carrying. No person should expect to receive guidance and direction from members of the Graduate Faculty unless he or she is so registered. Students must be registered in the term in which they take preliminary and comprehensive examinations. Student must have active status per Policy 09-04-01 in the term he or she expects to graduate.

The Registrar will withhold registration and add/drop services from students who so warrant for financial, academic or disciplinary reasons. The University reserves the right to change registration procedures. Current registration procedures are published each term in the Schedule of Classes.

Full-Time and Part-Time Study

Graduate students who register for nine to fifteen credits in the fall or spring term are full-time students and are assessed the current tuition rate for their school. A school may require students enrolled in a degree program to register for more than nine credits. Students who register for fewer than nine credits are part-time students and billed on a per-credit basis. Admission procedures for part-time students are the same as those for full-time students.

Doctoral students who have completed all credit requirements for the degree, including any minimum dissertation credit requirements and are working full-time on their dissertations may register for "Full-time Dissertation Study," which carries no credits or letter grade but provides students full-time status. Students so enrolled are assessed a special tuition fee.

Maximum Programs of Study

No student is permitted to register for more than 15 graduate credits without written permission from the dean of the academic center in which the student is pursuing a degree. Graduate students who register for more than 15 credits will be billed for each additional credit that exceeds their full-time tuition rate. Individual schools and departments may restrict the maximum program of any or all of their graduate students.

Cross-registration

Through the Pittsburgh Council on Higher Education (PCHE), Carlow University, Carnegie-Mellon University, Chatham University, Duquesne University, La Roche College, the Pittsburgh Theological Seminary, Point Park University, Robert Morris University and the University of Pittsburgh offer graduate students the opportunity for cross-registration in graduate programs in the fall and spring terms. Only full-time students may cross-register. Please note that students must maintain a full-time course load (at least 9 credits as a graduate student) at Pitt while cross-registered. Credits earned by cross-registration in graduate courses, when approved in advance by the student's graduate adviser, are accepted as University of Pittsburgh credits for the purpose of the calculation of the grade point average and the completion of degree requirements. Each department at each institution retains the authority to establish the prerequisites for admission and the maximum enrollment in its own courses and to grant priority in registration to its own graduate students.

Course Withdrawal

Students may add or drop courses before the end of the Add/Drop period. A student who wishes to withdraw from an individual course after the Add/Drop period but prior to the end of the ninth week of the term or the deadlines noted in the Schedule of Classes for the summer sessions, must complete a Monitored Withdrawal form available from the dean, obtain the signature of the instructor, and return the completed form to the dean's office of the school offering the course. A W grade will then be issued. After the official withdrawal deadline a student may withdraw from a course only in extraordinary circumstances and with the permission of the dean.

Students may terminate their registration in all classes by informing the Office of the Registrar of their intent to do so prior to the end of the Add/Drop period for the term. Students registered for courses scheduled to begin after the end of the Add/Drop period for the term may terminate their registration by informing the Registrar's Office of their intent to do so at any time prior to the first scheduled meeting day of the class.

An official resignation occurs when the student notifies the Office of Student Accounts of the intent to terminate registration for all classes after the end of the term's/sessions' Add/Drop period but no later than the 60th calendar day of the term or the deadlines noted in the Schedule of Classes for the summer sessions. The R grade will be assigned for each course for which the student registered.

A student may withdraw from all courses after the 60th calendar day of the term or by the deadlines noted in the Schedule of Classes for the summer sessions by processing their withdrawal through the office of the student's academic dean. There is no financial adjustment associated with this procedure, which results in the assignment of W grades for the courses.

A student who stops attending a course and does not initiate the withdrawal or resignation procedures may be assigned an F grade.

Students who plan to return to the University within one calendar year must indicate this when they provide notification of resignation. Students who do not advise the University of their intent to return to the University within one calendar year are classified as permanent resignations. Students who permanently resign and later decide to return to the University must apply for readmission and pay the appropriate fees. This includes cases when the readmission date is less than one year from the effective date of resignation.

Tuition, Fees and Other Charges

Tuition rates, fees, and other charges paid by graduate students are established by the Board of Trustees in cooperation with the University Administration.

The University reserves the right to change registration procedures. For additional registration information, visit the University Registrar's website at <http://www.registrar.pitt.edu/enrollment.html>.

University Grading Policy for Graduate Courses

**Introductory (or master's level) graduate courses are assigned the numbers 2000-2999; advanced (or doctoral level) graduate courses are assigned numbers 3000-3999.*

The following policy includes all grades and their corresponding definitions which may be legitimately issued within the schools of the University of Pittsburgh. All available grading options and their uses are also included. Each school uses symbols and grading options consistent with this University Grading Policy. The Registrar will record for a particular course only those grades specified in the Schedule of Classes. An inappropriate grade reported for a student will register as invalid, hence Z. Students will be subject to the grading policy of the school in which a course is given. Graduate students wishing to register for undergraduate courses should contact the dean's office of the Academic Center offering the course to explore grading option requirements and procedures.

Grading System Definitions and Grade Points

A+ = 4.00

A = 4.00 Superior attainment

A- = 3.75

B+ = 3.25

B = 3.00 Adequate graduate level attainment

B- = 2.75

C+ = 2.25

C = 2.00 Minimal graduate level attainment

C- = 1.75

D+ = 1.25

D = 1.00

D- = 0.75

F = 0.00 Failure

G	Course work unfinished because of extenuating personal circumstances
H	Exceptional (honors) completion of course requirements
I	Incomplete course work, due to the nature of the course, clinical work, or incomplete research work in individual guidance courses or seminars
N	Noncredit audit
NC	No Credit
R	Student resigned from the University
S	Satisfactory (successful) completion of course requirements
U	Unsatisfactory (failing) completion of course requirements
W	Withdrawal
Z	Invalid grade reported
**	No grade reported

Grading Options

LG	Letter Grade
H/S/U	Honors/Satisfactory/Unsatisfactory
H/HS/S/LS/U	Honors/High Satisfactory/Satisfactory/Low Satisfactory/Unsatisfactory*
S/NC	Satisfactory/No Credit (formerly the S/N option)
LG and H/S/U	Letter Grade and Honors/Satisfactory/Unsatisfactory
LG and S/NC	Letter Grade and Satisfactory/No Credit

* This option is available for professional students in the School of Medicine only.

Each Academic Center is responsible for establishing guidelines as to which University-approved grading options are appropriate for courses offered by that Academic Center. Similarly, each department may identify from among the grading options approved by the Academic Center those it deems acceptable for the courses it offers. Furthermore, each course instructor may specify, within the range of grading options approved by the department and the Academic Center, the grading options which may be selected by students taking his or her course. A University Grade Option/Audit Request form is not required to be completed by a student and will not be accepted by the Office of the Registrar for a graduate course. Only the S/NC grading option may be used in evaluating thesis or dissertation research.

Grade Assignments

It is the responsibility of each faculty member of the University to assign a standard letter grade or option grade as listed in the Schedule of Classes to each student enrolled in an approved University course. All other grades will be recorded by the Registrar as a Z, an invalid grade.

N (Noncredit Audit) Option

A student may choose to audit any graduate course on a space available basis. After obtaining the instructor's permission to audit a course, the student follows the same procedures as registering for credit. Tuition is assessed for all audits. An N or W are appropriate grades for courses audited.

G and I Grades

A student may be graduated without removing G and/or I grades from the record provided all degree requirements have been met and the student's department recommends graduation. The individual school's grading policy should be consulted for regulations dealing with the removal of I grades. Students assigned G grades are required to complete course requirements no later than one year after the term in which the course was taken. Once the deadline has passed, the G grade will remain on the record, and the student will be required to re-register for the course if it is needed to fulfill requirements for graduation.

Grade Changes

A faculty member wishing to effect a grade change must complete a Grade Change Request. The dean of the school in which the course is offered or his or her designee must approve a grade change before it will be honored by the Registrar. While each school may determine a time limit for grade changes, they should be processed no later than one year after the initial grade was assessed. There may be reasons that justify a later change of grade, but they must be of an unusual nature and considered most exceptional. Any exception must receive the dean's approval. Changes in I grades are exempt from this policy.

Official University Record: GPA Calculation

A student's graduate Grade Point Average (GPA) is obtained by dividing the total number of letter grade credits taken in the graduate program into the total number of grade points earned in the graduate program. Only letter grades with GPA values will be used in computing the Grade Point Average.

A student may repeat any course in which a grade of B- or lower is received if an authorization to repeat the course is given by the student's adviser. A school may restrict the type and/or number of different courses which may be repeated during one degree program. The grade earned by repeating a course is used in lieu of the grade originally earned, although the original grade is not erased from the transcript. No course may be repeated more than twice. No sequence course may be repeated for credit after a more advanced course in that sequence has been passed with a B or higher grade. The repeated course must be the same as that in which the original grade was earned. In extenuating circumstances, a department chair or program director, with the dean's approval, may substitute another course of similar content. Grades of W, R, or N reported for the repeated course will not be counted as a course repeat.

To initiate only the last course grade being computed in the GPA, a Course Repeat form must be filed with the dean's office.

General Regulations

Academic Standards

A grade average of at least B (GPA = 3.00) is required in the courses which make up the program for any graduate degree.

A student with full graduate status is automatically placed on probation whenever his or her cumulative GPA falls below 3.00. Each school determines the restrictions placed on a student on probation. A student who remains on probation is subject to dismissal within a time period determined by the school, subject to review by the University Council on Graduate Study. A student on provisional or special status or on probation is not eligible to take the Ph.D. preliminary evaluation, the MA/MS or Ph.D. comprehensive examination, or to be graduated.

Statute of Limitations

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

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

From the student's initial registration for graduate study, all requirements for the PhD degree must be completed within a period of ten years or eight years if the student has received credit for a master's degree appropriate to the field of study. Programs for professional doctoral degrees, for which the majority of candidates pursue part-time study while working full time within their chosen disciplines, may be granted a longer statute of limitations by the schools offering the degrees.

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

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

Acceptance of Transfer Credits

The completion of requirements for advanced degrees must be satisfied through registration at the Pittsburgh campus of the University of Pittsburgh. Graduate students already enrolled may, when approved in advance by their department and the dean, spend a term or more at another graduate institution to obtain training or experience not available at the University of Pittsburgh and transfer those credits toward the requirements for an advanced degree at the University of Pittsburgh. In such instances, neither the University nor any of its components is responsible for providing any financial assistance to the graduate student.

Official transcripts certifying graduate courses completed in a degree granting graduate program at another appropriately accredited institution prior to admission to the University of Pittsburgh should be submitted at the time of application and should be evaluated for acceptability as transfer credit early in the student's graduate career for acceptability as transfer credit subject to University policy, course equivalencies, and individual school requirements. In no case may the total number of credits transferred for completion of requirements for an advanced degree exceed the maximum number stated in the sections pertaining to advanced degree requirements. The Registrar, after notification by the dean, will enter the transfer (advanced standing) credits as block credits on the student's transcript. Grades (and grade points) are not recorded for credits accepted by transfer.

Transfer credits will not be accepted for courses in which a grade lower than B (GPA = 3.00) or its equivalent has been received. No credit will be granted toward an advanced degree for work completed in extension courses, correspondence courses, or in the off-campus center of another institution unless those credits are approved for equivalent graduate degrees at that institution and the institution has an accredited program.

Credit by Course Examination

Each school authorized to offer graduate courses should clearly specify in its school bulletin whether or not students may obtain credit toward a degree by the procedure of "credit by course examination." If such an option is provided, the courses for which this option is appropriate should be designated as such in the school bulletin. A school granting graduate credit for life or work experience should do so only through the option of credit by examination.

Registration of Undergraduate Students for Graduate Courses

Undergraduate students with sufficient preparation are permitted to enroll in graduate courses following procedures determined by each school. The graduate credits earned may be counted toward the undergraduate degree if approved by the student's school. These may not be counted as credits toward a graduate degree except as noted below.

Undergraduate students who need fewer than 15 credits to complete requirements for the baccalaureate degree and who intend to continue study toward an advanced degree may be permitted during their final term to register for graduate courses which will later apply toward a graduate degree. The student must obtain written permission from the school of proposed graduate study that the courses may count when and if the student is

admitted into the graduate degree program. This privilege should not be granted if the proposed total program exceeds a normal full-time load. Although these credits will appear on the undergraduate transcript, they will not count toward fulfilling undergraduate degree requirements. They will be posted as Advanced Standing credits on the graduate transcript.

Early Admission Program

Exceptionally able undergraduate University of Pittsburgh students may be admitted to full graduate status if their graduate and undergraduate schools have approved early admission as a permitted option, have established standards and procedures, and provided the student needs no more than 24 credits to complete the baccalaureate degree. Credits earned while enrolled in the graduate program may also be counted toward fulfilling undergraduate degree requirements.

Course Work Acceptable as Graduate Credit

A substantial proportion of courses acceptable toward a graduate degree should be designed explicitly for graduate students. Introductory graduate level (master's level) courses are numbered 2000-2999, those at an advanced graduate level (doctoral level) are numbered 3000-3999. To be eligible for a master's degree, a student must have completed at least 30 credits at the graduate level with at least an average grade of B (3.00). A doctoral student must complete additional graduate level courses as determined by his or her department or school. No lower level undergraduate course (numbered 0001-0999 or 7000-7999) may be applied toward a graduate degree.

Students may register for graduate courses at Carlow University, Carnegie-Mellon University, Chatham University, Duquesne University, La Roche College, the Pittsburgh Theological Seminary, Point Park University, and Robert Morris University under the PCHE cross-registration agreement. Such work, if approved in advance by the student's adviser, will not be considered as transfer credit and may be counted for credit toward a graduate degree; the grade earned will be used in computing the student's grade point average.

Two Independent Degree Programs Simultaneously

Students may pursue two independent graduate degrees simultaneously in two different schools within the University or two different departments within the same school. Students desiring to enroll in two degree programs must have approval from both program faculties and their respective deans, must be admitted into both programs, and must satisfy the degree requirements of both programs. Students are billed at the tuition rate of the primary academic program. Normally, such students should be enrolled for no more than a total of 15 credits per term.

The same examination, thesis, or dissertation cannot be used to fulfill requirements for two independent degrees, although a maximum of six credits of course work may be used in partial fulfillment of the requirements of both degrees. It is the responsibility of the dean or deans, if two schools are involved, to ensure that this regulation is enforced.

Dual and Joint Degree Programs

Dual and joint degree programs result in two degrees being awarded. Requirements for these programs include all or most of the requirements of two distinct academic degree programs. Dual programs exist within a single school; joint programs exist between two or more schools; cooperative programs are administered by two or more institutions. The same course, examination, or thesis may be used to fulfill requirements only if so specified in the documents formally establishing the dual or joint degree program as approved by the University. These programs may result in a student earning two separate masters' degrees, a master's and a first professional degree, or a master's or first professional degree and a doctoral degree, but never result in a student earning two separate doctoral degrees.

Students must be admitted to both academic programs offering the dual or joint degrees being sought and must be graduated from both degree programs at the same time.

Certificate Programs

Certificates Programs and Micro-Credentials

Graduate Certificates and Graduate Micro-Credentials are coherent sets of courses and related work specifically designed to provide depth of understanding or awareness in a particular area. For students enrolled in a graduate degree program, the pursuit and awarding of a given certificate or micro-credential allows for an explicit recognition of a specific set of skills or educational experiences that may not be readily apparent through the conferring of a given graduate degree. These offerings are distinctly different and are intended to impact traditional and non-traditional students. Students seeking enrollment into one of these offerings must hold a baccalaureate degree or other advanced degree and be subject to equivalent admission requirements for a graduate degree.

NOTE: This policy applies to newly created certificates created after 9/1/2018 or for existing certificates that are revised after 9/1/2018.

Graduate Certificates

Graduate certificates are intended to provide depth of understanding in a given topic or area and must be comprised of greater than nine (9) University of Pittsburgh graduate level credits. Transfer credits from other universities may be applied toward a University of Pittsburgh graduate certificate, but at least ten Pitt credits must be earned towards the certificate. The certificate courses may be comprised from one academic unit or multiple academic units. At the discretion of the academic unit, graduate certificates may be offered to currently enrolled students or to Non-Degree Seeking students. Non-Degree Seeking students must hold a baccalaureate or other advanced degree and be subject to admission requirements as outlined and governed by the academic unit granting the certificate.

For graduate certificates created across two or more academic units, a cost-sharing plan must be articulated in the certificate proposal. Absent capacity constraints, enrolled students may pursue any graduate certificate at the sole discretion of the academic unit(s) offering the certificate.

The awarding of a graduate certificate will be annotated on the official transcript of student who successfully meets the requirements as set forth by the academic unit (s) offering the graduate certificate. It is the responsibility of the academic unit offering the graduate certificate to track, certify and award the certificate.

Academic units seeking to award graduate certificates are required to submit a formal proposal to the Office of the Provost. No graduate certificate shall be advertised, enrolled or awarded until a formal review by the University Council for Graduate Studies and subsequent approval by the Provost has been granted in writing.

Graduate Micro-Credentials

Graduate micro-credentials are intended to indicate familiarity with a given topic or area and may be comprised of between four and nine credits. Graduate micro credentials may include requirements for non-course educational activities such as workshops, projects or other milestones. The micro-credential courses may be comprised from one academic unit or multiple academic units. At the discretion of the academic unit, graduate micro-credentials may be offered to currently enrolled students or to students who may be enrolled as Non-Degree Seeking. Students enrolled as Non-Degree Seeking must hold a baccalaureate or other advanced degree and be subject to admission requirements as outlined and governed by the academic unit offering the micro-credential.

For graduate micro-credentials created across two or more academic units, a revenue-sharing plan must be articulated in the micro-credential proposal. Absent capacity constraints, enrolled students may pursue any graduate micro-credential at the sole discretion of the academic unit(s) offering the micro-credential.

Graduate micro-credentials are intended to be flexible, adaptive and to impact the changing demands of enrollees and other stakeholders. While a student's transcript will list the courses required for the micro-credential, the transcript will not have an annotation of the awarded micro-credential. It is the responsibility of the academic unit(s) offering the graduate micro-credential to track progress and provide verification upon completion.

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

Academic units seeking to create a graduate micro-credential shall issue a memorandum in writing from the Dean(s) to the Provost for approval. The memorandum should include the proposed name, rationale for the creation of the micro-credential, all requirements associated with the graduate micro-credential (including which requirements are for credit and how many credits), a description of the mechanism for verification of the credential, and a list of existing graduate certificates or degree programs that the micro-credential could potentially feed into. Any budgetary impact should also be described. The graduate micro-credential shall not be made available to students until approval in writing is received from the Office of the Provost.

	Graduate Certificate	Graduate Micro-Credential
Required Credits	10 or more	Between 4 and 9
Purpose	Deep knowledge Anticipated long-term impact	Fundamental awareness Agile/Adaptive
Approval	UCGS Provost	Provost/Provost's Delegate
Transcript Annotation	Yes	No

Graduate Programs Offered in Off-Campus Locations or via Electronic Communication

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

Editorial Assistance

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

Publication of Theses and Dissertations

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

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

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

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

University Patent Policy

During enrollment at the University, a student may be responsible for new discoveries and inventions that could have commercial value and contribute to scientific, technological, social, or cultural progress. Those accomplishments should be patented in the best interest of the student, the University, the public, and the government. The University's policy on patents determines the rights and obligations of the student and the University in any technology the student may invent while enrolled in the University. Details of this University policy are available from the Office of Technology Management.

Application for Graduation

A graduate or professional student must have active status per Policy 09-04-01 in the term he or she expects to graduate.

Each candidate for graduation must file an official Application for Graduation in the office of the dean early in the term in which graduation is expected. Students are required to be registered for at least one credit at the University in the 12 month period before graduation.

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

Certification for Graduation

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

Regulations Pertaining to Master's Degrees

Master of Arts and Master of Science Degrees

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

Programs of Study

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

At least 30 credits at the graduate level must be completed with at least an average grade of B (3.00). No course numbered below 1000 or from 7000 to 7999 may be applied toward graduate degree requirements.

Credit Requirements

The Master of Arts and Master of Science degrees require the satisfactory completion of a minimum of 30 credits of graduate study approved by the department or school. Not more than six credits may be granted toward the completion of the requirements for a master's degree for work completed at another graduate institution. (See Acceptance of Transfer Credits for further information.)

Comprehensive Examination

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

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

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

Thesis Option

The requirement of a thesis or its equivalent is at the discretion of individual departments, programs, or schools. If a thesis is submitted, its form must be in accord with specifications stipulated in the Format Guidelines for Electronic Thesis and Dissertation Preparation at the University of Pittsburgh. The thesis examining committee will consist of at least three members of the faculty recommended by the major adviser and approved by the department chair or program director. The final oral examination in defense of the master's thesis is conducted by the thesis committee, and a report of this examination signed by all members of the committee must be filed in the office of the dean. After the examination, all master's theses must be submitted electronically and will be made available through PITTcat, the University Library System's online catalog.

Non-thesis Option

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

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

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

Professional Master's Degrees

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

Programs of Study

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

At least one-half of the credits earned in a master's degree program must be at the graduate level (the 2000 or 3000 series) and must be completed with at least an average grade of B (3.00). No courses numbered below 1000 or from 7000 to 7999 may be applied toward graduate degree requirements.

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

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

Credit Requirements

The professional master's degrees require the satisfactory completion of a minimum of 30 credits of graduate study approved by the department. No more than one-third of the total number of required credits may be granted to a student as transfer credit for work done at another graduate institution. (See Acceptance of Transfer Credits.)

Additional Requirements

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

Student Assessment

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

Regulations Pertaining to Doctoral Degrees

Doctor of Philosophy Degree

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

Admission to Doctoral Study

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

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

Programs of Study

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

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

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

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

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

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

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

Credit Requirements

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

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

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

Residency Requirement

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

Preliminary Evaluation

The preliminary evaluation should be designed to assess the breadth of the student's knowledge of the discipline, the student's achievement during the first year of graduate study, and the potential to apply research methods independently. The form and nature of the evaluation should be approved at the school level and described in the school bulletin. It should be conducted at approximately the end of the first year of full-time graduate study. The evaluation is used to identify those students who may be expected to complete a doctoral program successfully and also to reveal areas of weakness in the student's preparation. Evaluation results must be reported promptly to the dean's office, but no later than the last day of the term in which the evaluation occurs.

Comprehensive Examination

The Comprehensive Examination should be designed to assess the student's mastery of the general field of doctoral study, the student's acquisition of both depth and breadth in the area of specialization within the general field, and the ability to use the research methods of the discipline. In some programs, the comprehensive examination is combined with the overview or prospectus meeting. It should be administered at approximately the time of the completion of the formal course requirements and should be passed at least eight months before the scheduling of the final oral examination and dissertation defense. In no case may the comprehensive examination be taken in the same term in which the student is graduated. Examination results must be reported promptly to the dean's office but no later than the last day of the term in which the examination is administered. A student who is unable to complete all degree requirements within a five-year period after passing the comprehensive examination may be re-examined at the discretion of the department, program, or school.

Doctoral Committee

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

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

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

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

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

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

Overview or Prospectus Meeting

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

Admission to Candidacy for the Doctor of Philosophy Degree

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

Dissertation and Abstract

Each student must write a dissertation that presents the results of a research project carried out by the student. An appropriate research project involves a substantive piece of original and independent research grounded in an appropriate body of literature. It is relevant to an identifiable field as

it is currently practiced. It presents a hypothesis tested by data and analysis and provides a significant contribution or advancement in that field. It is the responsibility of the student's doctoral committee to evaluate the dissertation in these terms and to recommend the awarding of the doctoral degree only if the dissertation is judged to demonstrate these qualities.

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

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

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

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

Language of the Doctoral Dissertation

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

Final Oral Examination

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

Interdisciplinary Doctoral Programs

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

1. *Generic Programs*, which are ongoing, formally structured, and approved doctoral programs, admission into which follows the same procedures as those of departmental programs; and,
2. *Individualized Programs*, which are specially designed to permit an exceptionally able student who has earned a master's degree or the equivalent to pursue an interdisciplinary doctoral program structured to satisfy his or her unique goals. Such students should apply to the dean of the school if the departments involved in the proposed program are organized within one school or to the Provost if the departments are organized within more than one school. The student must satisfy the admission requirements of each of the departments or schools

involved in the proposed program. If the request is approved, the dean or the Provost, in consultation with the departments concerned, will designate five members from these departments to serve as an advisory committee. After these advisers meet with the student, a chief adviser is selected to assume responsibility for general guidance to the student. These advisers continue their responsibility until the student is admitted to candidacy for the PhD degree and may, if it is appropriate, continue as the doctoral committee for this student.

Other Research Doctoral Degrees

The University of Pittsburgh, through its professional schools, offers the following research doctoral degrees in professional fields of study: Doctor of Education offered through the School of Education and the Doctor of Public Health offered through the Graduate School of Public Health.

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

Other Professional Doctoral Degrees

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

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

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

Application for Admission

Graduate admissions to the University of Pittsburgh are handled by the particular graduate school or program; there is no central admissions office for graduate and professional schools at the University.

This section details only the University requirements and procedures for admission to the University. The Graduate Admissions Office of each school provides admissions information for prospective students to that school.

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

Graduate Admissions

Decisions regarding admission are based on an overall evaluation of all the credentials submitted by the candidate and in accord with the availability of faculty, facilities, and student support necessary to meet the applicant's expressed academic and research needs and interests. Many departments or programs have a limited number of places available. Interested students should refer to the Schools, Departments, and Programs section of this catalog in addition to the general admission information provided here.

Application Procedures

Students seeking admission should apply online or call or write to the school or program of intended graduate study for application forms or information about applying online, instructions concerning the completion of all forms including the Application Data Form, and description materials. See the Schools, Departments, and Programs section of this catalog for contact information and Web site addresses.

The applicant should complete the online application and submit the application fee through the online payment system. If the applicant submits a paper application, he or she should return the completed application and a check for the application fee (payable to the University of Pittsburgh) to the department or school. Cash is not accepted for application fees.

Applicants must also request that the registrars of all undergraduate and any graduate schools attended send official transcripts of their records to the department or school of intended graduate study. In addition, many schools and departments require additional material. These materials may include any or all of the following: scores achieved on standardized examinations such as the Graduate Record Examination or the Miller Analogies Test, letters of recommendation, term papers written during previous study, evidence of work/life experience, evidence of motivation for graduate study, and a statement of career objectives. Applicants should arrange for a personal interview if requested by the department or school.

Application Deadlines

See the Schools, Departments, and Programs sections of this catalog for information about specific application deadlines, but note that students applying for fellowships and assistantships should file their applications at the earliest possible date. Applicants interested only in admission may be considered up to the deadline dates, but postponing applications may entail the risk that available spaces will be filled. Some programs admit students only for a particular term, so prospective students are encouraged to check with the school and program for specific admissions information.

International Graduate Student Admission

The admission of international graduate and first-professional students is processed by the school or department. Information about graduate and first-professional programs, access to the online application, deadlines, financial aid information, the admission requirements and procedures are available on the Web site of the school or department of intended study. Web site addresses may be found in the School, Department, and Programs section of this catalog or on the Graduate and Professional Website. International students are recommended to start the application process at least 12 months in advance of the intended term of enrollment.

International Student Academic Requirements and Credentials

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

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

English Language Proficiency Requirements

International graduate students must possess proficiency in English at a level to enable them to succeed in graduate-level studies. The University of Pittsburgh uses the official results of the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS) as a measure of having the necessary English language proficiency. Official test results are required if the applicant is a citizen of a country where English is not the official language of that country. The required minimum acceptable score for graduate admission for the TOEFL is 80 for the Internet-based test, 213 on the computer-based version or 550 on the paper-based test; or Band 6.5 on the IELTS (taking the academic writing and reading modules of the test). Some graduate programs may require higher test results. Only officially reported results of the TOEFL or IELTS are accepted in meeting this requirement. Applicants who are citizens of a country where English is the official language are exempt from submitting the results of the TOEFL or IELTS. In addition, applicants who have earned a bachelor's degree or higher degree from a regionally accredited institution in the U.S. are also exempt from submitting the results of the TOEFL or IELTS.

Students with a TOEFL score of less than 600 (250 on the computer-based test or 100 on the Internet-based test) or less than 7.0 on the IELTS must verify English language proficiency prior to completing registration by sitting for an additional Test of English Language Proficiency (TELP) administered through the English Language Institute. Individual schools or departments may require students with higher test scores to sit for this TELP. Based on the test results, students may be required by their academic department or school to take courses in English as a second language as part of their graduate program.

English Language Fluency for Teaching Assistants/Fellows

Teaching assistants (TAs) and teaching fellows (TFs) who are non-native speakers of English must be evaluated through a test designed to assess spoken English and English comprehension, approved by the Office of the Provost and administered by the English Language Institute (ELI). The Office of the Provost in consultation with ELI will establish minimum scores acceptable to permit a TA/TF to teach. Individual academic centers or departments may require higher scores than the established University minimums. All TAs/TFs with unsatisfactory scores on this test will be given non-teaching assignments and are required to take special course work until they attain a passing score. An unsatisfactory score at the time of reappointment is sufficient cause for nonrenewal of the student's TA/TF appointment.

Office of International Services

The Office of International Services (OIS) advises international students on how to maintain their immigration status and helps to ensure compliance for both international visitors and the University, with respect to federal regulations. OIS also provides generalized support in connecting the University's international community and their hosting departments with resources inside and outside campus. For more information, contact OIS at ois@pitt.edu or call 412-624-7120.

Process for Issuing Visa Documents for International Graduate Students

After an international student has been accepted and submitted their enrollment deposit, the school or department will inform the Office of International Services (OIS) of the student's intention to enroll. OIS will then contact the student directly to collect any documents required prior to issuance of the Form I-20 or Form DS-2019.

The deadlines for schools or departments to inform OIS of new students are:

- **Fall Term** - June 1
- **Spring Term** - October 1
- **Summer Term** - March 1

Immigration documents are mailed to the student in his/her home country, usually within 3 weeks of receiving all required information from the student.

Additional International Student Requirements

The University of Pittsburgh reserves the right, even after arrival and enrollment, to make individual curricular adjustments whenever particular deficiencies or needs of a student are identified. In such instances, students may be required to take, at their own expense and without receiving credit, courses in English language (see English Language Proficiency Requirements above) or courses prerequisite to their course of study to make up deficiencies.

It is strongly recommended that students arrive in Pittsburgh at least two weeks before the start of the term to allow sufficient time to make housing arrangements and to take part in the orientation program conducted by the Office of International Services.

Admissions Status

Admission may be granted or denied only by the dean of the school or his or her designee. However, non-immigrant students must meet U.S. Department of Homeland Security eligibility requirements for visa document issuance as determined by the Office of International Services. Acceptable students are admitted to graduate study in a specific department or school with "full," "provisional," or "special" graduate status depending on their qualifications and objectives. The qualifications described below represent the minimum standards of the University. These may be made more stringent or specific at the option of the department or school.

Full Graduate Status

For admission to full graduate status, an applicant must be a graduate of an accredited U.S. college or university and must be considered qualified for advanced study by the department or school. This normally is demonstrated by a B average (a grade point average of 3.00 on a 4.00 scale) or better in the total undergraduate program. If students with less than a B average present alternative evidence (such as completion of an advanced degree or successful relevant work experience) of superior ability, they may be considered for full graduate status on the recommendation of the department of proposed graduate study. Only students with full graduate status may take the PhD preliminary evaluation, take the MA/MS or PhD comprehensive examination, be considered for the award of an advanced degree or certificate, or be graduated.

Provisional Graduate Status

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

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

Special Status

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

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

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

See Schools, Departments, and Programs section for specific requirements connected to special status students.

Guarantees and Early Admission to Graduate and First-Professional Programs

Undergraduate students receiving an academic merit scholarship who indicate certain professional programs (including communication science, dental medicine, education, law, medicine, physical therapy, and public and international affairs) as their intended field of study on the Freshman Application to the University of Pittsburgh will be automatically reviewed for guaranteed admission into that professional program. Early application is recommended, as spaces are limited.

Exceptionally able undergraduate University of Pittsburgh students may be admitted to full graduate status if their graduate and undergraduate schools have approved early admission as a permitted option and have established standards and procedures, and if the student needs no more than 24 credits to complete the baccalaureate degree.

Tuition Deposit

Once a student is admitted to a program, some of the graduate and professional schools at the University of Pittsburgh require a tuition deposit to secure the student's place in the incoming class. Students should refer to the Financial Issues: Tuition, Fees, Loans, and Scholarships section or to the admissions information for their specific school to determine the amount required for the tuition deposit.

Deferred Admission

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

Readmission

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

Changing the Field of Graduate Study

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

Admission to Graduate Study

An undergraduate degree is the minimal requirement for admission to graduate study. Students are admitted to a graduate program and granted one of the following three types of status:

1. **Full graduate status:** when all admission requirements are met;
2. **Provisional graduate status:** when some admission requirements are not (or inadequately) met;
3. **Special graduate status:** to take specific graduate-level courses for one or more terms.

All students, except those with temporary status, must apply either to the MS program or to the PhD program. Students admitted to the MS program are eligible to complete the requirements for that degree. If they wish to transfer to the PhD program, they must apply to the admissions committee, which will make its decision based on the student's performance in the MS program and on faculty recommendations.

Full Graduate Status

For admission to full graduate status, an applicant must be a graduate of an accredited U.S. college or university and must be considered qualified for advanced study by the department or school. International applicants must meet the admissions guidelines described under "Admission of Students from Other Countries." Qualification for advanced study normally is demonstrated by a B average (a grade point average of 3.00 on a 4.00 scale) or better in the total undergraduate program. If students with less than a B average present alternative evidence (such as completion of an advanced degree or successful relevant work experience) of superior ability, they may be considered for full graduate status on the recommendation of the department of proposed graduate study. Only students with full graduate status may be considered for the award of an advanced degree.

Provisional Graduate Status

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

Special Graduate Status

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

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

Application Instructions and Requirements

Apply Online

Applications for graduate study must be completed and submitted entirely online. You will be asked to set up a free account with the ApplyYourself Application Network, which enables you to work on your application over several sessions. Your information is transmitted through a secured server and is kept confidential until you submit your application.

We require you to upload copies of your undergraduate/graduate transcripts to ApplyYourself. We do not need official transcripts unless you are admitted.

We require at least three letters of recommendation, two of these must be from Professors (preferable with PhD's), especially if you are applying for a PhD degree. ALL LETTERS MUST BE SUBMITTED ONLINE. No paper recommendation letters will be accepted.

Your application will be available for review by the department once all the evaluator's letters are submitted and all the transcripts are uploaded.

We do require the GRE general exam although we do not have a minimum score requirement

The required minimum TOEFL score of 90 (with at least a score of 22 in each of the four sections of speaking, listening, reading and writing) will be required for applicants. The required minimum IELTS score of 7.0 (with at least 6.5 in each of its four sections) will be required for applicants. **If you do not meet the minimum TOEFL or IELTS scores, your application will not be considered for admission.**

For material that must be sent to the department directly (such as GRE and TOEFL scores) our institution code is: 2927. A department code is no longer required.

Begin the online application process.

Deadlines

- **January 15:** Fall admission. All application materials, including TOEFL and GRE results, must be received in the admissions office by February 28. International students cannot be admitted if materials are not received by the deadline.
- **September 15:** Spring admission. All application materials, including TOEFL and GRE results, must be received in the admissions office by September 15. International students cannot be admitted if materials are not received by the deadline.

Financial Information

Tuition

Enrollment Fee or Tuition Deposit

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

Full-time and Part-time Tuition and Mandatory Fees

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

Pitt Online Tuition and Mandatory Fees

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

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

In the Fall and Spring Terms:

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

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

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

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

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

In the Summer Term:

All students are billed on a per-credit basis in the Summer Term with the exception of students in the School of Dental Medicine Dental Hygiene Certificate Program; the Swanson School of Engineering undergraduate program; the Katz Graduate School of Business Full-time MBA, MBA/MS and EMBA Programs; and the School of Nursing Accelerated Nursing Program.

DETERMINING HOW UNDERGRADUATE VS. GRADUATE STUDENTS ARE BILLED

Students are billed at the undergraduate or graduate tuition level in accordance with University of Pittsburgh Tuition and Fees Policy 09-05-03.

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

About Mandatory Fees

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

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

Residency/Reduced Tuition

Admitted students who are United States citizens and have lived in Pennsylvania for a continuous period of 12 months before enrollment in any institution of higher education may be eligible for Pennsylvania tuition rates. Students who wish to challenge their residency classification may petition for Pennsylvania tuition rates by submitting convincing evidence for review to the Student Appeals Office in Thackeray Hall. The University's policy on Pennsylvania Residency Classification is located online at <https://www.cfo.pitt.edu/policies/policy/09/09-05-04.html>.

Military affiliated students and students who are not U.S. citizens may be eligible for Pennsylvania tuition rates if they meet the qualifications and provide the documentation required by University of Pittsburgh Policy 09-05-04, Pennsylvania Residency Classification.

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

Financial Obligation

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

Fees

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

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

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

Payments and Credit Balance Refunds

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

Payments may be made in PittPAY by electronic check (eCheck) or by credit or debit card. While there is no charge for eCheck transactions, our vendor will charge a non-refundable 2.75% convenience fee for all debit or credit card payments. Check payments can be mailed to the address on the Remittance Form at the bottom of the Term Statement, which students and Authorized Users can generate and print themselves.

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

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

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

Tuition Rates - Pennsylvania Residents

School	Full-Time Per Academic Year	Full-Time Per Term	Part-Time Per Credit
Dietrich School of Arts and Sciences and School of Education	\$23,530	\$11,765	\$947
Graduate School of Public and International Affairs (except as follows)	\$23,530	\$11,765	\$947
Nursing/GSPIA Program	\$27,590	\$13,795	-----
School of Social Work (except as follows)	\$23,530	\$11,765	\$947
MSW/MBA Program	\$31,286	\$15,643	-----
Joseph M. Katz Graduate School of Business (except as follows)	\$31,280	\$15,640	\$1,347
MBA: One-Year Program; MBA/MOIS Full-Time Program	\$46,920 (<i>for three terms</i>)	\$15,640	\$1,347
MBA: Two-Year Program; MBA Part-Time Program	\$23,460	\$11,730	\$1,347
All MS programs	\$30,128	\$15,064	\$1,143
JD/MBA Program	\$43,014	\$21,507	-----
MSW/MBA Program	\$31,286	\$15,643	\$1,347
MHA/MBA Program	\$28,700	\$14,350	\$1,347
The EMBA program is a five-term program. The total cost for new students first entering in May 2020 and after is \$80,000.			

The EMBA in Healthcare program is a five-term program. The total cost for new student who enter in May 2020 is \$95,000.			
Swanson School of Engineering	\$27,010	\$13,505	\$1,280
School of Law			
Graduate (MSL)	\$34,962	\$17,481	\$1,318
Graduate (LLM)	\$39,000	\$19,500	-----
Doctorate - Professional Practice (JD)	\$34,962	\$17,481	\$1,318*
<i>*Applicable to courses outside the curriculum</i>			
School of Computing and Information	\$24,742	\$12,371	\$1,006
School of Dental Medicine			
Graduate (except as follows)	\$52,594	\$26,297	\$2,171
Graduate (MS, PhD, in Oral Biology)	\$27,585 (for three terms)	\$9,195	\$1,122
Doctorate - Professional Practice	\$50,368	\$25,184	\$1,102*
<i>*Applicable to courses outside the curriculum</i>			
School of Nursing	\$27,590	\$13,795	\$1,122
School of Pharmacy			
Graduate (except as follows)	\$27,590	\$13,795	\$1,122
Doctorate - Professional Practice (PharmD)	\$32,770	\$16,385	\$1,264*
The MSPBA Program is a three-term program. The total cost for new students who entered in January 2020 and after is \$58,050.			
<i>*Applicable to courses outside the curriculum</i>			
Graduate School of Public Health			
Graduate (except as follows)	\$27,590	\$13,795	\$1,122
MHA/MBA Program	\$28,700	\$14,350	\$1,347
School of Medicine			
Graduate	\$27,710	\$13,855	\$1,125
Doctorate - Professional Practice	\$57,684	\$28,842	\$1,009*

<i>*Applicable to courses outside the curriculum</i>			
School of Health and Rehabilitation Sciences (except for Doctor of Physical Therapy Program)	\$27,590	\$13,795	\$1,122
Doctor of Physical Therapy Program			
The Doctor of Physical Therapy (DPT) Program is a full-time, three-year, three-terms-per-year program. Tuition is billed at the flat rate for the entire three-year program. The three-term cost for students first entering in May 2020 is \$43,047.			

Mandatory Fees

Graduate and Doctorate-Professional Practice

Fee	Full-Time Per Academic Year	Full-Time Per Term	Part-Time Per Term
Student Activity Fee	\$60	\$30	\$15
Wellness Fee	\$360	\$180	\$90
Computing and Network Services Fee	\$350	\$175	\$100
Security, Safety, and Transportation Fee	\$180	\$90	\$90
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TOTAL	\$950	\$475	\$295

Tuition Rates - Out-of-State Residents

School	Full-Time Per Academic Year	Full-Time Per Term	Part-Time Per Credit
Dietrich School of Arts and Sciences and School of Education	\$39,898	\$19,949	\$1,630
Graduate School of Public and International Affairs (except as follows)	\$39,898	\$19,949	\$1,630
Nursing/GSPIA Program	\$32,948	\$16,474	-----
School of Social Work (except as follows)	\$32,948	\$16,474	\$1,345
MSW/MBA Program	\$43,888	\$21,944	-----

Joseph M. Katz Graduate School of Business (except as follows)	\$43,880	\$21,940	\$2,084
MBA One-Year Program; MBA/MOIS Full-Time Program	\$65,820 <i>(for three terms)</i>	\$21,940	\$2,084
MBA: Two-Year Program; MBA Part-Time Program	\$32,910	\$16,455	\$2,084
All MS Programs	\$41,714	\$20,857	\$1,664
JD/MBA Program	\$56,900	\$28,450	-----
MSW/MBA Program	\$43,888	\$21,944	\$2,084
MHA/MBA Program	\$44,644	\$22,322	\$2,084
The EMBA program is a five-term program. The total cost for new students first entering in May 2020 and after is \$80,000.			
The EMBA in Health-care program is a five-term program. The total cost for new student who enter in May 2020 is \$95,000.			
Swanson School of Engineering	\$45,808	\$22,904	\$2,166
School of Law			
Graduate (MSL)	\$44,996	\$22,498	\$1,971
Graduate (LLM)	\$39,000	\$19,500	---
Doctorate - Professional Practice (JD)	\$44,996	\$22,498	\$1,971*
<i>*Applicable to courses outside the curriculum</i>			
School of Computing and Information	\$41,952	\$20,976	\$1,724
School of Dental Medicine			
Graduate (except as follows)	\$64,490	\$32,245	\$2,670
Graduate (MS, PhD, in Oral Biology)	\$32,946 <i>(for three terms)</i>	\$10,982	\$1,345
Doctorate - Professional Practice	\$60,396	\$30,198	\$1,670*
<i>*Applicable to courses outside the curriculum</i>			
School of Nursing	\$32,948	\$16,474	\$1,345
School of Pharmacy			
Graduate (except as follows)	\$29,428	\$14,714	\$1,199
Doctorate - Professional Practice (PharmD)	\$37,687	\$18,839	\$1,454*

The MSPBA Program is a three-term program. The total cost for new students who entered in January 2020 and after is \$58,050.			
<i>*Applicable to courses outside the curriculum</i>			
Graduate School of Public Health			
Graduate (except as follows)	\$46,814	\$23,407	\$1,916
MHA/MBA Program	\$44,644	\$22,322	\$2,084
School of Medicine			
Graduate	\$44,402	\$22,201	\$1,818
Doctorate - Professional Practice	\$59,930	\$29,965	\$1,374*
<i>*Applicable to courses outside the curriculum</i>			
School of Health and Rehabilitation Sciences (except as follows)	\$46,814	\$23,407	\$1,916
Rates for out-of-state residents in the following programs:			
Graduate programs in Clinical Rehabilitation and Mental Health Counseling (MS); Communication Science and Disorders (MA, MS); Nutrition and Dietetics (MS); Occupational Therapy (MOT); Physician Assistant Studies (MS); Prosthetics and Orthotics (MS) Doctorate - Professional Practice programs in Audiology (AuD); Occupational Therapy (OTD)	\$32,948	\$16,474	\$1,345
Doctor of Physical Therapy Program			
The SHRS Doctor of Physical Therapy (DPT) Program is a full-time, three-year, three-terms-per-year program. Tuition will be billed at the flat rate for the entire three-year program. The three-term cost for students first entering in May 2020 is \$50,658.			

Mandatory Fees

Graduate and Doctorate-Professional Practice

Fee	Full-Time Per Academic Year	Full-Time Per Term	Part-Time Per Term
Student Activity Fee	\$60	\$30	\$15
Wellness Fee	\$360	\$180	\$90
Computing and Network Services Fee	\$350	\$175	\$100

Security, Safety, and Transportation Fee	\$180	\$90	\$90
	----	----	----
TOTAL	\$950	\$475	\$295

Pitt Online Tuition And Fees

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

Tuition for Pitt Online Students	Per Credit	
	In-State	Out-of-State
Graduate School of Public and International Affairs (except as follows)	\$947	\$947
- Nursing/GSPIA Program	\$1,122	\$1,122
School of Computing and Information	\$1,006	\$1,006
School of Education	\$947	\$947
School of Law	\$633	\$633
School of Nursing - Graduate Courses	\$1,122	\$1,122
School of Nursing - Undergraduate Courses	\$977	\$977
UCSUR - Gerontology Certificate	\$947	\$947

Fees for Pitt Online Students	Per Term	
	In-State	Out-of-State
Computing and Network Services Fee	\$100	\$100

Kenneth P. Dietrich School of Arts and Sciences

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

A&S Graduate Studies has final approval over all admissions to graduate study in A&S and overall student appointments as teaching assistants, teaching fellows, graduate student assistants, A&S fellows, and graduate student researchers, as well as responsibility for processing all related tuition scholarships. It reviews and records the academic progress of graduate students, including the passing of comprehensive examinations, admissions to doctoral candidacy, and final oral examinations. It verifies the completion of theses and dissertations and certifies all graduate degrees awarded in the Dietrich School of Arts and Sciences.

Contact Information

Questions regarding admissions, teaching and research appointments, and programs of study should be addressed first to the individual graduate department or program. Questions regarding registration, tuition scholarships for teaching or research assistants, and graduate status should be addressed to:

Dietrich School of Arts and Sciences-Graduate Studies
5141 Sennott Square
412-624-6094
Fax: 412-624-6855
E-mail: graduate@as.pitt.edu
www.asgraduate.pitt.edu

Admissions

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

Students applying for admission should proceed as follows:

Interested applicants are encouraged to go to the Dietrich School of Arts and Sciences graduate Web page at www.asgraduate.pitt.edu and to visit Web pages of their departments of interest. Students should complete the online application through the ApplyYourself Application Network from the departments' Web pages. The online application is automatically sent to the appropriate department for processing.

Deferred Admission

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

Transferring Between A&S Departments

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

Admission of International Students

Before reading the A&S-specific details below, see the *International Graduate Student Admission section under Application for Admission* section for a complete overview of University admissions requirements, including TOEFL or IELTS scores, for students from other countries.

The Dietrich School of Arts and Sciences minimum TOEFL score of 90 (with at least a score of 22 in all of the four sections of speaking, listening, reading, and writing) will be required. The required minimum IELTS score of 7.0 (with at least 6.5 in each of its four sections) will be required.

Students should apply online using the ApplyYourself Application Network available from the department's Web site. The online application is automatically sent to the appropriate department for processing. All applicants should take note of specific departmental requirements, in addition to those required of all international students. A&S Graduate Studies, (in 5141 Sennott Square) will determine whether an applicant has sufficient proficiency in English.

International Student Application Deadlines and Application Fee

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

The application fee for all students is \$50. The fee must be submitted in the form of a check or money order made payable to the University of Pittsburgh or may be paid using a credit card when applying online.

Admission Status

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

Full Graduate Status

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

Provisional Graduate Status

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

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

Special Status

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

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

Early Admission Program

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

additional information regarding requirements for the completion of the baccalaureate degree, see the *A&S section in the University of Pittsburgh Undergraduate Catalog*.

Inactive Status/Readmission

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

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

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

Financial Assistance

Financial assistance for graduate students is provided in the form of teaching and research appointments, fellowships, traineeships, tuition scholarships, and loans. Application for financial aid should be made on the regular Application for Admission to Graduate Study form except in special cases as noted below. All applications for financial assistance are reviewed at the departmental level and awards are made to the extent of available funds. Admission to graduate study does not carry any implications concerning the award of financial aid. Only students with full graduate status are eligible for teaching assistantships and fellowships.

Information concerning nationally competitive grants and fellowships is available to University of Pittsburgh Students through the Office of Research Web site at <http://www.research.pitt.edu/find-funding>.

Teaching and Research Appointments

Each year about 665 graduate students receive teaching appointments and fellowships in departments offering graduate degrees in the Dietrich School of Arts and Sciences to assist in undergraduate instruction in Arts and Sciences and the College of General Studies. In addition to financial support and medical coverage, these appointments provide teaching experience and further professional development.

In recognition of academic merit, the University offers teaching assistants (TA), teaching fellows (TF), graduate student assistants (GSA), and graduate student researchers (GSR) full or partial tuition scholarships, and students are required to register for the number of credits proportional to their appointment. If appointed in the summer term, students should register for a minimum of 3 credits (or full-time dissertation study, if eligible), unless additional registration is needed for academic purposes.

Information regarding TA/TF/GSA/GSR policies is available at <http://www.pitt.edu/~graduate/tapolicyrev.htm> and at A&S Graduate Studies, in 5141 Sennott Square. For further information on these positions and general descriptions of each appointment's job requirements, see the Financial Aid and Policies/Regulations sections in the above catalog.

Teaching Assistants (TA)

For completion of services requiring approximately 20 hours per week, a TA receives a salary for two terms. Two-term TAs who want to receive their salary spread out across three terms should contact their department immediately.

Teaching Fellows (TF)

For teaching services, requiring about 20 hours per week, a TF receives a salary for the term of their contract, either one or two terms. Two-term TFs who want to receive their salary spread out across three terms should contact their department immediately.

Graduate Student Assistants (GSA)

A few graduate student assistantships are available in A&S. A GSA usually assists a faculty member in library research, editorial duties, or similar academic tasks. For such services, requiring about 20 hours per week, a GSA receives a salary for the term of their contract, either one or two terms. Two-term GSAs who want to receive their salary spread out across three terms should contact their department immediately.

Graduate Student Researchers (GSR)

The GSRs work under the direct supervision of and are appointed by the principal investigator (or associate) of a funded research project. Their stipends are determined by the terms of the grant within guidelines set by the Associate Dean for Graduate Studies and Research.

Fellowships and Traineeships

Fellowships and traineeships available to students in the School of Arts and Sciences can be found at <https://www.asgraduate.pitt.edu/financial-support>.

Academic Standards

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

Credits and Grade Points

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

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

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

Academic Probation and Dismissal

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

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

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

Withdrawal from Courses

Students may add or drop courses before the end of the add/drop period. A student who wishes to withdraw from an individual course after the add/drop period must complete a Monitored Withdrawal form available from the Dean of the school offering the course, obtain the signature of the instructor, and return the completed form to the Assistant Dean of Graduate Studies, 5141 Sennott Square. A W grade will then be issued.

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

Repetition of Courses

A student may repeat any course in which a grade of B- or lower is received if authorization is given by the student's department. When a graduate student repeats a course in which the subject matter has not changed, only the last grade received is counted in computing the grade point average. A Course Repeat form must be filed with A&S Graduate Studies, 5141 Sennott Square, to initiate proper computing of the grade point average.

Grade Changes

A grade given by an instructor for completed work will not be changed unless an error has been made in reporting or recording the grade. (Reexamination or extra work may not be used as a basis for a change of grade.) A Grade Change Request form must be filed with A&S Graduate Studies, 5141 Sennott Square, and approved by the Assistant Dean of Graduate Studies.

Independent Study

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

Directed Study

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

Transfer Credits

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

A maximum of 6 credits may be accepted by transfer toward the requirements for the master's degree. A maximum of 24 credits may be transferred toward the requirements for the PhD degree for course work at the master's level earned in another approved graduate school. A student who transfers 24 credits due to completion of a master's degree at another institution is not eligible to earn a master's degree in that discipline at the University of Pittsburgh. If a student has completed relevant graduate work beyond the master's level at another institution, up to 12 additional credits may be accepted for transfer. (No more than 36 credits can be accepted for transfer from all other graduate institutions.) Acceptance of credits by transfer

from other graduate schools does not relieve the student from the requirement to register at the University of Pittsburgh and satisfactorily complete a minimum of 18 credits for a master's degree and a minimum of 36 credits for a PhD degree.

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

Registration of Undergraduate Students for Graduate Credit

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

Statute of Limitations and Leaves of Absence

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

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

Under exceptional circumstances a candidate for an advanced degree may apply for an extension of the statute of limitations. Applications are available in the department or in A&S Graduate Studies, 5141 Sennott Square. They must state the reason for the delay, provide evidence of continuing progress toward the completion of the degree, and include a detailed plan of study and proposed date for completion. The request must be approved by the Chair of the student's doctoral or master's committee and the department Chair or director of graduate studies and be submitted to the Assistant Dean of Graduate Studies for final action. Each student who requests an extension of the statute of limitations must be able to demonstrate proper preparation for the completion of all current degree requirements. There is no extension on the time limits for the master's and doctoral comprehensive examinations.

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

Advising and Placement

Advising and placement services in A&S graduate programs are conducted within the various departments and programs. Students should consult department handbooks, their departmental advisor, their departmental director of graduate studies, their departmental graduate administrator, and/or the Chair for details. The A&S Graduate Studies Office makes every effort to keep advising and placement in the forefront of departmental concerns. All departments are responsible, with A&S oversight, for implementing policies and practices consistent with the University's in *Elements of Good Academic Advising*. Unresolved problems relating to the advising of graduate students at the department level can be taken to the Assistant Dean of Graduate Studies and research in A&S Graduate Studies, 5141 Sennott Square

A&S Degree Requirements

The general requirements for the master's degrees and doctoral degrees are detailed under Regulations Pertaining to Master of Arts and Master of Science Degrees, Regulations Pertaining to Professional Master's Degrees (including the MFA), and Regulations Pertaining to Doctoral Degrees.

For further A&S-specific requirements, see below. Once the University-wide requirements and the A&S Degree Requirements below have been reviewed, see the relevant departmental description for more specific detail.

Requirements for the MA, MS, and MFA Degrees

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

Credit Requirements

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

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

Second Language Requirement

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

Comprehensive Examination

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

Thesis

The requirement of a thesis or its equivalent is at the discretion of individual departments. If a thesis is submitted, its form must be in accord with specifications available from The ETD Format Guidelines Manual and approved by the Assistant Dean of Graduate Studies. A report of the final oral examination in defense of the master's thesis must be filed in 5141 Sennott Square. *For further information on thesis requirements, including the make up of the thesis committee, see Thesis Option under Regulations Pertaining to Master's Degrees.*

Application for Graduation

Each candidate for graduation must file an official Application for Graduation in 5141 Sennott Square, early in the term in which graduation is expected. (See your graduate administrator for deadline dates.) *See Application for Graduation under General Regulations for further details on graduation and graduation requirements.*

Graduation Certification

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

Requirements for the PhD Degree

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

Credit Requirements

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

Course Requirements

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

Second Language and/or Other Tools of Research

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

Preliminary Examination

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

Comprehensive Examination

Comprehensive examination results must be reported promptly to A&S Graduate Studies, 5141 Sennott Square, and no later than the last day of the term in which the examination is administered. Students must be enrolled in the term in which they are completing the Comprehensive Examination. *See Comprehensive Examination under Regulations Pertaining to Doctoral Degrees for further detail on regulations regarding the exam*

Doctoral Committee

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

Notification of Committee Membership

The names of the committee members must be submitted to the Graduate Studies Office as part of the application for candidacy by the graduate student. All requests for subsequent changes to the committee should be submitted for approval to the Graduate Studies Office by the Graduate Administrator for the candidate's department. Any changes to the committee membership, internal or external, after the dissertation

proposal/prospectus/overview meeting must be approved by the Assistant Dean of Graduate Studies before the dissertation defense. Forms for admission to candidacy and committee changes can be obtained by the Graduate Administrator in the A&S Graduate Handbook.

Special Requirements for External

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

Additional Committee Members

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

Committee Participation by Former Members of the University of Pittsburgh Faculty

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

Committee Participation by Retired Members of the University of Pittsburgh Faculty

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

Remote Participation by Candidate and Committee members

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

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

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

about their availability such that remote attendance by more than one member is avoided if at all possible. Remote attendance by more than two committee members will not be permitted.

Remote Attendance Requirements

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

1. it is not technologically possible to accomplish the required level of audiovisual interaction at the time and place appointed; or
2. the video portion of the connection fails before the defense is 50% completed (reasonably determined by the Committee Chair) and cannot be reestablished; or
3. the audio portion connection fails before 90% of the meeting or defense is completed (reasonably determined by the Committee Chair) and cannot be reestablished.

Chair Certification of Compliance with Remote Participation Requirements

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

The form is available at: Remote Attendance Certification

Admission to Candidacy for the PhD Degree

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

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

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

Dissertation

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

Language of the Doctoral Dissertation

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

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

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

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

Final Oral Examination

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

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

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

When the examination is completed, the candidate must notify the Assistant Dean if they have uploaded an electronic dissertation and submit three copies of an abstract of the dissertation initialed by the dissertation advisor in the upper right-hand corner. These documents must have been prepared for publication in accordance with instructions furnished by A&S Graduate Studies, 5141 Sennott Square. Each candidate must execute an agreement for the publication of the dissertation on microfilm and for publication of the abstract in Dissertation Abstracts; respond to the Survey of Earned Doctorates; and present a Microfilm Processing Fee Receipt when the dissertation is deposited in 5141 Sennott Square. All graduation requirements are in the graduation packet available each term in 5141 Sennott Square.

Multiple Degree Options

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

Dual-Degree Programs

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

Joint-Degree Programs

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

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

3. The JD/MA program offers selected students the opportunity to earn the JD and the interdisciplinary MA degree in Bioethics. Interested students should see the Bioethics section of this catalog or call the School of Law at 412-648-1415.

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

Certificate Programs

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

Composition, Literacy and Pedagogy Certificate

Composition, Literacy and Pedagogy Certificate, MA

Composition, Literacy and Pedagogy Certificate, MFA

Composition, Literacy and Pedagogy Certificate, PhD

Cultural Studies, Doctoral Certificate

Cultural Studies, Master's Certificate

Gender, Sexuality, and Women's Studies Doctoral Certificate

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

Medieval and Renaissance Studies Doctoral Certificate

Medieval and Renaissance Studies Master's Certificate

TESOL Certificate

Department and Program Descriptions

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

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

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

Arts and Sciences Administration and Staff

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

Arts and Sciences Faculty

Dietrich School of Arts and Sciences Faculty

Departments/Programs

Department of Anthropology

The Department of Anthropology offers the degrees of Master of Arts and Doctor of Philosophy.

The department also offers several areas of concentration:

- Anthropological Linguistics
- Archeology
- Cultural Anthropology
- Medical Anthropology
- Physical Anthropology

And has several focal study programs:

- Comparative Archeology of Complex Societies
- Ethnicity, Nationalism and the State

Students may combine work for the MA and PhD degrees, including a program in which the student earns an MPH (Master of Public Health in behavioral and community health science), as part of the PhD in anthropology. Students are encouraged to develop a regional specialization that can lead to a certificate in Latin American studies, Asian studies, West European studies, or Russian and Eastern European studies.

Contact Information

Department Chair: Bryan Hanks
Main Office: 3302 Wesley W. Posvar Hall
412-648-7500
Fax: 412-624-5133
E-mail: bkh5@pitt.edu
www.anthropology.pitt.edu

Additional information concerning the department's graduate program may be obtained from the University of Pittsburgh, Department of Anthropology, Graduate Administrator, 3302 WWPH, Pittsburgh, PA 15260. Phone: 412-648-7504. Fax: 412-624-5133. E-mail: pdeasy@pitt.edu.

Admissions

Entrance into programs leading to the MA and PhD degrees in anthropology requires a baccalaureate degree in one of the arts or sciences from an accredited institution of higher learning. Qualified students from any discipline are considered for admission. Applicants whose first language is English are required to submit Graduate Record Examination (GRE) scores. International applicants whose first language is not English are required to submit either the TOEFL administered by the Educational Testing Service or the IELTS administered by the University of Cambridge (taking the academic writing and reading modules). The department admits students only for the fall term. The deadline for applications is January 15. All applicants are automatically considered for financial aid.

Financial Assistance

Graduate student financial support awarded to graduate students by the Department of Anthropology includes fellowships, teaching assistantships, research assistantships, and Heinz/Mellon Fellowships in Latin American Archeology. The University Center for International Studies is another significant source of financial assistance.

Faculty

Doctoral

Anthropology, PhD

Requirements

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

Credit Requirements:

A minimum of 72 course credits in anthropology is required for the PhD (doctoral) degree. Of these, at least 57 credits must be in formal courses (as opposed to readings courses, independent study, or thesis or dissertation credits). The remaining 15 credits may be any combination of formal courses, readings courses, independent study, and/or thesis and dissertation credits.

Core Courses/Preliminary Examinations:

The core course system of the Department of Anthropology fills the role of the preliminary examination in the Dietrich School of Arts and Sciences requirements for the PhD. PhD students are required to pass (with a grade of B or better) at least three of the four core courses (cultural anthropology [ANTH 2789], physical anthropology [ANTH 2687], archeology [ANTH 2588], and linguistics [ANTH 2490]), including the core course in the student's chosen subfield of specialization. Full-time students are expected to pass the required core courses by the end of their second term in residence. A student with an MA from another institution, or with a strong undergraduate background in one or more sub-disciplines, may petition the Committee on Graduate Studies to waive the core course in that/those sub-discipline(s).

Language Requirement:

Before students are advanced to candidacy, they must demonstrate competence in a language other than English that possesses a substantial body of anthropological literature.

Method/Theory Requirements:

Students in archeology must pass with a grade of B or better ANTH 2534 and ANTH 2524 (Archeological Data Analysis 1 and 2). Students in physical anthropology must pass with a grade of B or better: 1) Biostatistics BIOST 2041 and BIOST 2042 (Introduction to Statistical Methods I and II), or, for bioarcheology concentrators with the approval of their advisor, Anthropology ANTH 2534 and Anthropology ANTH 2524 (Archeological Data Analysis I and II); and 2) by the end of the second year, Anthropology ANTH 2614 (History of Paleoanthropology).

Students in cultural anthropology must pass with a grade of B or better ANTH 2763 (Field Methods) and ANTH 2750 (Seminar on Contemporary Theory) or a comparable seminar approved for this purpose by the Committee on Graduate Studies. Students may petition for approval of other courses to satisfy these requirements.

Comprehensive Examinations:

Students must pass two comprehensive examinations designed to test breadth and depth of knowledge in the chosen areas of expertise. The acceptable forms of the exam are described in greater detail on the department's Web site. Each examination is designed and administered by a faculty committee consisting of at least three members of the department. Students generally take their comprehensive examinations at the end of their third year in the program.

Dissertation Overview:

Before actively pursuing dissertation research, the student makes an oral presentation of the intended project to a dissertation committee chosen by the student subject to approval by the department chair and dean. Following committee approval, the student applies for admission to candidacy for the Doctor of Philosophy degree.

Dissertation Defense and Graduation:

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

Joint Degree

Anthropology, PhD/MPH

Requirements

MPH students enrolled in the MPH/PhD program in anthropology fulfill the course work requirements for both BCHS and anthropology and earn both degrees for a total of 87 credits. The MPH essay/thesis requirement is met by the PhD dissertation. The practicum requirement is met through fieldwork.

Master's

Anthropology, MA

Requirements

A minimum of 30 course credits in anthropology and a paper is required for the MA (master's) degree. Of these, at least 21 credits must be in formal courses (as opposed to readings courses, independent study, or thesis credits). Full-time MA students must pass the core course in their declared subfield by the end of their second term in residence (or, for part-time students, before they have completed 18 credits), or petition for a specialized written examination (administered by their MA committee) in lieu of the core course. The MA committee consists of three graduate faculty members. Two must come from the department and include the student's advisor. The third member can be either from the department or outside of the department. All committees are approved by the faculty of anthropology. The language requirement is the same as for the PhD program. Students must pass a designated "methods" course with a B or better.

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

Center for Bioethics and Health Law

Overview of the Department

The Center for Bioethics & Health Law (CBHL) brings together clinicians, scholars, and researchers from many schools and disciplines across the University to investigate issues in bioethics and health law by employing empirical, philosophical, humanities, and legal research methods. The Center is founded on the premise that questions posed by contemporary health care and research are not the province of any single discipline but require the collaborative integration of insights garnered from myriad disciplines of the humanities and the social and medical sciences. It has been recognized as a leader in empirical research on topics such as informed consent, organ donation, and long-term care, as well as scholarly research on issues ranging, for example, from conscientious objection to justice to precision medicine to the right to die.

Contact Information

Program Director: Lisa S. Parker, PhD
Program Administrator: Beth Ann Pischke
Main Office: 519 Barco Law Building
412-648-7007

Admissions

Applicants for admission must submit digital scans of all undergraduate and graduate transcripts (official transcripts are not required during the application process - applicants who are accepted will be required to submit certified transcripts when they accept the offer of admission and matriculate), three letters of recommendation, a personal statement explaining interest in the program (including plans to use this degree in further professional or graduate education or a career), a sample of written work demonstrating critical reasoning skills and/or ability to present an argument, and Graduate Record Examination scores (or an applicable substitute for those applying to joint degree programs, e.g., MCAT or LSAT scores). If submitting GRE scores, use the University Code 2927 and the Department Code for Interdisciplinary Programs 5101. International applicants whose first language is not English are required to submit TOEFL scores. Applications for admission to the Bioethics Program in the fall term must be submitted no later than March 31; after that date, interested applicants should contact the program administrator. Joint program students must be admitted by both the Dietrich School and the relevant professional school.

Financial Assistance

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

Faculty

Faculty of the Center for Bioethics & Health Law, and its affiliated faculty, teach in the MA Program in Bioethics, serve on thesis committees, and provide clinical and research mentorship. These faculty are listed on the Center's website at <http://bioethics.pitt.edu/people>. They conduct research-empirical and theoretical-on issues across the lifespan, professional issues like conscientious objection, and issues in research including mental health and genomic research. Research by Center faculty is described at <http://bioethics.pitt.edu/research>.

Dietrich School of Arts and Sciences Faculty

Master's

Bioethics, MA

Overview of Degree Program

The interdisciplinary Master of Arts in Bioethics, offered by the Kenneth P. Dietrich School of Arts and Sciences in collaboration with the Center for Bioethics & Health Law, is designed for those with a background in the humanities or social sciences, or with degrees in law, medicine, or public health. The degree is intended primarily to complement and enhance other graduate or professional education, although some students pursue the degree immediately upon graduation from college.

This program, founded in 1989, affords students the opportunity to observe ethical issues as they arise in clinical practice and to pursue in-depth research. The curriculum includes core courses, electives, clinical ethics practica, and the MA thesis project. Course work, which may be completed within one year of full-time study, allows students to combine study in ethical theory, philosophy, history of medicine, cultural and gender studies, health law, public health, and the social sciences. The program, including Master's thesis research, may be completed in one or two years, depending on the student's prior experience and education.

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

Requirements

- BIOETH 2658 - PHILOSOPHY OF MEDICINE
- BIOETH 2661 - THEORETICAL FOUNDATIONS
- BIOETH 2664 - BIOETHICS
- Elective courses are taken in relevant disciplines, as well as Bioethics
- A Master's thesis is required

Department of Biological Sciences

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

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

Contact Information

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

Additional information concerning the department's graduate programs may be obtained from the University of Pittsburgh, Department of Biological Sciences, Graduate Administrator, A234 Langley Hall, Pittsburgh, PA 15260. Phone: 412-624-4268. Fax: 412-624-4349. E-mail: biophd@pitt.edu.

Admissions

Admissions to our graduate programs are competitive, and applications must meet minimum standards (<http://www.biology.pitt.edu/graduate/how-apply>). Applications should be submitted via online at <http://app.applyyourself.com/?id=up-as>. Applications are considered for matriculation for the fall term beginning July 1, and must be completed by December 9 for applicants residing within the United States and international applicants.

Financial Assistance

Graduate students receive a competitive stipend, health insurance, tuition waivers, and other financial assistance.

Faculty

<http://www.biology.pitt.edu/all-faculty>

Doctoral

Biological Sciences, PhD

Requirements

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

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

Courses

- BIOSC 2121 - BIostatISTICS
- BIOSC 2435 - ENVIRONMENTAL PHYSIOLOGY OF ANIMALS
- BIOSC 2540 - SEMINAR IN ECOLOGY AND EVOLUTION
- BIOSC 2545 - THE MATHEMATICS OF BIOLOGY

Department of Chemistry

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

Research

Analytical Chemistry
Biological Chemistry
Inorganic Chemistry
Organic Chemistry
Physical Chemistry

Contact Information

Department Chair: Sunil Saxena
Main Office: 234 Chevron Science Center
412-624-8200
Fax: 412-624-8611
E-mail: gradadm@pitt.edu
www.chem.pitt.edu

Facilities-Department Shared Instrumentation

The Department of Chemistry is housed in a modern chemistry complex that includes Eberly Hall, Chevron Annex, Ashe Lecture Halls and the 15-story Chevron Science Center. The Chemistry Instrumentation Center is an in-house research instrumentation laboratory that includes NMR, mass spectroscopy, and X-ray crystallography facilities. In addition to instrumentation within individual research groups, the department supports a vast array of modern research instruments, including three 300 MHz NMRs, one 500 MHz NMR, one 600 MHz NMR, two high-resolution and two low-resolution mass spectrometers, a light-scattering instrument, a circular dichroism spectrophotometer, a spectropolarimeter, X-ray systems-single crystal, powder, and fluorescence, a scanning electron microscope, an atomic force microscope, a vibrating sample magnetometer, several FT-IR and UV-VIS spectrophotometers, and workstation computer clusters. The Chemistry Library, a unit of the University Library System is a 6,000-square-foot facility that provides access to more than 30,000 monographs, 15,000 bound periodicals and more than 250 maintained journal subscriptions. Additional shared research resources include in-house machine shop, electronics shop, and glassblowing laboratory; helium recovery system and the Dietrich School Scientific Stockroom.

Admissions

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

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

All applicants must submit Graduate Record Examination (GRE) scores. Submission of advanced chemistry GRE test scores is recommended. International applicants must also submit TOEFL or IELTS scores. The minimum acceptable TOEFL score for the Department of Chemistry is 100 with a minimum of 22 in each category. The minimum IELTS score for the Department of Chemistry is a 7.0 with a minimum of 6.5 in each section.

Financial Assistance

All full-time doctoral students in good academic standing receive complete financial support in the form of teaching assistantships, research assistantships or competitive departmental or university fellowships. This support is available throughout a student's graduate career, including summer sessions. High quality UPMC health care coverage is provided with all assistantships and fellowships.

Faculty

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

Doctoral

Chemistry, PhD

Requirements for the PhD

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

Additional Requirements

PhD Preliminary Evaluation: Satisfactory completion of the preliminary exam requires the student to achieve a grade point average of at least 3.00 in 12 credits of core courses selected from two or three of the five chemistry divisions. If the student receives grades below B in two or more core courses, regardless of the overall GPA, that student will have failed the Ph.D. preliminary evaluation and will not be permitted to remain in the Ph.D. program.

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

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

Proposal: When substantial progress has been made by the student on the dissertation problem a proposal for an original research problem is to be written, presented and successfully defended before the student's faculty proposal committee. The topic of this proposal should differ from that of the student's dissertation problem. The proposal is an important opportunity for the student to display scientific maturity in terms of originality and critical thinking.

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

Master's

Chemistry, MS

Requirements for the Master's Degree

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

Additional Requirements

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

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

Department of Classics

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

Contact Information

University of Pittsburgh, Department of Classics
1501 Cathedral of Learning
4200 Fifth Avenue, Pittsburgh, PA 15260
[P] 412-624-4494
[F] 412-624-4419

Director of Graduate Studies:

Director of Graduate Studies and Director of the Joint Graduate Program in Classics, Philosophy and Ancient Science (CPAS):
Christina Hoenig, Assistant Professor in Classics, Department of Classics, University of Pittsburgh
Office: 1502A Cathedral of Learning
Phone: 412-624-4485
Email: emh159@pitt.edu

Interim Director of the Joint Graduate Program in Classics, Philosophy and Ancient Science (CPAS) - Fall Term:
Christian Wildberg
Email: CHW168@pitt.edu

Admissions

Applicants must hold a Master of Arts (MA), or an equivalent qualification, in Classics or Classical Studies upon admission to the degree program, and be prepared to transfer at least 24 credits of relevant coursework. Transfer credit will not be accepted for courses in which a grade lower than B or its equivalent has been received (For more information on transfer credits, please see the Graduate and Professional Bulletin at <http://www.bulletins.pitt.edu/graduate/regulations.htm>).

Applicants should have a broad exposure to the cultural history of ancient Greece and Rome, and will have demonstrated knowledge of Ancient Greek and Latin appropriate for graduate work. All applicants will also have demonstrated reading knowledge of at least one modern foreign research language besides English (German, French, or Italian) before beginning the program. Applicants from outside the U.S. must show evidence of having completed a program of study equivalent to a Master of Arts degree and be prepared to present certification of the degree or license at the time of registration. If the credentials are incomplete or not familiar, please send a copy of the application to Office of International Services for evaluation. For applicants whose first language is not English, please refer to <http://www.asgraduate.pitt.edu/node/315> to ensure fulfillment of the University's language requirements.

Required Application Materials:

- University of Pittsburgh's on-line Application for Admission (note the \$50.00 application fee)
- A personal statement indicating your reasons for pursuing a graduate degree at the University of Pittsburgh and your academic and professional goals. You may submit your Statement of Purpose and writing sample in the "Additional Information" section of the online Application for Admission, which allows you to upload your document. Alternatively, you can mail it to the Department of Classics.
- Official or Unofficial College Transcripts. Admitted students will need to send official transcript copies before they can be matriculated.
- Current, official GRE scores
- 3 Letters of Recommendation. You must submit the names of three referees with your online Application for Admission. The recommendation form to be included with each letter of recommendation is available for download as a .pdf file once you begin your online application process. Referees may submit their recommendations either electronically or by mail directly to the Department of Classics.
- 2 samples of academic writing.
- Non-US citizens: TOEFL or IELTS scores. This process must be completed by January 15.

Financial Assistance

The Department of Classics expects to admit one graduate student every other year. Students admitted to the program receive a teaching fellowship during years 1-4. During the first year of teaching at the University of Pittsburgh, students receive a teaching assistantship (TA). If a student's teaching is deemed satisfactory by the graduate faculty based on OMETS and teaching observations, he or she will receive a teaching fellowship (TF) during their remaining years teaching in the department. The expected time to degree in the Department of Classics is 4 years. If additional time is required to complete the degree, students are expected to apply for dissertation funding (both internally and externally). Assistantships include full tuition remission, health benefits at no additional cost, and a stipend. For information on current stipend rates, see <http://www.pitt.edu/~graduate/stipends.html> . See listing of available fellowships for all graduate students at the Dietrich School of Arts and Sciences <http://www.asgraduate.pitt.edu/financial-assistance>.

Faculty

Dietrich School of Arts and Sciences Faculty

Doctoral

Classics, PhD

Overview of Degree Program

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

<http://cpas.pitt.edu/>

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

Requirements for the PhD

Degree Requirements

Course Requirements:

Students are required to enroll in the following courses:

- CPAS Proseminar (two terms, during year 1 in the program)
- CPAS Ancient Greek Seminar (four terms, during years 1 and 2 in the program)
- Four courses in Classics, one of which may be completed at the undergraduate level with appropriate graduate components added (e.g. papers and oral examinations, as approved by the DGS). These four must include:
 - at least two Classics graduate seminars in Ancient Science (2000-level)
 - at least two other graduate seminars in Classics or a related subfield (e.g. ancient Greek or Roman literature, history, archaeology, rhetoric, art history) approved by the student's advisor and the DGS.
- Two courses in Philosophy, including Metaphysics and Epistemology.
- One course in History and Philosophy of Science: Part One of the 'History of Science Sequence' (equals one course).
- Remaining credits may be earned through electives, Independent or Directed Study, and up to 12 credits of PhD dissertation research.

Comprehensive PhD Examinations

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

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

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

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

The Prospectus

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

- Abstract (*ca.* 200 words). The abstract gives a clear statement of the research topic and the main conclusion(s).
- Proposal (*ca.* 3000-4000 words).
 1. statement of the research topic, with review of earlier scholarship on the ^[100]topic. Make clear to the reader how your work fits into the scholarly discussion of the topic. A precise mapping of your own position relative to the views of other scholars will make it easier for you to focus your attention on your own project and to define your contribution to the scholarship.
 2. description of the method(s) you will use in conducting your research. This item is related to the review of scholarship. In the course of the review you may single out the approach of a scholar or scholars that you have decided to follow in your own research; or you may reject previous approaches in favor of your own. Here you may include a specific example or examples of what kinds of evidence you will be using and how you will treat that evidence. A sample of the argumentation you will be using allows readers to see whether your method is adequate to the material you are working with.
 3. statement of the contribution that the dissertation will make to scholarship on the topic. Here you will explain how your work marks an advance in some way on what previous scholars have written.
 4. bibliography (not a comprehensive listing at this stage of all relevant items but rather of the works that at this point have stimulated and influenced your own thinking on the topic).
- A Chapter Outline with a brief summary of contents for each one.

- A Timetable for Completion, setting out a realistic schedule for completing the project.

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

The Dissertation

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

Dissertation Defense

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

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

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

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

Summary of Milestones towards the PhD Degree

1. Modern Language Exam by beginning of Year Two
2. PhD Preliminary Examination by Beginning of Year Two
3. Three Comprehensive Exams (oral and written) by beginning of Year Three
4. Dissertation Prospectus by end of Year Three Fall Term
5. Admission to PhD candidacy at least 8 months prior to defense
 - # of courses required (list core courses, etc.)
 - PhD Prelim Evaluation
 - Comprehensive Exam
 - Proposal/overview
 - Dissertation and Final Examination

Master's

Classics, MA

The Classics Department is currently not accepting applications for the Masters Program.

Requirements for the MA

The course requirements for the MA are a minimum of ten one-term graduate credit courses (30 credits), of which at least four must be at the 2000 level or higher. Included in the program must be CLASS 2010 (Introduction to Classical Studies) and a two-term sequence, consisting of a reading course and a seminar on a single subject. Students may emphasize either Greek or Latin, but they must pass at least one course at the level of 1300 or higher in each language.

A reading knowledge of German is required. This requirement may be met either by taking two appropriate courses and receiving a letter grade of B or higher, or by passing an examination administered by the department.

The MA comprehensive examination consisting of three parts is also required. Students choose, in consultation with the graduate advisor and the department, the three fields in which they will be examined. The three are usually chosen from the following six fields: Greek translation, Latin translation, Greek literature, Latin literature, Greek history, and Roman history. Either Greek translation or Latin translation must be included.

Department of Communication

The department offers the Master of Arts and Doctor of Philosophy in Communication. The curriculum emphasizes critical, cultural, historical, philosophical, and theoretical approaches to studying contexts of power, knowledge, and desire that exert differential impacts on various bodies and groups. Departmental research, teaching, and extracurricular community interventions attend to structures of power informing race, class, gender, sex, sexuality, ability, and other intersecting axes of social difference. Many students and faculty members examine the forms of persuasion, protest, silence, coming-to-voice, testimony, noise, and imagination needed to transform such power structures that produce and reproduce inequality.

Contact Information

Director of Graduate Studies: Dr. Ronald J. Zboray
Main Office: 1433 Cathedral of Learning
412-624-6569
Fax: 412-624-1878
E-mail: zboray@pitt.edu
<http://www.comm.pitt.edu/>

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

Admissions

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

Financial Assistance

The department makes every effort to sustain funding and full remission of tuition for five years of doctoral study for students entering directly from undergraduate programs, and four years for students entering with an M.A. or equivalent in Communication or cognate field. In addition to teaching assistantships there are also several non-teaching fellowships, including some dedicated to underrepresented groups, available through the University. See the listing of available fellowships for all graduate students at the Dietrich School of Arts and Sciences <http://www.asgraduate.pitt.edu/financial-support>

William Pitt Debating Union

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

Faculty

Dietrich School of Arts and Sciences Faculty

Doctoral

Communication: Rhetoric and Communication, PhD

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

Requirements for the PhD

- 24 courses (72 credit hours) required, two of which are core (COMMRC 2296 - PROSEMINAR and COMMRC 3384 - TEACHING PRACTICUM), 4 of which may be taken as Independent Study Opportunities (e.g., COMMRC 3902 - DIRECTED STUDY FOR PHD STUDENTS or COMMRC 3002 - PROFESSIONAL DEVELOPMENT), and 3 of which may be taken outside the Department of Communication. Students entering with a recent MA in Communication or cognate field may be able receive credit toward the PhD for up to 10 prior courses.
- Approved Plan of Study (in first year of degree work)
- Written Comprehensive Exam with Oral Defense (after or near the end of coursework)
- Dissertation Prospectus and Oral Defense
- Dissertation and Final Oral Defense

Master's

Communication: Rhetoric and Communication, MA

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

Requirements for the MA

- 10 courses (30 credit hours) required, two of which are core (COMMRC 2296 - PROSEMINAR and COMMRC 3384 - TEACHING PRACTICUM), one of which may be taken as COMMRC Directed Study, and two of which may be taken outside the Department of Communication.
- Approved Plan of Study (in first year of degree work)

- Written Comprehensive Exam with Oral Defense (after or near the end of coursework), along with two research papers for examination committee approval.

Program in Computational Biology

Joint Pitt-CMU PhD Program in Computational Biology

James Faeder and Russell Schwartz, Directors

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

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

*NIH Working Definition, July 17, 2000

Contact Information

	University of Pittsburgh:	Carnegie Mellon University:
Directors:	James R. Faeder, PhD Associate Professor Department of Computational and Systems Biology School of Medicine, University of Pittsburgh 3501 Fifth Avenue, BST3, Room 3082 Pittsburgh, PA 15260 412-648-8171 (phone) 412-648-3163 (fax) faeder@pitt.edu	Ziv Bar-Joseph, PhD Professor of Computational Biology and Machine Learning Carnegie Mellon University 5000 Forbes Avenue Pittsburgh, PA 15213 Phone: 412-2688595 email: zivbj@cs.cmu.edu
Associate Directors:		Carl Kingsford, PhD Associate Professor Department of Computational Biology School of Computer Science, Carnegie Mellon University Gates Hillman Center, Room 7705 5000 Forbes Avenue Pittsburgh, PA 15213 412-268-1769 (phone) 412-268-2977 (fax) carlk@cs.cmu.edu

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

Admissions

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

Recommended Prerequisites

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

Application

REQUIRED MATERIALS - Deadline December 15, 2017

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

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

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

Financial Aid

All students are provided with a stipend and full tuition remission. Assistance is also provided for health insurance.

Teaching Assistantships

Although all students are supported as research assistants throughout their time in the program, there are opportunities to assist in the teaching courses of the program. Students are also encouraged to develop teaching skills by mentoring other students and passing on their knowledge to lab mates and fellow students.

Terminal Masters Degree

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

Courses

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

Training Faculty

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

For a list of training faculty, see http://www.compbio.cmu.edu/?page_id=31615

Doctoral

Center for Neuroscience Training Program (CNUP), PhD

PhD Degree Requirements

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

Specifically, the following core courses are required:

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- MSNBIO 2010 - SCIENTIFIC ETHICS or
- NROSCI 2010 - SCIENTIFIC ETHICS
- MSNBIO 2100 - CELLULAR AND MOLECULAR NEUROBIOLOGY 1 or
- NROSCI 2100 - CELLULAR AND MOLECULAR NEUROBIOLOGY 1
- MSNBIO 2101 - CELLULAR & MOLECULAR NEUROBIOLOGY 2 or
- NROSCI 2101 - CELLULAR & MOLECULAR NEUROBIOLOGY 2
- MSNBIO 2102 - SYSTEMS NEUROBIOLOGY or
- NROSCI 2102 - SYSTEMS NEUROBIOLOGY

- MSNBIO 2624 - GRANT WRITING

Note:

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

Integrative Molecular Biology, PhD

Degree Requirements

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

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

- MSIMB 2000 or
- IMB 2000 - LABORATORY RESEARCH ROTATIONS - 9 credits - taken in the summer prior to the first year
- INTBP 2290 - SCIENTIFIC ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH - taken during the summer of the second year
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- MSIMB 2050 or
- IMB 2050 - PIMB RESEARCH SEMINAR - the Department/Program Seminar and Journal Club/Conference are taken each fall and spring term until graduation

Advanced Elective Courses (6 credits total)

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

Critical European Culture Studies Program

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

Contact Information

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

Graduate Administrator: Briar Somerville
E-mail: kbs47@pitt.edu

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

Admissions

Admission Requirements:

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

1) semester-length enrollment in a European University OR

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

Financial Assistance

Graduate student funding would combine both Research Fellowships and Teaching Fellowships for a total of four years of funding from Pitt sources. Research Fellowships will be awarded during the first and last years. In other years, Teaching Fellowships give students experience teaching within specific departments.

In addition, students will receive one summer fellowship to offer research opportunities and language improvement in Europe (students may also supplement traditional summer fellowship amounts with research and travel funds from other sources such as the European Studies Center and the Center for Russian and Eastern European Studies, when necessary).

Affiliated Faculty

Dietrich School of Arts and Sciences Faculty

PhD

Critical European Culture Studies, PhD

Credit Requirement:

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

PhD Qualifying Examination:

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

Supervised Teaching Experience:

Supervised teaching experience is an integral part of the doctoral program. All PhD students will be given an opportunity to teach either a language, European history or a European culture course in their second and third years of the PhD program for a total of four semesters. This experience will serve as preparation for scholarly and professional careers. Students will be supported by a pedagogy seminar to prepare and aid them.

Comprehensive Examination:

Supervised teaching experience is an integral part of the doctoral program. All PhD students will be given an opportunity to teach either a language, European history or a European culture course in their second and third years of the PhD program for a total of four semesters. This experience will serve as preparation for scholarly and professional careers. Students will be supported by a pedagogy seminar to prepare and aid them.

Dissertation Overview:

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

Language Requirement:

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

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

Dissertation Defense:

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

Cultural Studies Program

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

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

Political Science, Public and International Affairs, Public Health, Religious Studies, Slavic Languages and Literatures, Social Work, Sociology, and Theatre Arts.

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

Contact Information

Program Director: Professor Ronald J. Zboray

E-mail: zboray@pitt.edu

Graduate Administrator: Briar Somerville

E-mail: kbs47@pitt.edu

Main Office: 401C Cathedral of Learning

Phone: 412-624-7232

Fax: 412-624-7232

E-mail: cultural@pitt.edu

www.culturalstudies.pitt.edu/

Admissions

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

Financial Assistance

Two one year fellowships are awarded annually to outstanding resident doctoral students who have passed comprehensive examinations.

Publications

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

Affiliated Faculty

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

Certificate

Cultural Studies, Doctoral Certificate

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

Requirements for the Doctoral Certificate

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

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

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

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

Cultural Studies, Master's Certificate

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

Requirements for the Master's Certificate

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

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

Digital Studies and Methods Program

Graduate Certificate in Digital Studies and Methods

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

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

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

Contact Information

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

Enrollment

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

Certificate

Digital Studies and Methods Certificate

Department of East Asian Languages and Literatures

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

Contact Information

Department Chair (EALL): Hiroshi Nara
Main Office: 2714 Cathedral of Learning
Graduate Administrator: Keanna Cash
412-624-5227
Fax: 412-624-3458
E-mail: kec176@pitt.edu
<http://deall.pitt.edu/graduate>

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

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

Applicants for admission must submit a two-page career statement in English that identifies the student's academic and intellectual goals. They must submit transcripts of all college-level work, three letters of recommendation in English, a writing sample in English, and scores on the verbal, quantitative, and writing assessment-analytical sections of the Graduate Record Examination. International applicants whose first language is not English are required to submit the TOEFL administered by the Educational Testing Service: The required TOEFL score of 90 (with at least a score of 22 in all of the four sections of speaking, listening, reading, and writing); the required minimum IELTS of 7.0 (with at least 6.5 in each of its four sections). The deadline each year for submitting applications is January 15. Notification can be expected by the middle of March. The program admits students only for the fall term.

Financial Assistance

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

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

Faculty

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

Dietrich School of Arts and Sciences Faculty

Course Note

Not all courses are offered every term. Undergraduate courses at the 1000 level can be carried for graduate credit. No more than 15 credits of undergraduate courses at the 1000 level can be carried for graduate credit.

Joint Degree

East Asian Studies, MA/MBA

Admission to the MA/MBA Joint Degree Program

Qualified students may simultaneously earn a master's degree in business administration and an interdisciplinary Master of Arts in East Asian Studies. Students enrolled in the joint degree program take MBA and MA course work concurrently. Students will normally be expected to complete the program in five consecutive terms, beginning in the fall term of the first academic year and ending in the spring term of the following year. Students may, however, extend their program of study in order to pursue further language acquisition or an internship.

Prospective students must meet the full set of admission requirements for MBA study in the Joseph M. Katz Graduate School of Business and for the MA program of graduate study in the Dietrich School of Arts and Sciences. Students should first apply for admission to the MBA program. After admission to the MBA program, applicants to the MA program will be assessed by review panels of appropriate A&S faculty. To obtain MBA application forms, contact: University of Pittsburgh, Joseph M. Katz Graduate School of Business, Office of Admissions, Pittsburgh, PA 15260; phone: 412-648-1700; fax: 412-648-1659; e-mail: mba-admissions@katz.business.pitt.edu.

Master's

East Asian Studies, MA

The interdisciplinary Master of Arts degree in East Asian studies (IDMA) combines advanced language training with study in the social sciences and humanities focusing on East Asia. It is designed for graduate students who plan professional careers in government, business, journalism, or pre-college teaching; or for those who want intensive area training before pursuing a doctoral program in a particular discipline. The IDMA is typically a two-year program. It is designed for students who have already had at least two years of Chinese, Japanese, or Korean language study. The interdisciplinary nature of the program comes not from specially constructed interdisciplinary courses but from taking a planned complement of graduate-level courses in different departments. The strength of this interdisciplinary approach lies in the fact that students are able to elect to work with faculty in several disciplines, as well as to take courses in different areas in the humanities and social sciences. The applicant's academic interests must be compatible with the expertise of the East Asian faculty at the University of Pittsburgh. IDMA students are eligible to apply for a variety of scholarships and fellowships administered by Asian Studies. See the Web site www.ucis.pitt.edu/asc and click on Funding for descriptions of awards.

Requirements for the MA

Requirements for the IDMA

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

Credit Requirements: Students must earn a minimum of 30 credits of course work (excluding language credits) in two or more departments with an overall GPA no lower than 3.0. At least half of these credits must be carried in courses numbered 2000 or above. In addition, EAS 2005 - SOURCES AND METHODS IN EAST ASIA, a research methodology course, must be taken in the first year.

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

Course Specialization: Students who specialize in China must take at least one 3-credit course on Japan, and those who specialize in Japan must take at least one 3-credit course on China.

History Courses: Six of the required credits must be taken in course work relating to the ancient and modern history of China or Japan.

Thesis: The thesis topic must be approved by the student's academic advisor and a faculty committee of three, which regularly included the academic advisor. The faculty committee must present at least two different departments. The thesis must demonstrate an ability to research primary East Asian language materials.

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

Department of Economics

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

The normal time to complete the PhD is five years. The Department of Economics does not offer a master's degree program. Nevertheless, graduate students may apply for a Master of Arts (MA) under specific circumstances as described below.

1. Continuing Master's Degree

Continuing students may apply for an MA in economics after they have passed all preliminary examinations and have at least 30 credits in graded coursework at the 2000 or 3000 level. In addition, their GPA must be 3.0 or higher in all courses counting toward the 30-credit minimum.

2. Non-continuing Master's Degree

The Graduate Committee may recommend that a MA in economics be awarded to a student who is leaving the PhD program either voluntarily or because of dismissal. The requirements for the terminal master's degree are: 1) either passing each of the seven first year courses with a minimum grade of B or passing one of the preliminary exams; and, 2) completing 30 credits of graduate level coursework with a cumulative GPA of 3.0.

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

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

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

- Public Economics
- Urban Economics

Contact Information

Department Chair: David Huffman
 Director of Graduate Studies: Werner Troesken
 Main Office: 4901 Wesley W. Posvar Hall
 412-648-1730
 E-mail: econcpt@pitt.edu
 www.econ.pitt.edu

Additional information concerning the department's graduate program may be obtained from the University of Pittsburgh, Department of Economics, Graduate Administrator Brian Deutsch, 4911 Wesley W. Posvar Hall, Pittsburgh, PA 15260. Phone: 412-648-7270. Fax: 412-648-1793. E-mail: brd51@pitt.edu.

Admissions

Applicants for admission must submit transcripts of all college-level work, three letters of recommendation, a career statement that addresses the applicant's personal and professional goals and the reasons for pursuing doctoral study in economics, as well as and scores on the verbal, quantitative, and analytical sections of the Graduate Record Examination. International applicants whose first language is not English are required to submit official scores from either the TOEFL administered by the Educational Testing Service with a minimum score of 90 on the internetbased test (with at least a score of 22 in all four sections). Applicants may also submit scores from the IELTS administered by the University of Cambridge, Local Examinations Syndicate. The minimum acceptable score is 7.0, with at least a score of 6.5 in each of the 4 sections (taking the academic writing and reading modules). Application must be received by January 15. The department admits students only for the fall term.

Financial Assistance

The department generally offers financial support beginning with the first year of graduate study. Awards are competitive; not all students who are admitted to the program are offered fellowships. All fellowships and assistantships offer full tuition as well as a stipend and some include medical coverage. Students who are admitted without funding may qualify for funding if they pass the preliminary examinations in microeconomics and macroeconomics at the end of the first year of study.

Provided there are adequate funds, students with fellowships or teaching assistantships who make satisfactory progress toward completion of the PhD can expect their financial support to continue for up to four years beyond the first year of study.

Doctoral

Economics, PhD

Requirements for the PhD

Credit Requirement

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

- ECON 2010 - MATHEMATICAL METH ECON ANALYSIS
- ECON 2020 - INTRO TO ECONOMETRIC THEORY
- ECON 2100 - ADVANCED MICROECONOMIC THEORY 1
- ECON 2110 - ADVANCED MACROECONOMIC THEORY 1

- ECON 2120 - ADVANCED MICROECONOMIC THEORY 2
- ECON 2130 - ADVANCED MACROECONOMIC THEORY 2
- ECON 2150 - GENERAL ECONOMETRICS

Additional Requirements

Preliminary Examinations

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

Minimum GPA

All students must attain a minimum GPA of 3.00 in 2000- and 3000-level course work in economics as well as maintain a minimum GPA of 3.00 in all courses qualifying for graduation to be certified for the PhD in economics, as well as to qualify for continued financial assistance.

Comprehensive Exam Requirement (Research Paper)

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

Field Requirements

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

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

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

Dissertation Overview (Admission to Candidacy)

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

Dissertation Defense

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

Department of English

The Department of English offers the following degrees and certificate:

Master of Arts (MA)

Master of Fine Arts (MFA)

Doctor of Philosophy (PhD)

Certificate in Composition, Literacy and Pedagogy

Contact Information

Director of Graduate Studies: Tyler Bickford

Main Office: 526 Cathedral of Learning

412-624-6549

Fax: 412-624-6639

E-mail: engrad@pitt.edu

<http://www.english.pitt.edu/graduate/>

Additional information concerning the department's graduate program may be obtained from the Graduate Administrator, Department of English, University of Pittsburgh, Pittsburgh PA 15260. Phone: 412-624-6549. Fax: 412-624-6639. E-mail: engrad@pitt.edu. Web site: www.english.pitt.edu/graduate.

Admissions

Applicants for admission must submit an online application, transcripts of all college-level work, three letters of recommendation, a personal statement, and a writing sample (which varies by degree—please consult the application requirements link above). International applicants whose first language is not English are required to submit either the TOEFL administered by the Educational Testing Service with a minimum score of 90 (with a minimum of 22 in each section), or the IELTS administered by the University of Cambridge, Local Examinations Syndicate with a minimum score of 7.0 (taking the academic writing and reading modules). Applications to the MA and PhD program will be accepted for fall term admission until December 10, and applications to the MFA program are due, January 7. Newly admitted students enter the program in the fall semester only.

Applicants can apply online at the following site: app.applyyourself.com/?id=up-as.

Financial Assistance

All PhD students are offered a non-teaching fellowship for their first year of study. Students making satisfactory progress are then ordinarily supported with renewable teaching assistantships and teaching fellowships for four more years, with the possibility of a sixth year depending on the availability of funding. MFA students are admitted either as teaching assistants or as a non-teaching fellow, and these funding streams are renewable as teaching assistantships for two more years if the students are making satisfactory progress. The department does not currently offer financial assistance to MA students.

Certificate in Composition, Literacy and Pedagogy

This graduate certificate recognizes sustained, advanced study in composition, literacy, and pedagogy. It can be awarded to students who have earned the MA, MFA, or PhD degree in the department of English, and to those earning graduate degrees in other programs and departments.

To qualify for the certificate, students must successfully complete 12 to 18 credits (depending upon the level of the certificate being awarded). More information about the certificate is online at http://www.composition.pitt.edu/graduate/graduate_more.html.

Faculty

Certificate

Composition, Literacy and Pedagogy Certificate

Graduate and Professional Degrees

The Department of English offers a PhD emphasizing Cultural and Critical Studies, and two Master's degrees: an MA in English and an MFA in Writing. The PhD in English, open to applicants with at least a BA or its equivalent, encourages interdisciplinary scholarship. PhD students typically base their work in Composition/Rhetoric, Film Studies, or Literature, but the department fosters interdisciplinary work that draws on more than one program. The department has a strong national reputation in composition and literacy studies, children's literature, global film studies, and cultural theory. Based in the Literature Program but including faculty members and PhD students across programs are four focal areas that provide curricular and extracurricular support for student work: Children's Literature and Childhood Studies; Genealogies of Modernity; Media and Material Practices; and Race, Politics, and Empire. The MA in English provides broad familiarity with advanced studies in Composition/Rhetoric, Film Studies, and/or Literature. The MFA in Writing allows students to specialize in poetry, fiction, or nonfiction, while also integrating courses in literature and literary history. The department also offers a graduate-level certificate in Composition, Literacy, Pedagogy and Rhetoric.

Certificate in Composition, Literacy and Pedagogy

<http://www.composition.pitt.edu/graduate/certificate>

This graduate certificate recognizes sustained, advanced study in composition, literacy, and pedagogy. It can be awarded to students who have earned the MA, MFA, or PhD degree in the department of English, and to those earning graduate degrees in other programs and departments.

To qualify for the certificate, students must successfully complete 12 to 18 credits (depending upon the level of the certificate being awarded). More information about the certificate is online at http://www.composition.pitt.edu/graduate/graduate_more.html

Certificate

This graduate certificate recognizes sustained, advanced study in composition, literacy, pedagogy and rhetoric at the University of Pittsburgh. It can be awarded to students who have earned the MA, MFA, or PhD degree in the Department of English, and to those earning graduate degrees in other departments, programs, and institutions.

To qualify for the certificate, students must successfully complete ENGLIT 2500 - SEMINAR IN PEDAGOGY (or an equivalent course in writing pedagogy), and a set of additional courses described below: the MA and MFA certificate will require three (3), and the PhD certificate five (5) additional courses. These courses are selected from among an array of seminars that represent intersecting strands of work in the Composition Program:

- **Composition**, including study of the theories and practices of writing, within and beyond the field of Rhetoric and Composition;
- **Literacy**, including research into public rhetorics and the literacies of diverse groups in the larger culture beyond the academy;
- **Pedagogy**, including historical and critical inquiry into issues of schooling, teaching, and the institutions of academic writing;
- **Rhetoric**, including the history and theory of rhetoric and its functioning in institutional, political and literary spheres of communication.

Students interested in the certificate should see the Director of Composition for initial advising. He or she will identify qualifying courses for the certificate in English and may approve courses in other departments at the University of Pittsburgh. One course of Directed Study may also be accepted for the certificate, with the approval of the Director of Composition. In order to graduate with this certificate, students must apply to the certificate program at least one semester in advance of their graduation. The application form can be obtained from the Graduate Administrator in the Department of English (engrad@pitt.edu (<mailto:engrad@pitt.edu>)).

To qualify for the Graduate Certificate in composition, Literacy, Pedagogy, and Rhetoric, students are further required to produce a teaching portfolio. The portfolio must be submitted to the Director of Composition at least 3 weeks before the end of the semester in which the student plans to graduate. The portfolio assembles materials that document at least one of the following:

- An ability to design and teach an effective undergraduate course or communitybased writing workshop;

- Significant work in support of teaching: for instance, as a mentor to beginning teachers, or as an assistant in the administration of the Composition Program, the Western Pennsylvania Writing Project, or the Writing Center;
- Demonstrated ability as a writing tutor in the Writing Center, in other university support services, or in afterschool programs for children.

Portfolios characteristically include teaching materials such as syllabi, assignments, exercises, and observations by peers and faculty members. Administrative documents may include reports, proposals, newsletters, Web pages, and other materials that demonstrate the work of the position, as well as statements of evaluation. Portfolios are reviewed by a committee of the composition faculty.

Notice that students have been awarded the Graduate Certificate in Composition, Literacy, Pedagogy, and Rhetoric appears on their final transcript for the MA, MFA, or PhD degree.

Notes:

MA or MFA candidates without a teaching assistantship may replace ENGLIT 2500 - SEMINAR IN PEDAGOGY with another course in composition, literacy and pedagogy and/or rhetoric. Courses that satisfy this requirement are designated each year by the Director of Composition.

Candidates are urged to consult with a member of the composition faculty while preparing a teaching portfolio.

Composition, Literacy and Pedagogy Certificate, MA

Graduate and Professional Degrees

The Department of English offers a PhD emphasizing Cultural and Critical Studies, and two Master's degrees: an MA in English and an MFA in Writing. The PhD in English, open to applicants with at least a BA or its equivalent, encourages interdisciplinary scholarship. PhD students typically base their work in Composition/Rhetoric, Film Studies, or Literature, but the department fosters interdisciplinary work that draws on more than one program. The department has a strong national reputation in composition and literacy studies, children's literature, global film studies, and cultural theory. Based in the Literature Program but including faculty members and PhD students across programs are four focal areas that provide curricular and extracurricular support for student work: Children's Literature and Childhood Studies; Genealogies of Modernity; Media and Material Practices; and Race, Politics, and Empire. The MA in English provides broad familiarity with advanced studies in Composition/Rhetoric, Film Studies, and/or Literature. The MFA in Writing allows students to specialize in poetry, fiction, or nonfiction, while also integrating courses in literature and literary history. The department also offers a graduate-level certificate in Composition, Literacy, Pedagogy and Rhetoric.

Certificate in Composition, Literacy and Pedagogy

<http://www.composition.pitt.edu/graduate/certificate>

This graduate certificate recognizes sustained, advanced study in composition, literacy, and pedagogy. It can be awarded to students who have earned the MA, MFA, or PhD degree in the department of English, and to those earning graduate degrees in other programs and departments.

To qualify for the certificate, students must successfully complete 12 to 18 credits (depending upon the level of the certificate being awarded). More information about the certificate is online at http://www.composition.pitt.edu/graduate/graduate_more.html

Composition, Literacy and Pedagogy Certificate, MFA

Graduate and Professional Degrees

The Department of English offers a PhD emphasizing Cultural and Critical Studies, and two Master's degrees: an MA in English and an MFA in Writing. The PhD in English, open to applicants with at least a BA or its equivalent, encourages interdisciplinary scholarship. PhD students typically base their work in Composition/Rhetoric, Film Studies, or Literature, but the department fosters interdisciplinary work that draws on more than one program. The department has a strong national reputation in composition and literacy studies, children's literature, global film studies, and cultural theory. Based in the Literature Program but including faculty members and PhD students across programs are four focal areas that provide curricular and extracurricular support for student work: Children's Literature and Childhood Studies; Genealogies of Modernity; Media and Material Practices; and Race, Politics, and Empire. The MA in English provides broad familiarity with advanced studies in Composition/Rhetoric, Film Studies, and/or

Literature. The MFA in Writing allows students to specialize in poetry, fiction, or nonfiction, while also integrating courses in literature and literary history. The department also offers a graduate-level certificate in Composition, Literacy, Pedagogy and Rhetoric.

Certificate in Composition, Literacy and Pedagogy

<http://www.composition.pitt.edu/graduate/certificate>

This graduate certificate recognizes sustained, advanced study in composition, literacy, and pedagogy. It can be awarded to students who have earned the MA, MFA, or PhD degree in the department of English, and to those earning graduate degrees in other programs and departments.

To qualify for the certificate, students must successfully complete 12 to 18 credits (depending upon the level of the certificate being awarded). More information about the certificate is online at http://www.composition.pitt.edu/graduate/graduate_more.html

Composition, Literacy and Pedagogy Certificate, PhD

Graduate and Professional Degrees

The Department of English offers a PhD emphasizing Cultural and Critical Studies, and two Master's degrees: an MA in English and an MFA in Writing. The PhD in English, open to applicants with at least a BA or its equivalent, encourages interdisciplinary scholarship. PhD students typically base their work in Composition/Rhetoric, Film Studies, or Literature, but the department fosters interdisciplinary work that draws on more than one program. The department has a strong national reputation in composition and literacy studies, children's literature, global film studies, and cultural theory. Based in the Literature Program but including faculty members and PhD students across programs are four focal areas that provide curricular and extracurricular support for student work: Children's Literature and Childhood Studies; Genealogies of Modernity; Media and Material Practices; and Race, Politics, and Empire. The MA in English provides broad familiarity with advanced studies in Composition/Rhetoric, Film Studies, and/or Literature. The MFA in Writing allows students to specialize in poetry, fiction, or nonfiction, while also integrating courses in literature and literary history. The department also offers a graduate-level certificate in Composition, Literacy, Pedagogy and Rhetoric.

Certificate in Composition, Literacy and Pedagogy

<http://www.composition.pitt.edu/graduate/certificate>

This graduate certificate recognizes sustained, advanced study in composition, literacy, and pedagogy. It can be awarded to students who have earned the MA, MFA, or PhD degree in the department of English, and to those earning graduate degrees in other programs and departments.

To qualify for the certificate, students must successfully complete 12 to 18 credits (depending upon the level of the certificate being awarded). More information about the certificate is online at http://www.composition.pitt.edu/graduate/graduate_more.html

Doctoral

English, PhD

Graduate and Professional Degrees

The Department of English offers a PhD emphasizing Cultural and Critical Studies, and two Master's degrees: an MA in English and an MFA in Writing. The PhD in English, open to applicants with at least a BA or its equivalent, encourages interdisciplinary scholarship. PhD students typically base their work in Composition/Rhetoric, Film Studies, or Literature, but the department fosters interdisciplinary work that draws on more than one program. The department has a strong national reputation in composition and literacy studies, children's literature, global film studies, and cultural theory. Based in the Literature Program but including faculty members and PhD students across programs are four focal areas that provide curricular and extracurricular support for student work: Children's Literature and Childhood Studies; Genealogies of Modernity; Media and Material Practices; and Race, Politics, and Empire. The MA in English provides broad familiarity with advanced studies in Composition/Rhetoric, Film Studies, and/or Literature. The MFA in Writing allows students to specialize in poetry, fiction, or nonfiction, while also integrating courses in literature and literary history. The department also offers a graduate-level certificate in Composition, Literacy, Pedagogy and Rhetoric.

Requirements for the PhD

General Requirements. The PhD requires 72 credit hours, 34 of which must be in courses at the 2000 or 3000 level, with a minimum grade point average of 3.00. Required courses are a one-credit practicum, Introduction to Graduate Study; Seminar in Pedagogy (3 credits); and a Dissertation Writing Workshop (3 credits). Additionally, three core courses in at least two programs of the department (Composition, Film, and Literature) are required. The remaining credits are earned through elective seminars, independent studies in preparation of the PhD project and dissertation research credits. PhD candidates must fulfill a language requirement by demonstrating reading knowledge of two languages other than English, advanced study in one language other than English, or beginning knowledge of a new language. PhD students must teach for at least two terms.

Earning the MA. PhD students may elect to earn an MA as they progress in the PhD program, although they are not required to do so. If they wish to earn the MA, they must successfully complete the two core courses listed above with a grade of B or better, and either complete the master's research paper (outlined above under "Requirements for the MA Degree"), or successfully pass their PhD comprehensive (project) examinations. Application for the MA must be made before the end of the student's fourth year in the PhD program.

The PhD Project. The PhD project fulfills the University requirement for a comprehensive examination prior to admission to doctoral candidacy. It is a historical and theoretical investigation of a topic that can be demonstrated by the student to be of long-term significance for critical study. The project allows students to examine and synthesize a range of interests that ordinarily lead into the more detailed inquiry of a dissertation. While we no longer insist on comprehensive knowledge of all literature written in English, the project is meant to demonstrate a breadth of knowledge as well as the ability to work on a single problem. For more specific regulations governing the PhD project, please consult the PhD website listed above.

The Dissertation. After students have passed their project examinations, they will register for independent study credits in order to write a prospectus for the dissertation. The student should choose a dissertation director and a committee at this time. Once a dissertation committee has been formed, the student will submit a formal dissertation prospectus to them for approval. When the dissertation committee has approved the prospectus, the dissertation director will submit for the student an application for admission to doctoral candidacy. Once students have had their dissertation prospectus passed and have been admitted to doctoral candidacy, they should begin the work of researching and writing the dissertation. Normally students will complete the dissertation during the fifth and sixth years in the program, the fifth through the eighth terms as a teaching fellow, or the ninth through the 12th terms in residence. Once the dissertation is completed, students must successfully defend the dissertation in order to earn the PhD.

Master's

English, MA

Graduate and Professional Degrees

The Department of English offers a PhD emphasizing Cultural and Critical Studies, and two Master's degrees: an MA in English and an MFA in Writing. The PhD in English, open to applicants with at least a BA or its equivalent, encourages interdisciplinary scholarship. PhD students typically base their work in Composition/Rhetoric, Film Studies, or Literature, but the department fosters interdisciplinary work that draws on more than one program. The department has a strong national reputation in composition and literacy studies, children's literature, global film studies, and cultural theory. Based in the Literature Program but including faculty members and PhD students across programs are four focal areas that provide curricular and extracurricular support for student work: Children's Literature and Childhood Studies; Genealogies of Modernity; Media and Material Practices; and Race, Politics, and Empire. The MA in English provides broad familiarity with advanced studies in Composition/Rhetoric, Film Studies, and/or Literature. The MFA in Writing allows students to specialize in poetry, fiction, or nonfiction, while also integrating courses in literature and literary history. The department also offers a graduate-level certificate in Composition, Literacy, Pedagogy and Rhetoric.

Requirements for the MA

General Requirements. The MA requires the completion of 30 credit hours, including a one-credit Introduction to Graduate Studies and a core course for one of the programs of the PhD (in Composition, Film, or Literature). MA students must complete a master's research paper in an elective course of their choice (see below), and must fulfill a language requirement by demonstrating reading knowledge of a language other than English or take the appropriate coursework in the study of a language other than English, undertaking the advanced study of a language, or beginning a new language.

Master's Research Paper. All MA students must also complete a master's research paper in an elective course of their choice. The master's research paper should be of professional article length, defined by the Modern Language Association (MLA) as 6,000-8,000 words not including

documentation. Students must engage in primary research beyond course readings and/or what is ordinarily required for a term paper, and the Master's Research paper must reflect that research. Students must consult an instructor, and receive the instructor's approval, no later than the end of the add/drop period if they wish to write their master's research paper for that instructor's seminar. The instructor of the seminar will be solely responsible for evaluating the paper. The master's research paper must be completed no later than the last day of the spring term of a student's second year, or fourth term in residence. In order for the master's research paper to count toward earning the MA, a student must receive a grade of B or better on the paper and as a final grade for the course in which the paper was completed.

English, MFA

Requirements for the MFA

General Requirements. The MFA requires 36 credit hours with a minimum grade point average of 3.0, plus the completion of an acceptable final manuscript. Requirements vary according to the student's area of major interest (fiction, nonfiction, or poetry), but the degree requires a combination of writing workshops, graduate-level readings courses, and English courses outside the Writing Program (in composition, literature, or film). Also required is ENGLIT 2608: Genres and Genre Theory. Further information about requirements for each MFA genre can be found in the English Department's graduate handbook. There are no language requirements for MFA students.

The Final Manuscript. The final manuscript is equivalent to the MA comprehensive examination. It consists of a book-length manuscript of the student's best work in the area of major interest - 150 pages (typed, double-spaced, standard format) for fiction and nonfiction, and 50 pages for poetry. The manuscript shall be submitted to a committee of three English faculty members-two writing graduate faculty in the student's area of major interest and one English graduate faculty member outside the writing program. The student may recommend committee members, but the writing program director has final approval.

Film and Media Studies Program

The Film and Media Studies Program is an interdisciplinary program offering courses in history, aesthetics, theory, and critical studies. The Film and Media Studies Program offers the following graduate degrees and certificates:

PhD in Film and Media Studies (in conjunction with five Associated Departments)
Terminal MA in Film and Media Studies
MA Certificate in Film and Media Studies
PhD Certificate in Film and Media Studies

Contact Information

Director of Graduate Studies: Professor Mark Lynn Anderson
E-mail: andersml@pitt.edu

Graduate Administrator: Briar Somerville
Main Office: 454 Cathedral of Learning
412-624-6564
E-mail: filmandmedia@pitt.edu

www.filmandmedia.pitt.edu

Admissions

Applicants will submit an application to the Film and Media Studies PhD program, identifying an Area of Concentration from the list of associated departments (e.g. English, French, Hispanic, History of Art and Architecture, and Slavic). The name of the Associated Department will appear on the student's transcript when the degree is granted. The application will be vetted simultaneously by Film and Media Studies and the Associated Department. Only one application fee is required.

Students who have already entered graduate programs in associated departments are welcome to apply to the Film and Media Studies PhD through the normal application process. If accepted, they are eligible to transfer a maximum of 24 credits towards the Film and Media Studies PhD degree requirements, and can petition to waive required courses that have been fulfilled, following normal University, School, and Program regulations.

Students who wish to enroll in the graduate certificate programs in Film and Media Studies (whether MA or PhD) must be matriculated for a graduate degree in a department of the Dietrich School of Arts and Sciences or in another school within the University. Students interested in pursuing a Film and Media Studies certificate at any point in their career may do so by filing the appropriate form with the Film and Media Studies Program.

Financial Assistance

Financial assistance for both the PhD and the certificates will be provided by the associated department (reflecting the student's Area of Concentration). Such aid typically takes the form of scholarships, fellowships, teaching assistantships, and/or graduate student assistantships.

Affiliated Faculty

Dietrich School of Arts and Sciences Faculty

Certificate

Film and Media Studies Doctoral Certificate

In the Spring of 2018, the Film Studies Doctoral Certificate was renamed to Film and Media Studies Doctoral Certificate. Students who were enrolled prior to the Spring 2018 term have the option to take the Film Studies doctoral certificate or change to the Film and Media Studies doctoral certificate. They will have until the end of the Fall 2017 term to choose to complete the program under the current name. Students who choose to complete their program under the current name must do so by Summer 2020 term. There are no program requirement changes.

Eligibility

Students engaged in an A&S doctoral program at Pitt can enroll in the Film and Media Studies Doctoral Certificate Program at any point in the course of their study by submitting a completed Graduate Certificate Application Form to filmandmedia@pitt.edu or 454 Cathedral of Learning. The doctoral certificate is awarded only after the completion of all degree requirements for the PhD in the student's home department, school, or program.

Course Work

Six film and Media Studies courses (18 credits) including:

Core Course:

- ENGFLM 2451 - FILM HISTORY/THEORY or
- ENGFLM 2452 - FILM HISTORY/THEORY 2

Five Electives:

Including at least two areas of study (e.g., national cinema, theory/themes, genre, etc.); at least two courses must be outside the student's home department.

Research Paper

The PhD Certificate requires a research paper be written in the field of Film and Media Studies (approx. 25-30 pp. in length) and evaluated by a Film and Media Studies faculty member who teaches one of the seminars that the student takes for his/her Certificate requirements.

The procedure for so doing is as follows:

At the beginning of a Film and Media Studies course that counts for the Certificate the student will inform the faculty member teaching the course that he/she wishes for his/her seminar to count as well as the official Research Paper for the Certificate Program. The faculty member will then require of the student something more ambitious than the normal seminar paper (see Guidelines for Certificate Research Paper below) and meet with the student during the term to advise him/her.

At the end of the course the student has two options: (1) submit the Certificate Research Paper for both the course and Certificate requirements or (2) submit a paper that satisfies the course requirements and continue to work on the expanded Certificate Research Paper over the following semester. The paper should be turned in for the Certificate requirement no later than at the end of the semester following the course in which the paper was conceived.

Guidelines for Certificate Research Paper

The research paper that qualifies for the MA and/or PhD Certificates in Film and Media Studies should go beyond the average seminar paper for a course, though (as per above) it should begin as such a seminar paper in conjunction with a member of the Film and Media Studies faculty. In essence, the research paper should aspire to be one publishable in an academic journal (though there is no requirement that it actually be published).

This paper might go beyond a standard seminar paper in any or several of the following ways: (1) have a demonstrated original point of view or approach to a given topic; (2) articulate a clear and demonstrated argument about a topic that clarifies important issues in media studies; (3) involve substantial research with primary sources; (4) forge new theoretical or historical terrain; (5) consider hitherto ignored media texts. It will be up to the Film and Media Studies instructor/advisor to determine how the paper might meet some of the above standards.

Additional Conditions

- Only two directed study courses (supervised by Film and Media faculty) can be counted toward the doctoral certificate.
- All courses must be passed with a B or higher.
- Students should notify the program director of their intention to file for graduation at the beginning of their final semester.

Film and Media Studies Master's Certificate

In the Spring of 2018, the Film Studies Master's Certificate was renamed to Film and Media Studies Master's Certificate. Students who were enrolled prior to the Spring 2018 term have the option to stay Film Studies master's certificate or change to the Film and Media Studies master's certificate. They will have until the end of the Fall 2017 term to choose to complete the program under the current name. Students who choose to complete their program under the current name must do so by Summer 2020 term. There are no program requirement changes.

Eligibility

Students engaged in an A&S master's program at Pitt can enroll in the Film and Media Studies Master's Certificate Program at any point in the course of their study by submitting a completed Graduate Certificate Application Form to filmandmedia@pitt.edu or 454 Cathedral of Learning. The master's certificate is awarded only after the completion of all degree requirements for the MA in the student's home department, school, or program.

Course Work

Four Film and Media Studies courses (12 credits) including:

Core Course:

- ENGFLM 2451 - FILM HISTORY/THEORY or
- ENGFLM 2452 - FILM HISTORY/THEORY 2

Three Electives

(one outside home department)

Research Paper

The MA Certificate requires a research paper in the field of Film and Media Studies (approx. 25-30 pp. in length) to be written for and evaluated by a Film and Media Studies faculty member who teaches one of the seminars that the student takes for his/her Certificate requirements.

The procedure is as follows:

At the beginning of a Film and Media Studies course that counts for the Certificate, the student will inform the faculty member teaching the course that he/she wishes for his/her seminar to count as the official Research Paper for the Certificate Program. The faculty member will then require something more ambitious than the normal seminar paper (see Guidelines for Certificate Research Paper below) and meet with the student during the term to advise him/her.

At the end of the course the student has two options: (1) submit the Certificate Research Paper for both the course and Certificate requirements or (2) submit a paper that satisfies the course requirements and continue to work on the expanded Certificate Research Paper over the following semester. The paper should be turned in for the Certificate requirement no later than the end of the semester following the course in which the paper was conceived.

Guidelines for Certificate Research Paper

The research paper that qualifies for the MA and/or PhD Certificates in Film and Media Studies should go beyond the average seminar paper for a course, though (as per above) it should begin as such a seminar paper in conjunction with a member of the Film Studies faculty. In essence, the research paper should aspire to be one publishable in an academic journal (though there is no requirement that it actually be published). Such a paper might go beyond a standard seminar paper in any or several of the following ways:

1. Have a demonstrated original point of view or approach to a given topic
2. Articulate a clear and demonstrated argument about a topic that clarifies important issues in media studies
3. Involve substantial research with primary sources
4. Forge new theoretical or historical terrain
5. Consider hitherto ignored media texts.

It will be up to the Film and Media Studies instructor/advisor to determine how the paper might meet some of the above standards.

Additional Conditions

- Only one directed study course (supervised by Film and Media Studies faculty) can be counted toward the master's certificate.
- All courses must be passed with a B or higher.
- Students should notify the program director of their intention to file for graduation at the beginning of their final semester.

Doctoral

Film and Media Studies, PhD

In the Spring of 2018, the Film Studies, PhD was renamed to Film and Media Studies, PhD. Students who were enrolled prior to the Spring 2018 term have the option to stay Film Studies PhD or change to the Film and Media Studies PhD. They will have until the end of the Fall 2017 term to choose to complete the program under the current name. Students who choose to complete their program under the current name must do so by Summer 2020 term. There are no program requirement changes.

Requirements for the PhD

General Requirements. The PhD requires 72 credits. All Film and Media Studies PhD students will be required to fulfill the requirements of their associated department as well as the Film and Media Studies requirements. PhD students must take the three core courses in Film and Media Studies, as well as four elective film studies courses. Language and teaching requirements are determined by associated departments, but Film and Media Studies students will be required to serve as TA/TF for at least one Film and Media class.

Comprehensive Exam. The comprehensive exam will be taken in the student's associated department. While the exam structure will differ from department to department, in all cases:

- one component (or more) of the exam will focus on Film and Media Studies
- a second component of the exam will focus on the departmental field (including its relation to cinema)
- at least one member of the exam committee in the student's associated department will be a member of the graduate faculty in Film and Media Studies.

The Dissertation. The dissertation will be completed in the associated department and must involve film and/or media studies as subject matter incorporated with the student's area of concentration (as determined by the dissertation director). The chair of the dissertation committee will be a graduate faculty member in the student's associated department who is also member of the interdisciplinary Film and Media Studies graduate faculty. The external member of the committee will be a member of the Film and Media Studies graduate faculty from outside the associated department.

Master's

Film and Media Studies, MA

In the Spring of 2018, the Film Studies, MA was renamed to Film and Media Studies, MA. Students who were enrolled prior to the Spring 2018 term have the option to stay Film Studies masters or change to the Film and Media Studies master. They will have until the end of the Fall 2017 term to choose to complete the program under the current name. Students who choose to complete their program under the current name must do so by Summer 2020 term. There are no program requirement changes.

Requirements for the MA

General Requirements: The Terminal MA in Film and Media Studies degree will be granted only to those students who have been admitted to the PhD in Film and Media Studies but are subsequently unable to finish the program. The terminal MA provides this group of students the possibility of a terminal degree that acknowledges their time of study. A total of 30 credits are needed, including the three core courses in Film and Media Studies and five electives in film studies.

Master's Research Paper: The Master's paper is required for a terminal MA in Film. This project can be based on a paper prepared for a Film and Media Studies class. It should be between 6,000-8,000 words following MLA format. One Film and Media Studies faculty member will supervise the paper (most likely the instructor for the class in which the paper was written). Two other film faculty members including the student's AOC Department faculty advisor and one other film faculty member will serve as readers. All three must approve the paper for it to fulfill the Film and Media Studies Terminal Master's paper requirement. To pass, a paper should coherently present original research on a topic or issue relevant to the contemporary study of time-based media and/or their histories, incorporating primary research in a cogent, scholarly fashion.

Department of French and Italian Languages and Literatures

The Department of French and Italian offers programs leading to the MA in Italian, a PhD in French with an MA *en route* and the PhD in French. Students may also apply for the PhD in Film Studies with a Concentration in French (granted by Film Studies). The following tracks are offered at the MA level in French and Italian:

French Language and Literature
Italian Language and Literature

The following tracks are offered at the PhD level in French:

French Language and Literature
Film Studies with a Concentration in French
French Language and Literature with a Concentration in Romance Languages and Literatures

Students enrolled in the PhD program may take courses in the following thematic clusters:

French Language and Literature: Literature and Politics

In addition, the department encourages students to participate in various interdisciplinary programs, such as African Studies; Cultural Studies; European Union Studies; Film Studies; Gender, Sexuality, and Women's Studies; Global Studies; Medieval and Renaissance Studies; and West European Studies, where students may work toward a graduate certificate in conjunction with their degree.

Contact Information

Department Chair: Lina Insana
Main Office: 1328 Cathedral of Learning
412-624-5220
Fax: 412-624-6269
E-mail: frit@pitt.edu
www.frit.pitt.edu/

Additional information concerning the department's graduate program may be requested from the University of Pittsburgh, Department of French and Italian, Assistant to the Directors of Graduate Studies, 1328 Cathedral of Learning, Pittsburgh, PA 15260. Phone: 412-624-5220. Fax: 412-624-6263. E-mail: frit@pitt.edu.

Graduate Degree Programs

Admissions

Students accepted into the graduate program must meet the following criteria:

- They should have completed an undergraduate major (or equivalent) in the language and literature they propose to study at the graduate level or substantial coursework in a related field.
- They must be able to enroll in courses that are taught entirely in French and/or Italian. This presupposes a high level of skill in speaking, reading, and writing in their major language.
- It is recommended that incoming students have a reading knowledge of German, a second Romance language, or Latin.

Applicants for admission must submit transcripts of all college-level work, three letters of recommendation, a personal statement, a sample of their writing in the target second language and scores on the verbal, quantitative, and writing assessment-analytical sections of the Graduate Record Examination. The GRE is not required for applicants to the MA program in Italian. International applicants whose first language is not English are required to submit either the TOEFL administered by the Educational Testing Service IBT (internet-based test) with a minimum score of 90 (with at least a score of 22 in all of the 4 sections of speaking, listening, reading, and writing), or the IELTS administered by the University of Cambridge, Local Examinations Syndicate with a minimum score of 7.0 (with at least 6.5 in each of its four sections). For a complete list of required items for admission, go to www.frenchanditalian.pitt.edu/graduate/about/admissions.php.

Applications for fall term admission will be accepted until April 15. For funding consideration, applications must be completed by December 7th 2017 for French and February 1 for Italian. The department admits students only for the fall term.

Financial Assistance

All applicants to the graduate program in French and Italian are considered for departmental funding. The Department of French and Italian offers teaching and research positions to graduate students at all levels. Most teaching assistantships and fellowships are renewable on a year-to-year basis for students in good academic standing. Students in the PhD who adhere to guidelines established in the departmental graduate policy statement may receive up to five years of support as a teaching fellow. Students enrolled in the PhD with MA *en route* may receive a sixth year of funding through competitive university fellowships.

Faculty

<http://www.frit.pitt.edu/people/faculty>

Doctoral

French and Italian Languages and Literatures - Film Studies - French Concentration, PhD

The PhD in Film Studies at the University of Pittsburgh is an interdisciplinary and interdepartmental degree that stresses the history, theory, and aesthetics of international cinema, video, television, and new media. While the student will earn a PhD in Film Studies (granted by the Film Studies Program), he or she will also be a full member of French, fulfilling all requirements for the PhD in French. French will appear as an Area of Concentration on the student's transcript. Thus, the student graduating with a PhD in Film Studies will be doubly qualified: in film studies as well as in French Studies.

Students must fulfill all of the requirements for the PhD in French (listed above) and the following additional requirements:

Core Courses in Film Studies (7 credits):

a two-course (6 credit) sequence taken in any order:

- ENGFLM 2451 - FILM HISTORY/THEORY
- ENGFLM 2452 - FILM HISTORY/THEORY 2
- 1 credit Film Studies Proseminar ENGFLM 2905

Note:

This will not count toward seminar credit within the French program and will be given on a Satisfactory/Unsatisfactory basis.

Electives in Film Studies (12 credits):

- Four elective Film Studies courses (in any department).

Note:

Of the total six required seminars, the student must take at least two courses taught by a member of the faculty outside of French. These courses can include the two required core courses as well as any of the four electives.

Additional Requirements

Teaching: All film PhD students will be required to serve as TA/TF for at least one film class. If the Department of French and Italian does not offer a film course or has no TA/TF positions for a film course, students will be required to teach one term of the undergraduate course Introduction to Film (or another such introductory course developed in the future) as part of his/her overall experience as a TA/TF.

Credit Requirement: Minimum of 72 hours, including the master's degree, earned from any suitable combination of formal course work, independent study, research, teaching or dissertation work as detailed elsewhere in this bulletin.

Preliminary Examination/Evaluation: The two required core courses in Film Studies (Film History/Theory I and II) will serve as the preliminary exam in Film Studies. Successful completion of these two classes with a grade of B or better will constitute passing the preliminary examination.

To maintain funding, students must also pass the required preliminary evaluation conducted by the French faculty at the end of the first year of enrollment.

Comprehensive Examination: The Comprehensive Exam must contain at least one component focusing on Film Studies, and at least one component on French Studies (including its relation to cinema).

At least one member of the exam committee will be a member of the graduate faculty in Film Studies.

Dissertation Committee: The dissertation will be completed in the Department of French and Italian and must involve film and/or media studies as subject matter incorporated with French Studies (as determined by the dissertation director).

The Chair of the dissertation committee will be a graduate faculty member in the Department of French and Italian who is also a member of the interdisciplinary Film Studies graduate faculty. The external member of the committee will be a member of the Film Studies graduate faculty from outside the Department of French and Italian. It is expected that students will have been exposed to these faculty members in taking the required Film Studies courses (taught by the interdisciplinary Film Studies faculty), elective Film Studies courses (outside the student's associated Department), and in the Proseminar (taught by the interdisciplinary faculty).

French, PhD

Requirements for the PhD

Before students may be considered for admission to candidacy for the PhD, they must complete successfully a minimum of eight 2000-level courses (24 credits) beyond the MA (a minimum of 72 credits). In addition, the candidates must present an oral *explication de texte* before a faculty committee, satisfy PhD language requirements, and pass written and oral comprehensive examinations. Upon admission to candidacy, the candidate will write and defend a doctoral dissertation. The course work must include:

FR 2710 (if not taken at the MA level) and an additional course in literary or cultural theory.

With the advisors consent students are free to take some of the additional required courses in other departments. Students in French are encouraged to pursue certification in one of the various programs offered by the University (African Studies, Cultural Studies, European Union Studies, Film Studies, Gender, Sexuality and Women's Studies, Global Studies, Medieval and Renaissance Studies, West European Studies). However, only three exterior courses may count towards the degree in French.

PhD in French with a Concentration in Romance Languages and Literatures

Candidates for this concentration will typically already hold an MA in one of the Romance languages and literatures or the equivalent, and will, upon entering the program, choose two major and one minor linguistic areas from among the four language areas (French, Italian, Portuguese, and Spanish). Portuguese may not be used as one of the major areas, and one of the major areas must be French.

Field of Study

The student will also choose a major and a minor period from among the following four periods: (1) Middle Ages; (2) Renaissance and Baroque; (3) Enlightenment, Romanticism and Realism (18th and 19th centuries to 1848); (4) Modern/Postmodern. If Spanish is one of the major linguistic areas, the student will also choose, as appropriate, between the peninsular and Latin American areas.

Course Work

The candidate will then take at least four 2000-level courses in each of the two major linguistic areas, and at least two 1000-level courses in the third area. At least one of these courses will be a 2000-level course in linguistics in one of the major fields (a course in the history of the language or in comparative Romance linguistics is recommended). At least three of these courses should involve the writing of a long (or seminar-type) paper of 20-30 pages, and one of these papers must be written in English.

Dissertation Committee

The dissertation committee should include one faculty member with expertise in each of the two major periods/areas. In all cases, the choice of linguistic areas and periods will be limited by the availability of faculty and course offerings in the concerned departments.

It is expected that candidates will teach at least one language course in each of their major linguistic areas before completing the degree.

Credit Requirement: Minimum of 72 hours, including the master's degree, earned from any suitable combination of formal course work, independent study, research, teaching or dissertation work as detailed elsewhere in this bulletin.

Preliminary Examination/Evaluation: Students in the PhD program will undergo a preliminary evaluation at the end of the first full year of residence.

Explication de Texte: Before taking their comprehensive examinations, PhD students must present an oral *explication de texte* in French before a jury comprising members of the faculty.

Comprehensive Examination: Students must take written and oral comprehensive examinations on a topic with historical coverage and an topic in the area of specialization. Candidates will work with a faculty advisor and a committee to prepare the reading list in the areas chosen. The purpose of the comprehensive examinations is to ensure that the candidate is able to develop a relevant and original approach to the study of French and Francophone literature and culture. These examinations should be passed at least eight months (two terms) before the degree is to be awarded. Students may schedule their examinations only after passing all preliminary examinations and language and other requirements.

Prospectus Presentation: As soon as the comprehensive examinations have been passed, students and their advisor should agree on a dissertation committee including at least three members of the department (including the director) and one member chosen from another department in an area of expertise relevant to the dissertation topic. Usually during the third year, but in no case later than the first term of their fourth year, students must submit a prospectus to the director for circulation among the committee members. The scope, size, organization, and format of the prospectus are specified in a separate departmental document, which PhD students should receive or request as soon as they pass their comprehensive examinations.

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

Joint Degree

French, MA/PhD

Requirements for PhD with MA en route

This degree is intended for students who wish to pursue the Doctor of Philosophy (PhD) degree in French Language and Literature but who do not already hold an MA in this field or in a closely-related discipline. Students must first successfully complete the requirements for the MA in French Language and Literature listed below, normally within their first two years of full-time enrollment. Students doing the PhD with the MA en route will be awarded an MA degree at the completion of these requirements:

- A minimum of ten one-term courses is required, for a total of 30 credit hours. These courses will include FR 2710 - INTRODUCTION TO LITERARY AND CULTURAL THEORY, FR 2903 - MA RESEARCH PAPER DIRECTED STUDY, and FR 2910 - COMPREHENSIVE EXAMINATION MA. Students holding Teaching Assistantships are also required to take FR 2970 - TEACHING OF FRENCH, though this does not count toward the required ten.
- Comprehensive examination: the comprehensive examination is a written examination and is given in two sessions on separate days during the fourth semester of the MA en route program. An oral interview is held after completion of the written exams to discuss the results of the exams and the MA research paper.
- Research Paper: each candidate must write a Master's Research Paper of professional quality and length.
- Second language: candidates must demonstrate a reading knowledge of a second Romance Language, or German, or Latin.

To ensure the acquisition of a broad knowledge of French literature and culture, candidates must take at least one course or one exam in each field (Middle Ages, Renaissance, 17th, 18th, 19th, and 20th centuries and African and Caribbean literatures) before they reach candidacy.

Before students may be considered for admission to candidacy for the PhD, they must successfully complete a minimum of five 2000-level courses (15 credits) beyond the MA. In addition, the candidate must present an oral *explication de texte* before a faculty committee, and pass written and oral comprehensive examinations. The PhD language requirement and *explication de texte* will normally be satisfied at the MA level. The eight courses must include:

1. FR 2710 (if not taken at the MA level) and an additional course in literary or cultural theory.
2. With the adviser's consent, students are free to take some of the additional required courses in other departments. Students in French are encouraged to pursue certification in one of the various programs offered by the University (African Studies, Cultural Studies, European Union Studies, Film Studies, Gender, Sexuality, and Women's Studies, Global Studies, Medieval and Renaissance Studies, West European Studies). However, only three exterior courses may count towards the degree in French.

Upon admission to candidacy, the candidate will write and defend a doctoral dissertation.

Master's

Italian, MA

Requirements for the MA in Italian

A minimum of ten one-term courses is required. These courses will include ITAL 2710 - INTRODUCTION TO LITERARY AND CULTURAL THEORY - ITAL 2903 - MA RESEARCH PAPER DIRECTED STUDY, and ITAL 2910 - COMPREHENSIVE EXAMINATION MA. Students holding Teaching Assistantships are also required to take ITAL 2970 - TEACHING OF ITALIAN, though this does not count toward the required ten. Candidates must also fulfill the following additional requirements:

- Comprehensive Examination
 - The MA comprehensive examination is a written examination and is given in three sessions on separate days during the second year of the MA program; an oral interview is held after completion of the exams to discuss the comprehensive exam results, as well as the student's research paper.
- Research Paper
 - Each candidate must write a Master's Research Paper (or tesina) of professional article quality and length (25 pp min.). Students must conduct research beyond the scope of any single graduate term paper, but are encouraged to develop and formulate their topic in the context of one particular seminar (or two, if seminars are thematically or otherwise related). Students will work closely with the faculty member whose field is most relevant to the chosen topic to identify appropriate areas for expansion, additional texts or case studies, and relevant methodologies. The paper must be written in Italian.
- Second Language Candidates must demonstrate a reading knowledge of Latin or German or a Romance language other than Italian. Other languages will be considered upon petition.

Gender, Sexuality, and Women's Studies Program

The Gender, Sexuality, and Women's Studies Program offers graduate certificates in Gender, Sexuality, and Women's Studies at both the master's and doctoral levels. The interdisciplinary curriculum draws upon faculty expertise in the arts, humanities, and social sciences; and in business, law, library and information science, nursing, medicine, public and international affairs, public health, and social work. The program provides opportunities for students who wish to focus their study on women, gender, and sexuality or who wish to add these areas as a subspecialty.

Contact Information

Program Director: Professor Nancy Glazener
E-mail: glazener@pitt.edu

Graduate Administrator: Briar Somerville
E-mail: kbs47@pitt.edu

Main Office: 401 Cathedral of Learning

Phone: 412-624-7232
E-mail: gsws@pitt.edu
www.gsws.pitt.edu

Admissions

Interested students must make an appointment with the Director of the Gender, Sexuality, and Women's Studies program for advising.

Financial Assistance

No initial financial aid is available through the GSWS Program. Graduate students who enroll in the program may apply for financial aid through a home department. Each year, the program hires 4-6 advanced graduate students as instructors or lecturers, and offers research grants for work on gender and sexuality.

Faculty

Dietrich School of Arts and Sciences Faculty

Certificate

Gender, Sexuality, and Women's Studies Doctoral Certificate

Requirements for Doctoral Certificate

The doctoral-level certificate requires 18 credits as detailed below:

- GSWS 2252 - THEORIES OF GENDER AND SEXUALITY
- At least two other courses must be outside the candidate's home department, including at least one course with a GSWS course number
- At least three courses in one field
- No more than 1 courses may be directed study

Note:

All candidates for graduate certificates must maintain a 3.00 average in courses for the certificate and submit a research paper to be read by at least one faculty member affiliated with the program. A short concept statement is also required. Students should notify the program director of their intention to graduate at the beginning of their final term. Students not in the Dietrich School must apply to graduate in A&S Graduate Studies.

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

Requirements for Master's-Level Certificate

The master's-level certificate requires 12 credits as detailed below:

- GSWS 2252 - THEORIES OF GENDER AND SEXUALITY
- At least two courses in one field
- At least one other course outside the student's home department
- No more than 1 course may be directed study

Note:

All courses for the certificate must be passed with at least a B grade.

Candidates for graduate certificates must submit a research paper to be read by at least one faculty member affiliated with the program. A short concept statement is also required. Students should notify the program director of their intention to graduate at the beginning of their final term. Students not in the Dietrich School must apply to graduate in A&S Graduate Studies.

Department of Geology and Environmental Science

The department offers programs that lead to the MS or PhD in Geology and Environmental Science and a Professional MS in Geographical Information Systems and Remote Sensing.. The principal objective of the graduate programs is to provide a broad and strong foundation upon which students may base careers. The PhD program is designed to educate scientists for basic or applied research and teaching. Graduate research may involve specialization in geology, geochemistry, geophysics, planetary science, and environmental science.

Contact Information

Department Chair: Mark Abbott
Main Office: 200 Space Research and Coordination Center
412-624-8780
Fax: 412-624-3914
E-mail: gpsgrad@pitt.edu
www.geology.pitt.edu

Research and Facilities

Please visit www.geology.pitt.edu to find out more about research and analytical facilities available in the Department of Geology and Environmental Science

Admissions

Prospective graduate students must meet Dietrich School of Arts and Sciences requirements for entrance into graduate programs.

Financial Assistance

Financial assistance for graduate students is provided in the form of teaching and research appointments, fellowships, tuition scholarships, and loans.

Doctoral

Geology and Environmental Sciences, PhD

Students in MS and PhD programs have opportunities to participate in research programs encompassing many fields of current interest in geology, geochemistry, volcanology, geographic information systems (GIS), remote sensing, planetary geology, paleoclimatology, hydrology, and environmental science. In general, the research is interdisciplinary, collaborative, and employs techniques such as traditional field-based studies, advanced geochemical analytical work, sophisticated remote sensing and GIS analysis, and advanced computer modeling of natural systems. Most students enter the program with an undergraduate degree in the geosciences; however, students with degrees in other natural sciences or in engineering may be admitted in some cases. The department also offers a professional Master's degree in GIS/Remote Sensing. This non-thesis MS is patterned after the MBA degree and is designed to focus on the advanced concepts of GIS and remote sensing in order to give the student a competitive edge in the job market.

Requirements for the PhD

The minimum course requirement for the PhD degree is seventy-two (72) credits. A minimum of thirty-six (36) credits must be from formal courses and at least eighteen (18) of the credits must be taken within the Department of Geology and Environmental Science. Up to twenty-four (24) credits may be accepted from a Master of Science degree or graduate study toward the PhD from another institution. An initial evaluation, designed to explore the student's basic knowledge of the geological sciences and related fields, is required of all PhD degree candidates during their first term of residence.

A graduate student seeking the PhD degree must complete a Comprehensive Examination. The comprehensive examination should take place no later than the Fall term of the student's third year of enrollment, although students are encouraged to complete the examination as soon as possible following completion of most required coursework and after beginning dissertation research. Following successful completion of the Comprehensive Examination, each PhD student must prepare a written dissertation proposal for presentation to the Dissertation Committee (consisting of at least four department members and one outside member) at a formal Dissertation Overview meeting. During this meeting, the Dissertation Committee will critique the research plan and proposed methodology and approve or reject the dissertation topic.

Each PhD candidate must prepare a dissertation demonstrating successful completion of the research project as well as competency in the methods and techniques of scientific investigation in the field of her/his area of specialization. Each student must also submit at least one manuscript to a peer-review journal prior to graduation and present research results at both a departmental colloquium and at a meeting of a national or international scientific organization. The candidate must formally defend her/his submitted dissertation in a public meeting before the full Dissertation Committee. Complete descriptions of the most recent degree requirements are available at www.geology.pitt.edu.

Master's

Geographical Information Systems & Remote Sensing, MS

Curriculum & Course Information:

General Information: The GIS/RS Professional-M.S. program in the Department of Geology & Planetary Science is a multidisciplinary, multi-departmental, non-research degree. Notionally, designed to be completed in two academic years (plus one summer), the program length can be changed to slightly shorter or longer depending on the student's work limitations. The required courses are centered in the Geology and Planetary Science Department and focus on GIS and RS core proficiencies. Students are also required to take at least one course in the Schools of Business, Law, and Information Sciences. A large degree of flexibility is designed into the 41 credit program so that the student can tailor his/her coursework to fit specific future career goals, personal interests, and time constraints of work/family life.

First Semester:

Skill Sets: GIS and Remote Sensing fundamental principles & software use; communication proficiency; exposure to geospatial professionals

- GEOL 2449 - GIS, GPS, AND COMPUTER METHODS
- GEOL 2461 - ADVANCE REMOTE SENSING
- COMMRC 1102: Organizational Communication
- GEOL 2015 - GEOLOGY COLLOQUIUM or

Total Credits: 10

Second Semester:

Skill Sets: advanced GIS/RS proficiency; introduction to computer programming

- GEOL 2446 - ADVANCED GEOGRAPHICAL INFORMATION SYSTEM
- GEOL 3946 - PYTHON SCRIPTING Python, Advanced Model Builder
- GEOL 2460 - APPLIED REMOTE SENSING AND GPS TECHNIQUES *

Total Credits: 9

Summer Semester:

Skill Sets: work experience utilizing geospatial analysis tools; compilation of digital dossier; oral/written presentation experience

- GEOL 3902 - DIRECTED STUDY

Total Credits: 4

Third Semester:

Skill Sets: statistical data analysis; methodology of information science; introduction to business administration

- INFORMATION SCIENCE ELECTIVE: Courses **
- BUSINESS ELECTIVE: EMBA Courses
- FOCUSED ELECTIVE #1: Detailed Options

Total Credits: 9

Fourth Semester:

Skill Sets: advanced GIS/RS proficiency; awareness of comparative law; personalized elective expertise; data mining & database management

- LAW ELECTIVE: Detailed Options
- STATISTICS ELECTIVE: Courses **
- FOCUSED ELECTIVE #2: Detailed Options

Total Credits: 9

Note:

** if not offered, student may substitute a Focused Elective Course this semester and take GEOL 2460 in the fourth semester in place of the FOCUSED ELECTIVE #2. See possible options.*

*** an appropriate equivalent course may be substituted depending on the career goals of the student. See possible options.*

Geology and Environmental Sciences, MS

Students in MS and PhD programs have opportunities to participate in research programs encompassing many fields of current interest in geology, geochemistry, volcanology, geographic information systems (GIS), remote sensing, planetary geology, paleoclimatology, hydrology, and environmental science. In general, the research is interdisciplinary, collaborative, and employs techniques such as traditional field-based studies, advanced geochemical analytical work, sophisticated remote sensing and GIS analysis, and advanced computer modeling of natural systems. Most students enter the program with an undergraduate degree in the geosciences; however, students with degrees in other natural sciences or in engineering may be admitted in some cases. The department also offers a professional Master's degree in GIS/Remote Sensing. This non-thesis MS is patterned after the MBA degree and is designed to focus on the advanced concepts of GIS and remote sensing in order to give the student a competitive edge in the job market.

Requirements for the Master's Degree

The minimum course requirement for the MS degree is thirty (30) credits beyond the baccalaureate. A minimum of eighteen (18) credits must be from formal courses. At least twelve (12) of these credits must be numbered 2000 or higher and must be taken within the Department of Geology and Environmental Science. An initial evaluation, designed to explore the student's basic knowledge of the geological sciences and related fields, is required of all MS degree candidates during their first term of residence. Each MS candidate prepares a thesis demonstrating successful completion of the research project as well as competency in the methods and techniques of scientific investigation in the field of her/his area of specialization. The thesis should serve as a source of publishable material, and all MS students must present research results at a meeting of a national or international scientific organization. Each MS student publicly defends her/his thesis before a Thesis Committee consisting of at least three faculty members from the Department of Geology and Environmental Science. Complete descriptions of the most recent degree requirements are available at www.geology.pitt.edu.

Department of German

**German is currently not accepting graduate applications.*

The Department of German offers a PhD program that includes the MA degree as a required step toward the PhD. The program trains future scholars in German Studies and prepares them to be competitive on the national job market. It encourages interdisciplinary work and students are required to pursue a certificate or related area in programs such as Cultural Studies, Film Studies, Women Studies, European Studies, or in another related area.

Contact Information

Director of Graduate Studies: Randall Halle
412-648-2614
Fax: 412-624-6318
E-mail: rhalle@pitt.edu
<http://www.german.pitt.edu/>

Additional information concerning the department's graduate program may be obtained from the University of Pittsburgh, Department of German, 1518 Cathedral of Learning, Pittsburgh, PA 15260. Phone: 412-624-5909. E-mail: grmndept@pitt.edu.

For more on each of the following programs, visit <http://www.german.pitt.edu/graduate/>.

Admissions

All applicants apply for the PhD program. Applicants should have a BA or MA in German or a related field. Students with training in related fields will be considered for full graduate status if their background in German language and culture is sufficient to succeed in graduate-level courses. For admission to the PhD, students completing their MA at the University of Pittsburgh must pass a preliminary evaluation in their final semester of study. For students entering with an MA from another institution, this evaluation takes place by the end of their first year of study at the University of Pittsburgh.

Applications should include:

- an Application Form;
- a Statement of Intent (Please describe your intellectual background, research interests, and academic goals);
- 3 Letters of Recommendation;
- Official Transcripts from all undergraduate and graduate study (non-US degrees must be accompanied by a notarized English translation);
- an audio recording (Non-native speakers should supply a recording in which they 1) speak freely about a topic and 2) read formally a passage from a literary or academic text);
- a Writing Sample (a research paper or selection from a thesis of about 20 pages that offers an example of the applicant's ability to conduct research and provide evidence of strong writing skills. It may be in either English or German.);
- TOEFL scores (Required of Foreign Students: minimum score of 550 [paper-based test] / 80 [internet-based test]) or the IELTS administered by the University of Cambridge, Local Examinations Syndicate with a minimum score of 6.5 (taking the academic and reading modules); and
- an Application fee of \$50 (Please contact the Director of Graduate Studies if this represents a financial hardship).

Applicants are required to submit all materials for fall term admissions by January 2. Students who would like to be considered for non-teaching fellowships are encouraged to submit their applications before the New Year. Applications submitted after the deadline will be considered only if space is available. Applications are submitted online at app.applyyourself.com/?id=up-as.

Financial Assistance

Students with a high proficiency in oral German are eligible for teaching assistantships or teaching fellowships for up to five years (three years when entering with the MA). These assistantships/fellowships consist of full tuition scholarships and living expense stipends. Aid is guaranteed for the duration of the assistantship/fellowship provided the student remains in good academic standing and makes satisfactory progress toward the degree. Students may also apply for graduate tuition scholarships, Andrew Mellon Predoctoral Fellowships, the Lillian B. Lawler Scholarship/Fellowship, the Provost's Humanities Fellowships, the Fellowships in Cultural Studies, and Exchange Fellowships with the Universities of Augsburg and Bonn. A number of these fellowships are available for first-year graduate students. Interested candidates should submit their completed applications to the department by the beginning of January.

Faculty

<http://www.german.pitt.edu/people/>

Doctoral

German, PhD

Requirements for the PhD

The requirements for the PhD consist of: (1) at least 72 credits of course work, (2) a language requirement, (3) the PhD comprehensive examination, (4) the dissertation prospectus, (5) the dissertation, and (6) the completion of a certificate program or approved work in a related area. Specific details are:

- minimum 72 credits of course work, broken down as follows:
 - 30 credits from the MA
 - at least 12 seminars total (for students entering Pitt with an MA from another institution) / at least 18 seminars total (for students entering Pitt with a BA-seminars taken at the MA level count towards this requirement)
 - of these seminars, at least 6 seminars (for students with an MA from another institution) / at least 12 seminars (for students entering Pitt with a BA) should be taken in the German department.
 - at least 6 of the above seminars should be in certificate-related courses (see below).
 - at least 2/3 of the seminars taken must be taken for a letter grade;
- Language requirement: High level of oral proficiency in German (superior on OPI scale, 3 on ILR scale); reading knowledge of another language;

- Comprehensive Examination: A written examination, evaluated by a committee of 3 faculty members. Demonstrates the student's foundation in German culture from the Enlightenment to the present, as well as the student's ability to situate a specific focus within this larger context. The PhD comprehensive examination needs to be completed with an average grade of A-. The examination may be retaken only one time and needs to be retaken by the next academic term. Before completing the PhD comprehensive examination, students have to submit to their examination committee two research/seminar papers that demonstrate their scholarly potential;
- Dissertation Prospectus: 10-15 pages, submitted in the semester following the comprehensive examination. After approval by the doctoral committee, students are admitted to PhD candidacy, after which the student meets annually with the dissertation committee;
- Dissertation Defense: The dissertation must be approved by the dissertation committee after a public oral defense; and
- Completion of a certificate program or work in a related area (at least 18 credits). Approved certificates include Cultural Studies, Film Studies, and Women Studies, and West European Studies, and other related areas can be defined by the student in consultation with the Director of Graduate Studies (for example, a recently developed area of concentration is Philosophy and Literature).

Master's

German, MA

Requirements for the Master's Degree

The Master of Arts normally takes two years of study. The 30 credits include nine graduate seminars, at least six taken within the department, and a 3 credit MA project (between 35 and 50 pages long). All teaching assistants/fellows must successfully pass German 2970 as a basis for continuing financial support as a teaching assistant or fellow. In addition, all entering students must enroll in GER 2110 - INTRODUCTION TO LITERARY AND CULTURAL THEORY.

In addition to the satisfactory completion of courses, students must demonstrate a high level of proficiency in writing both in German and English by submitting for departmental approval at least one paper written in German and one paper written in English by the time of the preliminary evaluation. They must also demonstrate reading proficiency in an additional language by the end of their last term of study.

Department of Hispanic Languages and Literatures

The Department of Hispanic Languages and Literatures offers a five-year Doctor of Philosophy (PhD) with an en route Master of Arts (MA) sequence. Unlike other Spanish departments, we concentrate on Latin American Literature and Culture, including Brazil. Within that broader context, we also offer an interdisciplinary and interdepartmental PhD in film studies, and field specializations in Peninsular, Brazilian, and cultural studies.

Candidates for both the MA/PhD can also earn certificates in Latin American Studies, Cultural Studies, Film Studies, Global Studies and Gender, Sexuality, and Women Studies,

Contact Information

Department Chair: Jerome Branche
 Main Office: 1309 Cathedral of Learning
 412-624-5468
 Fax: 412-624-8505
 E-mail: Branch@pitt.edu
 www.hispanic.pitt.edu

For additional information regarding the department's graduate program, or responses to questions that are not answered elsewhere, you can write to the University of Pittsburgh, Department of Hispanic Languages and Literatures, Graduate Office, 1309 Cathedral of Learning, Pittsburgh, PA 15260. You can also call 412-624-2055, or e-mail Director of Graduate Studies Prof. Gonzalo Lamana.

Admissions

Applicants must submit an online application, application fee of \$50, transcripts of all college-level work (along with notarized translations into English, if admitted), three letters of recommendation, a statement of academic goals, and a 15-30-page writing sample (in English, Spanish, or Portuguese; if submitting the sample in English, please also send us a short sample in Spanish).

Applicants whose native language is not English and who have not already completed a degree program in a U.S. college or university are required to submit either the TOEFL (administered by the Educational Testing Service) with a minimum score of 90 (with a minimum score of 22 in each section) or the IELTS (administered by Cambridge University, Local Examinations Syndicate) with a minimum score of 6.5.

Completed applications for admission in the fall term must be received no later than January 18.

Financial Assistance

The department awards two types of financial assistance to incoming students: teaching assistantships (to applicants with no previous graduate studies) or teaching fellowships (to applicants who hold a MA degree), which involve teaching duties, and A&S fellowships, which do not. While any student is eligible to apply for financial assistance, departmental awards of financial aid are granted on a competitive basis to those students demonstrating the strongest academic record.

Students entering with a BA are eligible for financial aid in some combination of forms (teaching assistantship/teaching fellowship, A&S fellowship, Mellon Predoctoral Fellowship, etc.) for two years for the en route MA and three additional years for the PhD, for a maximum of five years of support. Students entering the PhD program with an MA from elsewhere are eligible for up to five years of financial aid, under certain conditions.

Duration of the Program

It is expected that the MA/PhD program will take five years to complete. As of Fall 2005, incoming students who are offered financial assistance in the form of teaching assistantships, teaching fellowships or non-teaching University fellowships are, assuming that satisfactory academic progress is maintained, entitled to five (5) years of support, whether or not they already have an MA degree when they enter our graduate program. However, students with an MA from another university can elect to receive only four (4) years of funding and will be entitled to transfer up to 24 credits upon successfully passing the MA Comprehensive/PhD Preliminary examinations during their fourth semester. The decision to do so must be submitted to the departmental graduate office in writing by the end of the first week of their second term in graduate program (normally first week of January).

Faculty

<http://www.hispanic.pitt.edu/people/faculty>

Joint Degree

Hispanic Languages and Literatures, MA/PhD

Requirements for the PhD with En Route MA

The en route MA requires a minimum of 30 credits; 24 credits must be in substantive courses in the department, meeting major field and minor field requirements; the remaining 6 credits can consist of any combination of courses taken outside of the department (including transfer credits), a maximum of 1 Independent Reading and 1 Directed Study course.

Teaching assistants and teaching fellows new to the department are required to take a course in teaching methodology and language learning to assist them in teaching, unless a waiver is obtained.

In addition to the minimum of 30 credits, during the fourth year of full-time study (or its equivalent):

- Students must complete a long paper in the department, which is graded and serves as one part of the MA Comprehensive/PhD Preliminary examination.
- Students must also sit for the two-day MA Comprehensive/PhD Preliminary examination

Including the MA-level work, a minimum of 72 credit hours must be attained for the PhD. Students who have received the en route MA and are working toward the PhD in the department must take a total of 48 credits of substantive courses in the department. The remaining 24 credits may consist of courses taken outside of the department, credits transferred from other institutions, directed study, or PhD comprehensive exam/overview. Up to a maximum of 12 credits of PhD dissertation research credits are permitted to count toward these 24 credits.

Students who enter the department with an MA in Spanish or a related field from another institution must complete 30 credits of substantive course work out of the 72 total credits required for the PhD. The remaining 42 credits can be distributed among credits transferred from the institution from which they earned their MA's (normally, up to 24 are allowed, in exchange for the fifth year of funding), courses taken in other departments at the University of Pittsburgh, directed study and PhD comprehensive exam/overview credits, and up to 12 credits of PhD dissertation research.

PhD Preliminary Exam: Students who enter the department with an MA in Spanish from another institution must pass the two-day PhD Preliminary examination in the fourth term of graduate study in the department, after which they can petition for the transfer of credits and continue on for the PhD.

Language Requirement: Candidates for the PhD degree must give evidence of their ability to read a third language (Portuguese, French, Italian, etc.) prior to presenting their dissertation proposal. The Department strongly encourages the learning of the Portuguese language.

PhD Comprehensive Exam/Dissertation Overview: After completing 60 credits of coursework and fulfilling the Portuguese requirement, students take the PhD Comprehensive exam made up of questions based on their proposal for doctoral research, which must also be defended before their proposed doctoral committee. Upon successful completion of this two-step exam process, the student is formally nominated to candidacy for the doctoral degree.

Dissertation Defense: The final oral examination in defense of the doctoral dissertation is conducted by the doctoral committee and is open to the University community. The dissertation must be presented in English unless prior permission is obtained for it to be presented in a language other than English.

Department of History

The Department of History, which offers the degree Doctor of Philosophy (PhD), is committed to training area specialists with a global perspective. Our students learn how to research, interpret and teach the histories and historiographies of particular places from comparative, cross-cultural, transnational and global perspectives. The graduate program provides training in historical research and teaching to students who wish to find careers in colleges, universities, and other settings where the skills of the historian can be used. To advance this purpose, the department encourages a climate of intellectual inquiry and active research that embraces graduate students and faculty members alike. The hallmark of the program is the high measure of independence and flexibility it allows students in shaping a curriculum that meets their needs, within the limits of faculty expertise and available resources.

Contact Information

Department Chair: Lara Putnam
Main Office: 3702 Wesley W. Posvar Hall
412-648-7451
Fax: 412-648-9074

Director of Graduate Studies: Michel Gobat (mgobat@pitt.edu)
Phone: 412-648-7467
Graduate Administrator: Patty Landon (pal14@pitt.edu)
Phone: 412-648-7450
www.history.pitt.edu

Admissions

Admission to the graduate program in history is highly competitive. Candidates must present a career statement, a sample of their written work on a historical topic, undergraduate and/or graduate transcripts and two letters of recommendation. Test of English as Foreign Language scores are required of all applicants whose primary language is not English. Students interested in the graduate program should contact the graduate

administrator at the University of Pittsburgh, Department of History, Pittsburgh, PA 15260; by e-mail: pall4@pitt.edu Patty Landon; or apply online at app.applyyourself.com/?id=up-as.

Financial Assistance

The department offers funding to most of its graduate students through a mix of teaching assistantships, teaching fellowships, departmental fellowships, and research assistantships. If students are admitted to program with funding, the University waives tuition fees and offers health benefits or provisions for benefits. While in the program, students have the opportunity to apply for a variety of non-teaching fellowships provided by the University of Pittsburgh or national and international organizations. In addition to the teaching and non-teaching fellowships, the History Department offers summer research funding to graduate students on a competitive basis, which allows students to conduct archival research or language training within the US or abroad. The funding the University of Pittsburgh provides to graduate students is competitive and covers the costs of a graduate student living in Pittsburgh.

Students specializing in East Asian, Latin American, Russian and East European, and Western European history are also eligible to apply for fellowships and research grants offered by the University of Pittsburgh's University Center for International Studies (UCIS).

Degree Requirements

The minimal requirements for the degrees established by the Graduate Faculty of the University and by Dietrich School of Arts & Sciences A&S Graduate Studies, as described elsewhere in this bulletin, should be read in conjunction with the specific departmental requirements for these degrees in the following sections.

Doctoral

History, PhD

The graduate program in history is committed to training area specialists with a global perspective. Our students learn how to research, interpret and teach the histories and historiographies of particular places from comparative, cross-cultural, transnational and global perspectives. Close cooperation with the interdisciplinary programs in Latin American Studies, Russian and East European Studies, West European Studies, and Asian Studies, coordinated under the University Center for International Studies, strengthen the international orientation of the program, with graduate students from Europe, Asia, and Latin America joining American students pursuing a PhD degrees.

Requirements for the PhD

Prerequisite for admission is a Master of Arts in History or equivalent preparation (plus approval, for those previously enrolled in the department). Students entering the program with an MA from another institution must pass a preliminary examination at the end of the first year in the program. They must complete 9 credits in order to sit for the one-hour oral examination.

The coursework and comprehensive exam portion of the PhD program should take no more than one year beyond the MA. Required doctoral coursework includes successful completion post-MA of two graduate courses in History and the completion of the department pedagogy program.

Breadth Requirement: Ph.D. students entering the program with a B.A. must fulfill the Breadth Requirement by the end of their fifth year. This requirement is intended to help students think more broadly about their dissertation and intellectual trajectory as well as future career paths. It may be fulfilled as follows: a) a second foreign language; b) two skill-based courses agreed-upon with their advisor including but not limited to statistics, digital humanities, oral history/ethnography, and computer programming; c) two courses agreed-upon with their advisor that will permit students to enhance their knowledge in an interdisciplinary area including Gender, Sexuality & Women's Studies, Cultural Studies, or an area of the student's design; or d) in consultation with the DGS and their advisor, 6 credit hours or the equivalent accrued from internships and/or courses designed to enhance students' ability to utilize their professional skills in diverse career environments.

Comprehensive Exam:

For students entering with a BA, the comprehensive exam needs to take place by February 1 of their third year. At the end of their first year, students must meet with their advisor and the DGS to: a) constitute a comps committee consisting of three members, all of whom need to have Graduate

Faculty status; and b) identify any coursework completed in their first year that could be included in the comps portfolio. At the end of their second year, students and their full comps committee will agree upon the contents of the comps portfolio that will form the basis of the oral exam.

Students will work with faculty members who are members of the Graduate Faculty to develop expertise in: a regional field (Asia, Europe, Latin America, or United States); and a transregional or global field defined by the student in consultation with their advisor(s). Students may fulfill this requirement in one of the following ways: a) a field in world or global history; b) a field in a transregional history such as Atlantic history or Eurasian history; or c) a thematic field with transregional scope such as gender or empire.

The portfolio will consist of: a) two to three historiographic essays in the regional field as well as a bibliography of 40-50 books; b) two to three historiographic essays in the transregional or global field as well as a bibliography of 30-40 books; and c) a teachable undergraduate course proposal that demonstrates students' ability to translate their knowledge of the historiography and recent research trends in a given field into the composition of an undergraduate course.

Students complete the comprehensive exam through an oral examination, which will take place no later than February 1 of their third year. The oral examination will be a maximum of two hours in duration, and should focus on the portfolio. Students should be able to discuss the essays, the bibliographies, and the course proposal.

Dissertation overview: After having selected a suitable dissertation topic in consultation with their advisor, students will present a written overview to their Ph.D. committee describing the purpose, scope, and method of the proposed study and the sources upon which it will be based. A PhD committee is composed of at least four members, all of whom must be members of the Graduate Faculty. There must be three graduate faculty members from the candidate's department and at least one graduate faculty member external to the candidate's department. With the acceptance of this prospectus at the overview examination and the approval of the assistant dean of graduate studies, the student is formally admitted to candidacy for the PhD.

Dissertation defense: The doctoral thesis, directed and evaluated by the student's Ph.D. committee, is expected to demonstrate the student's capacity to carry out independent, original research. Only if the dissertation is judged to demonstrate such competence, after formal defense in a final oral examination, does the department recommend the awarding of a degree.

For further details regarding the graduate program in history and the specific exam requirements, please see the latest version of the Handbook of the Graduate Program in History, which can be downloaded from the History Department Website.

Master's

History, MA

The graduate program in history is committed to training area specialists with a global perspective. Our students learn how to research, interpret and teach the histories and historiographies of particular places from comparative, cross-cultural, transnational and global perspectives. Close cooperation with the interdisciplinary programs in Latin American Studies, Russian and East European Studies, West European Studies, and Asian Studies, coordinated under the University Center for International Studies, strengthen the international orientation of the program, with graduate students from Europe, Asia, and Latin America joining American students pursuing a PhD degrees.

Requirements for the Master's Degree

While the History Department does not offer a terminal Master's Degree, for students admitted with funding, graduate students get the Master's Degree while working towards their PhD. The requirements for being awarded the Master of Arts in history should be met within two years. 30 credits are required for the degree. Of these 30 credits, only 6 may be in Arts and Sciences courses numbered 1002 through 1999 series- these are undergraduate courses-subject to the approval of the student's advisor and the Director of Graduate Studies, but students are encouraged to take as much of their work as possible at the graduate seminar level. Students must take six credits in seminars or directed studies in transregional or global fields (the six credits may be in different transregional/global fields); and six credits in seminars or directed studies in a regional field (Asia, Europe, Latin America, or the United States). In addition, students must take three credits of graduate-level coursework outside of the discipline of history.

First Research Tool: The Master's degree requires the completion of the first research tool, which consists of reading proficiency in one foreign language. Students select, in consultation with their advisor, the language most useful to their specialization. Students are urged to complete language preparation before entering graduate school, not only to lighten their workload, but also because some seminars require the use of a second language.

Research paper: To complete their MA degree, students write a research paper of approximately 10,000 words, which is kept as part of their permanent record and is considered equivalent to a master's thesis. This paper, normally developed must be based on original research and should be potentially publishable.

MA committee: In consultation with their advisor, students create a three-person committee for their M.A. examination, usually chaired by their advisor. At least two of the committee members must be members of the Graduate Faculty. Before students can sit for their M.A. exam, the chair of the M.A. committee must approve the final version of the research paper.

MA examination and admission to the Ph.D. program: The M.A. examination will be a one-hour oral examination. Questions will be based on the M.A. research paper. At the conclusion of the examination, the committee will inform the student of its decision as to whether or not it recommends that the student be awarded the M.A. degree. If the student has expressed a desire to enter the Ph.D. program, the committee will also make a determination as to whether or not it recommends admission into the Ph.D. program. At the earliest opportunity, the M.A. committee's evaluation of the examination must be reported to the department, which must approve admission into the Ph.D. program.

Department of History and Philosophy of Science

The graduate program in the history and philosophy of science offers MA and PhD degrees through a combination of coursework and dissertation research. The department also offers an area of concentration in classics, philosophy and ancient science. The department supports scholarship in the history and philosophy of general science and in history and philosophy of particular sciences. It has special strengths in the history and philosophy of physical, biological, social, cognitive and neurosciences, and in ancient and 17th-century science. See <http://www.hps.pitt.edu/graduate/areas.php>.

Contact Information

Department Chair: Michael Dietrich
Main Office: 1101 Cathedral of Learning
412-624-5896
Fax: 412-624-6825
E-mail: mdietrich@pitt.edu
www.hps.pitt.edu

Admissions

Applicants for admission to the graduate program in history and philosophy of science will be expected to have a suitable undergraduate degree and to have some knowledge of the natural or social sciences. Applications are online. The deadline for completed applications is January 10. While the department awards both PhD and MA degrees, virtually all students are admitted into the PhD program.

Financial Assistance

Students in the PhD program are supported by fellowships or teaching assistantships/fellowships during their first five (5) years. The rates are set annually by the University. The department does not offer financial support to non-continuing MA students.

Degree Requirements

The graduate program consists of a series of seminars (approximately four to six are offered each term). These range from general surveys of the field and methods of research to specialized research seminars on selected topics in history and philosophy of science. These courses are divided into three areas:

- Area 1: Core sequence: a three-term introduction at the graduate level to history and philosophy of science
- Area 2: History of science
- Area 3: Philosophy of science

Faculty

Dietrich School of Arts and Sciences Faculty

Doctoral

History and Philosophy of Science, PhD

The department offers a comprehensive program of study leading to the PhD. It combines core and elective seminars with more advanced, supervised study and encourages continued study of a particular science outside the department. All periods of the history of science are supported, including ancient, and 16th century to present science; as is work in general philosophy of science (confirmation, explanation, realism, scientific change, etc.) and in the philosophy of particular sciences (biology, physics, psychology, cognitive science, social sciences, etc.).

PhD Degree Requirements:

A minimum of 72 credits with an MA in history and philosophy of science or completion of MA requirements.

1. Further distribution of studies requirements: At least nine hours at the 1000 or 2000 level, in one of the following (a maximum of two at the 1000 level, including the two for the MA):
 - Philosophy, exclusive of philosophy of science and logic
 - History, exclusive of history of science
 - A field of natural sciences, social science, or computer science
(courses taken toward the MA degree may be counted toward the requirement for the PhD)
2. Proficiency in logic (equivalent to PHIL 1500)
3. Language requirement: Good reading knowledge of one foreign language (Latin, Greek, German, French, or approved substitute). The foreign language exam must be passed before the student completes the comprehensive requirements.
4. Satisfactory fulfillment of the comprehensive requirements, which are:
 - Core seminar examinations: A pass in end-of-term examinations in the two history of science core seminars and the philosophy of science core seminar.
 - Students must submit a research paper in the history of science and a research paper in the philosophy of science. Both must pass at the PhD level.
5. Submission of a significant and acceptable dissertation on a topic in history and philosophy of science.
6. All students must acquire some supervised teaching experience during their tenure at the University.

These requirements are specific departmental requirements, in addition to the general requirements for the MA and PhD degrees laid down by the Graduate Dietrich School of Arts and Sciences.

Master's

History and Philosophy of Science, MA

MA Degree Requirements

A minimum 30 credit hours are required for the degree distributed as follows:

M.A. degree requirements:

A. Distribution-of-Studies Requirement:

1. Nine hours from Area 1 (Core Seminars). MA students must pass the end-of-term examination in all three core seminars. (See Section III E.1.)
2. Fifteen hours from Areas 2 and 3, with at least six hours in each area.
3. Six hours of Research Paper credits.

B. Language Requirement: Good reading knowledge of either French, German, Latin, Greek, or approved substitute language. (Language acquisition courses cannot count toward the degree).

C. Research Paper Requirement: Students must submit a research paper in the history of science and a research paper in the philosophy of science. Evaluations of papers will be limited to a master's pass-fail. A master's pass on both papers is required for the M.A. degree.

D. Course Credit Requirement: A minimum of 30 credit hours. No more than two (non-HPS) 1000-level courses (6 hours total) may count towards the M.A. degree. (No pre-1000 level courses can be used to satisfy the degree requirements. No HPS courses at the 1000-level can count.)

Department of History of Art and Architecture

The University of Pittsburgh's PhD program in History of Art and Architecture offers close mentoring from internationally renowned scholars for students admitted through a highly selective admissions process. We fully fund all our doctoral students with generous multiyear packages of financial support, including fellowships and teaching and research assistantships. Our students also have an excellent record in competing for prestigious external fellowships such as the Fulbright, and in job placement after graduation.

Application is directly to the PhD program. Even though many students earn an MA here before proceeding to the PhD, ours is essentially a PhD program and we do not admit students for a terminal MA.

We strongly encourage students to explore our web site (www.haa.pitt.edu) for more information on faculty members, graduate program requirements, and the application process. Our program possesses an innovative and exciting structure, in which faculty members and graduate students participate in research constellations. These constellations organize our department not around subject matter, but rather around commonly held interpretative approaches and lines of inquiry ("Visual Knowledge," "Agency," "Identity," etc.). While our students acquire specialized knowledge of a particular art-historical subfield, they also produce conceptually ambitious and methodologically innovative research for their PhD. We advise all prospective students to identify a potential advisor (or advisors) from among the graduate faculty listed on our web site based on faculty expertise, and to contact faculty members in their area(s) of interest before applying.

Contact Information

Karoline Swiontek
Graduate Administrator
104 Frick Fine Arts Building
Pittsburgh, PA 15260
Phone: 412-648-2400
E-mail: karoline@pitt.edu

Please consult our department website for further information on our graduate program (<http://www.haa.pitt.edu/graduate>) or email Karoline Swiontek at karoline@pitt.edu with questions.

Admissions

Applicants for admission must submit: an online application, official transcripts of all college-level work, three letters of recommendation, a statement of purpose outlining the applicant's intellectual and professional goals, a writing sample that demonstrates the applicant's scholarly ability, a completed foreign language questionnaire, and GRE scores. International students whose first language is not English must also submit TOEFL scores administered by the Educational Testing Service with a minimum score of 90 on the internet-based test and a minimum score of 22 in each section.

Strong applicants will have completed an undergraduate major in a discipline in the humanities with at least a minor (12 credits / 4 advanced-level courses) in history of art and architecture. They will also possess strong language skills in the area(s) that they wish to pursue. For example, students wishing to pursue degree work in East Asian art and architecture must have the equivalent of three years of college-level instruction in Chinese or Japanese before entering the program. Students applying to study topics related to Europe and/or the Americas should likewise have relevant language competency (completion through the intermediate college level with a B+ or better). Students in coursework also have opportunities to

acquire additional language skills both on campus and beyond. Our program embraces global perspectives on art and architecture, and we welcome applicants who will contribute diverse language skills that are essential to this mission.

The deadline for admissions is December 15. Applicants are notified of their status in the following spring, and admitted students enter the program in the fall.

Financial Assistance

The department offers five-year aid packages to all of its PhD students. These packages consist of full tuition scholarships and living expense stipends. Aid is guaranteed for the duration of the package provided the student remains in good academic standing and makes satisfactory progress toward the degree. Aid takes the form of teaching and research assistantships, including a variety of positions at the University Art Gallery (<https://uag.pitt.edu/>), the Visual Media Workshop (<http://www.haa.pitt.edu/visual-media-workshop>), and supporting the Collecting Knowledge Pittsburgh (<http://www.haa.pitt.edu/graduate/constellations>) initiative. All incoming students receive a fellowship free of teaching and other employment duties for their first year, and are expected to compete for internal and external fellowships as they continue in the program. The department is committed to supporting all students regardless of citizenship status or country of origin. For more financial aid information, please consult our website: <http://www.haa.pitt.edu/graduate/financial-aid>.

Faculty

Dietrich School of Arts and Sciences Faculty

Doctoral

Film and Media Studies - History of Art and Architecture Concentration, PhD

Degree Requirements

Incoming students are admitted directly into the doctoral program. For students entering without an approved master's degree, the MA is earned in the second year as a step toward the doctorate. Students who have been admitted into the Film and Media Studies PhD with a concentration in History of Art and Architecture must satisfy degree requirements for both programs (for more information please visit the Film and Media Studies website).

All graduate coursework done before the MA counts toward PhD requirements. Doctoral students must complete 72 credit hours, of which 30 must be completed in the first two years for the MA. Students entering with an approved MA from another institution may transfer 24 credits. At the PhD level, HAA 2005 - METHODS RESEARCH AND SCHOLARSHIP, HAA 2007 - HISTORIOGRAPHY, ENGFLM 2451 - FILM HISTORY/THEORY, ENGFLM 2452 - FILM HISTORY/THEORY 2, FILMG 2905 - PROSEMINAR IN FILM AND MEDIA STUDIES, and either four or seven additional graduate seminars, depending on the student's MA status, are required. It is expected that the student will take a substantial proportion of these seminars either with their advisor or within HAA to advance their research program. All other required credits for the PhD may be fulfilled through additional coursework or independent studies directed toward comprehensive exam and prospectus preparation, and dissertation research. The final requirement for the degree is the successful defense of the dissertation.

Course work

The PhD requires a total of 72 credits.

12 graduate-level classroom courses (for students without an MA)/nine graduate-level classroom courses (for students with an approved MA) are part of this requirement. Normally, most of these are completed in the first two years. The normal course load is three courses per semester (nine credits). The courses must include:

- HAA 2005 - METHODS RESEARCH AND SCHOLARSHIP and HAA 2007 - HISTORIOGRAPHY (Methods and Historiography are alternated every other fall semester and must be taken in the student's first and second year).
- ENGFLM 2451 - FILM HISTORY/THEORY and ENGFLM 2452 - FILM HISTORY/THEORY 2 (to be taken in any order).
- FILMG 2905 - PROSEMINAR IN FILM AND MEDIA STUDIES .

- Four to seven graduate seminars (depending on MA status), to be determined in consultation with advisor and HAA Director of Graduate Studies.

The remaining credits may be amassed through various independent study options and additional courses if necessary.

The departmental faculty teach across many areas. In line with the department's research constellations, students are expected to take courses on many different historical and geographical topics, while at the same time acquiring in-depth knowledge and expertise in one of these. In consultation with the HAA Director of Graduate Studies and the student's individual advisor, students should select their courses with these two requirements in mind.

Languages

Students are required to have reading knowledge of two languages (beyond English) relevant to their particular research area. The relevance of these languages to the student's course of study will be determined in consultation with the academic advisor. All students must be certified in two research languages; only native speakers will be exempted. Prior to admission, students specializing in East Asian film must have at least three years/six semesters of college-level Japanese or Chinese, with a grade of B+ or better, or equivalent knowledge. Similarly, students specializing in other areas must have at least two years/four semesters of college-level instruction, with a grade of B+ or better, or equivalent knowledge of a research language prior to admission.

Certification in research languages may be achieved in the following ways:

- through passage of a departmentally administered exam.
- completion through the intermediate level (typically the third semester) of a language, taken at the University of Pittsburgh during the period of the student's graduate study, with a grade of B+ or better.
- completion of two graduate level reading courses in a foreign language, taken at the University of Pittsburgh, with a grade of B+ or better.
- completion of an accredited language immersion program, in the United States or abroad.
- certification of language qualification attained at another accredited graduate degree program.

Graduate students will establish a schedule for completion and certification of the language requirement in consultation with their academic advisors.

All students are strongly encouraged to be certified in both languages as early in their time in the program as possible. Pre-MA students must be certified in at least one of the two languages required for the PhD by the fourth semester review if they wish to continue in the PhD program. No student will become ABD without completing language requirements.

The MA Paper and Degree

In the case of students who did not earn an approved MA degree in film and media studies or history of art and architecture at another institution prior to matriculating in the PhD program, the MA is typically granted at the end of the second year of study as a required step toward the PhD. The MA degree requires:

- a total of 30 graduate-level credits, including the courses enumerated above.
- at least one foreign language certified.
- an MA paper passed by majority vote of the graduate faculty.

The MA paper is a 25-to 45-page paper with an original argument based on original research. The paper functions as a demonstration of the student's ability to carry out research and writing of PhD caliber. Ideally, it will be based on a seminar paper written in the first year, which is then reworked and polished over the following summer and fall. In some cases, with the approval of a faculty advisor, the student may embark on a new paper not already written in a seminar.

Fourth Semester Review

In their fourth semester, all students (with the exception of those who entered with an MA) undergo a review for continuation in the PhD program. Students submit a dossier including:

- their completed MA paper.
- all faculty evaluations of the student's course work to date.

- a one-page form that summarizes their proposed dissertation field and lists the course requirements they have met and relevant foreign languages they have passed. This document must be approved and signed by the student's advisor.

The graduate faculty then reviews the dossier to make sure that the student's work demonstrates the ability to carry out a dissertation successfully. More specifically, the faculty looks for evidence of ability to carry out original research in the student's field, to master secondary literature, to frame an original argument, and to write lucidly.

If the faculty makes a positive determination, the MA is granted and the student is officially approved to continue in the PhD program. All graduate coursework done to this date counts toward the PhD degree. A dissertation committee is named, consisting of the student's advisor and two other faculty members drawn from HAA and/or Film and Media Studies at Pitt.

If the faculty determines that the student's work does not merit continuation in the PhD program, the student may be granted a terminal MA degree provided that they have met the MA requirements and the graduate faculty by majority vote deems the MA paper creditable.

Preliminary Exam

In the fifth semester (for students entering without an approved MA), the first of the student's annual PhD committee meetings is held. The student presents a one-page description of the dissertation topic, and the student and committee together decide on comprehensive exam areas and procedures. Once the student's committee as a whole reviews and approves the dissertation topic and exam areas, the "prelim" is passed.

Comprehensive Exams

Doctoral students normally take their comprehensive exams in the third or fourth year (or second or third year if they are entering with an MA), after they have completed their coursework requirements. While a committee member from outside the department is not required at this stage, it is recommended to have an outside member participate both in the formulation of the exam contents and in the exam itself. The comprehensive exams have two broad goals. The first goal is to test whether the student has sufficient knowledge of the field to carry out the dissertation. The student should be able to articulate "the shape of the field" and should be conversant with current trends in scholarship. The second goal is to test whether the student has sufficient knowledge to teach one or more broadly defined areas.

Teaching Portfolio

Graduate Students must produce teaching portfolios to advance to candidacy. They are encouraged to do so in the context of the pedagogy seminar, HAA 2970 - TEACHING OF ART HISTORY. Thereafter, they should include the teaching portfolio with the materials they submit to their PhD committee for their annual meetings. PhD committees are encouraged to give further feedback to the student as appropriate, especially as the student's thinking about pedagogy evolves, as the student readies themselves for the job market, et cetera.

Dissertation

The dissertation is a book-length research project designed to make an original scholarly contribution to the student's field. Ideally, students begin to focus their dissertation topic early in their graduate career, within the first two years. The MA paper can be a piece of the final dissertation. As soon as possible, students should design their curriculum to enrich and advance their dissertation project.

After a successful fourth semester review, a dissertation committee of three faculty (chaired by the student's advisor) guides and mentors the student. Upon passing the comprehensive exams, the student prepares a dissertation prospectus that must be approved by the dissertation committee, including a fourth external committee member. Once the student completes the dissertation itself, the student must pass a dissertation defense, normally a two-hour conversation with the committee (including outside faculty member).

Time to Degree

The PhD degree is designed to take five to seven years to complete, depending on the student's field. Actual time to degree varies depending on many factors, including the language preparation and/or specialized skills needed to conduct dissertation research. Students in East Asian art or architecture, for example, may need to learn classical as well as modern languages, and to learn archaeological methods.

Note: For more details on degree requirements, the student-advisor relationship, and other related matters, please see the HAA Department's Graduate Student Handbook.

History of Art and Architecture, PhD

Degree Requirements

Incoming students are admitted directly into the doctoral program. For students entering without an approved master's degree, the MA is earned in the second year as a step toward the doctorate. Students entering with an MA in history of art and architecture from another institution may have this requirement waived pending approval from their advisor and the Director of Graduate Studies.

All graduate coursework done before the MA counts toward PhD requirements. Doctoral students must complete 72 credit hours, of which 30 must be completed in the first two years for the MA. Students entering with an approved MA from another institution may transfer 24 credits, but are still required to complete nine graduate-level courses during their first two years. All graduate students entering with an MA must complete HAA 2005 - METHODS RESEARCH AND SCHOLARSHIP, HAA 2007 - HISTORIOGRAPHY, four graduate seminars in HAA, plus three elective courses in HAA or in other departments, for a total of nine courses. Graduate students without an MA must complete three additional graduate-level courses, of which at least one must be a seminar. It is expected that students will take seminars that advance their research program. After the first 30 credits have been completed, the remaining required credits for the PhD may be fulfilled through additional coursework or independent studies directed toward comprehensive exam and prospectus preparation, and dissertation research. The final requirement for the degree is the successful defense of the dissertation.

Course work

The PhD requires a total of 72 credits.

12 graduate-level classroom courses (for students without an MA)/9 graduate-level classroom courses (for students with an approved MA) are part of this requirement. Normally, most of these are completed in the first two years. The normal course load is three courses per semester (nine credits). The courses must include:

- HAA 2005 - METHODS RESEARCH AND SCHOLARSHIP and HAA 2007 - HISTORIOGRAPHY (Methods and Historiography are alternated every other fall semester and must be taken in the student's first and second year.)
- Four or five HAA graduate seminars (depending on MA status)
- Three or five elective courses (depending on MA status), in HAA or in other departments

The remaining credits may be amassed through various independent study options and additional courses if necessary.

The departmental faculty teach across many areas. In line with the department's research constellations, students are expected to take courses on many different historical and geographical topics, while at the same time acquiring in-depth knowledge and expertise in one of these. In consultation with the Director of Graduate Studies and the student's individual advisor, students should select their courses with these two requirements in mind.

Language Requirement

Students are required to have reading knowledge of two languages (beyond English) relevant to their particular research area. The relevance of these languages to the student's course of study will be determined in consultation with the academic advisor. All students must be certified in two research languages; only native speakers will be exempted. Prior to admission, students specializing in East Asian art and/or architecture must have at least three years/six semesters of college-level Japanese or Chinese, with a grade of B+ or better, or equivalent knowledge. Similarly, students specializing in other areas must have at least two years/four semesters of college-level instruction, with a grade of B+ or better, or equivalent knowledge of a research language prior to admission.

Certification in research languages may be achieved in the following ways:

- through passage of a departmentally administered exam.
- completion through the intermediate level (typically the third semester) of a language, taken at the University of Pittsburgh during the period of the student's graduate study, with a grade of B+ or better.
- completion of two graduate level reading courses in a foreign language, taken at the University of Pittsburgh, with a grade of B+ or better.
- completion of an accredited language immersion program, in the United States or abroad.
- certification of language qualification attained at another accredited graduate degree program.

Graduate students will establish a schedule for completion and certification of the language requirement in consultation with their academic advisors. All students are strongly encouraged to be certified in both languages as early in their time in the program as possible. Pre-MA students

must be certified in at least one of the two languages required for the PhD by the fourth semester review if they wish to continue in the PhD program. No student will become ABD without completing language requirements.

The MA Paper and Degree

In the case of students who did not earn an MA degree in history of art and architecture at another institution prior to matriculating in the PhD program, the MA is typically granted at the end of the second year of study as a required step toward the PhD. The MA degree requires:

- a total of 30 graduate-level credits, including the courses enumerated above.
- at least one foreign language certified.
- an MA paper passed by majority vote of the graduate faculty.

The MA paper is a 25-to 45-page paper with an original argument based on original research. The paper functions as a demonstration of the student's ability to carry out research and writing of PhD caliber. Ideally, it will be based on a seminar paper written in the first year, which is then reworked and polished over the following summer and fall. In some cases, with the approval of a faculty advisor, the student may embark on a new paper not already written in a seminar.

Fourth Semester Review

In their fourth semester, all students (with the exception of those who entered with an MA) undergo a review for continuation in the PhD program. Students submit a dossier including:

- their completed MA paper.
- all faculty evaluations of the student's course work to date.
- a one-page form that summarizes their proposed dissertation field and lists the course requirements they have met and relevant foreign languages they have passed. This document must be approved and signed by the student's advisor.

The graduate faculty then reviews the dossier to make sure that the student's work demonstrates the ability to carry out a dissertation successfully. More specifically, the faculty looks for evidence of ability to carry out original research in the student's field, to master secondary literature, to frame an original argument, and to write lucidly.

If the faculty makes a positive determination, the MA is granted and the student is officially approved to continue in the PhD program. All graduate coursework done to this date counts toward the PhD degree. A dissertation committee is named, consisting of the student's advisor and two other faculty members drawn from HAA.

If the faculty determines that the student's work does not merit continuation in the PhD program, the student may be granted a terminal MA degree providing they have met the MA requirements and the graduate faculty by majority vote deems the MA paper creditable.

Preliminary Exam

In the fifth semester (for students entering without an approved MA), the first of the student's annual PhD committee meetings is held. The student presents a one-page description of the dissertation topic, and the student and committee together decide on comprehensive exam areas and procedures. Once the student's committee as a whole reviews and approves the dissertation topic and exam areas, the "prelim" is passed.

Comprehensive Exams

Doctoral students normally take their comprehensive exams in the third or fourth year (or second or third year if they are entering with an MA), after they have completed their coursework requirements. While a committee member from outside the department is not required at this stage, it is recommended to have an outside member participate both in the formulation of the exam contents and in the exam itself. The comprehensive exams have two broad goals. The first goal is to test whether the student has sufficient knowledge of the field to carry out the dissertation. The student should be able to articulate "the shape of the field" and should be conversant with current trends in scholarship. The second goal is to test whether the student has sufficient knowledge to teach one or more broadly defined areas.

Teaching Portfolio

Graduate students must produce teaching portfolios to advance to candidacy. They will do so in the context of the pedagogy seminar, HAA 2970 - TEACHING OF ART HISTORY . Thereafter, they should include the teaching portfolio with the materials they send to their PhD committee for their annual meetings. PhD committees are encouraged to give further feedback to the student as appropriate, especially as the student's thinking about pedagogy evolves, as the student readies themselves for the job market, et cetera.

Dissertation

The dissertation is a book-length research project designed to make an original scholarly contribution to the student's field. Ideally, students begin to focus their dissertation topic early in their graduate career, within the first two years. The MA paper can be a piece of the final dissertation. As soon as possible, students should design their curriculum to enrich and advance their dissertation project.

After a successful fourth semester review, a dissertation committee of three HAA faculty (chaired by the student's advisor) guides and mentors the student. Upon passing the comprehensive exams, the student prepares a dissertation prospectus that must be approved by a dissertation committee consisting of four members (including one faculty member from outside HAA). Once the student completes writing the dissertation, they must pass a defense, normally a two-hour conversation with the committee (including the outside faculty member).

Time to degree

The PhD degree is designed to take five to seven years to complete, depending on the student's field. Actual time to degree varies depending on many factors, including the language preparation and/or specialized skills needed to conduct dissertation research. Students in East Asian art or architecture, for example, may need to learn classical as well as modern languages, and to learn archaeological methods.

Note: For more details on degree requirements, the student-advisor relationship, and other related matters, please see the HAA Department's Graduate Student Handbook.

Master's

History of Art and Architecture, MA (for admitted PhD students only)

General requirements

Students who enter the PhD program without an approved Master's degree are expected to complete an MA as part of their progress toward a PhD. Six credits (two courses) may be transferred from another approved graduate program.

Normally, the MA degree is granted at the end of the second year of study as a required step toward the PhD. The MA degree requires:

Requirements

- A total of 30 graduate level credits
- A minimum of five of the seven HAA graduate seminars required for the PhD, including:
 - HAA 2005 - METHODS RESEARCH AND SCHOLARSHIP
 - HAA 2007 - HISTORIOGRAPHY
 - Three HAA graduate seminars of choice (with approval from the Director of Graduate Studies, the remaining two HAA seminars required for the PhD may be taken in year three)
- HAA 2000 - RESEARCH AND THESIS MA DEGREE (up to six credits)
- One graduate-level cognate course outside HAA
- At least one foreign language certified
- An MA paper passed by majority vote of the graduate faculty.

Language Requirement

Certified competence in one language (beyond English) relevant to the student's program of research is required for the awarding of the MA degree. Students must demonstrate such competence by passing a department exam or by providing other verification within the first year of residence. Certified competence in two research languages is required for the PhD and must be demonstrated before the student is admitted to candidacy.

The MA Paper

The final requirement for the MA degree is an original research paper, typically 25 to 45 pages in length, produced under the supervision of two faculty readers and deemed satisfactory by a majority vote of the graduate faculty. The MA paper functions as a demonstration of the student's ability to carry out research and writing of PhD caliber. Ideally, the MA paper is based on a seminar paper written in the first year, which is then reworked and polished over the following summer and fall. In some cases, with the approval of a faculty advisor, the student may embark on a new paper not already written in a seminar. It must be submitted by a deadline in January of the student's fourth semester.

Interdisciplinary Programs

Doctoral

Computational Modeling & Simulation, PhD

Requirements

Course Requirements

<http://cmsp.pitt.edu/course-requirements>

All students enrolled in the program will be required to satisfy the following requirements:

1. Two courses (3 credits each) in Numerical Methods
2. Two courses (3 credits each) in Scientific Computing/Programming
3. Two courses (3 credits each) from a participating department outside Computer Science, Math, and Statistics, in the Dietrich School of Arts and Sciences or the Swanson School of Engineering
4. 12 credits in a concentration area in a participating department in the School of Arts and Sciences or in the Swanson School of Engineering
5. Enrollment in the Computational Modeling and Simulation Seminar series for all fall and spring semesters in residence

A minimum of 24 credits from categories I-IV are required, there can be overlap in courses satisfying requirement IV and those satisfying I, II, and III.

Preliminary Exam

A student will satisfy the preliminary exam requirements by passing (grade B or higher) the six courses in areas I-III described above. In the case that a student received one grade below B in one of the three main areas, he/she can counter that with a grade of B or above in an additional approved course in that area. If a student receives two grades below B, he/she will no longer be able to continue in the program. Students who do not meet these requirements but who have an overall grade average of B or better, have the option of doing a literature-based Master's thesis.

Comprehensive Exam

The comprehensive exam will be taken by the end of the student's seventh semester at Pitt, and will focus on the progress that the student has made to date on his/her research. The comprehensive exam will consist of a written report prepared by the student on his/her research, followed by an oral examination. The exam will be administered by a committee of four faculty members, at least two of whom (including the student's advisor) will be from the Department of the student's concentration, and at least one of whom will be from an outside department. If a student does not pass the comprehensive exam, he/she will have the option of continuing in the program for another semester and submitting a Master's thesis based on independent research. The student's committee will decide on whether the thesis warrants awarding the MS degree.

Dissertation/Thesis

Every graduate student has to write a thesis or dissertation before being awarded a MS or PhD degree. Browse our publications section for recently posted theses, dissertations, and presentations. All theses and dissertations are submitted online. Visit the EDT Web site for more information on the process.

Course Requirements

<http://cmsp.pitt.edu/course-requirements>

A minimum of 24 credits of graduate level courses from categories I - IV will be required. It is anticipated that students entering the program will be able to complete the six core courses in categories I - III in their first year and the concentration requirements in the second year.

Computational Modeling and Simulation Seminar Series: All students enrolled in the program are expected to attend the Computational Modeling and Simulation seminar program each semester they are enrolled. Students will receive one credit for each term they are enrolled in the Seminar Series. Seminars will be held typically twice per month, during the academic year. Each enrolled student will be required to give a seminar in this series, at least six months before the PhD defense.

University Credit Requirement: All students in the program must satisfy the university's requirement of a minimum of 30 credits for an MS. At least 24 of these credits will be satisfied by the core program, including the concentration area, described above, and at least 4 credits will be satisfied by enrollment and participation in the Computational Modeling and Simulation seminar program. The remaining credits will be met by directed study (i.e., research).

Interdisciplinary Studies - Medical Informatics Concentration, PhD

Requirements for the PhD

Students pursuing the Doctor of Philosophy degree in ISP must complete a program of study approved by an advisory committee of faculty. A total of 72 graduate credits are required for this degree. This program must include:

(a) The required courses:

- ISSP 2020 - TOPICS IN INTELLIGENT SYSTEMS
- ISSP 2030 - ADVANCED TOPICS IN INTELLIGENT SYSTEMS
- ISSP 2160 - FOUNDATIONS OF ARTIFICIAL INTELLIGENCE or
- CS 2710 - FOUNDATIONS OF ARTIFICIAL INTELLIGENCE
- INFSCI 3005 - INTRODUCTION TO THE DOCTORAL PROGRAM

(b) Two courses from the following:

- ISSP 2170 - MACHINE LEARNING or
- CS 2750 - MACHINE LEARNING
- ISSP 2230 - INTRO NATURAL LANGUAGE PROCESSING or
- CS 2731 - INTRO NATURAL LANGUAGE PROCESSING

(c) A theory course from both A and B

A

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- BIOST 2042 - INTRODUCTION TO STATISTICAL METHODS 2
- STAT 2131 - APPLIED STATISTICAL METHODS 1
- STAT 2132 - APPLIED STATISTICAL METHODS 2

B

- CS 2110 - THEORY OF COMPUTATION
- CS 2150 - DESIGN & ANALYSIS OF ALGORITHMS

(d) an additional course from either A or B

(e) four advanced courses numbered 2000 or higher

(must be approved by advisor)

(f) GPA of 3.0 or better

(g) Successful defense of a proposal and doctoral dissertation

Concentration Requirements

<http://www.isp.pitt.edu/about/degrees>

The curriculum assumes that a student already has training in a health care field. If this is not so the faculty will select a set of courses that teaches the student basic medical knowledge, and the student may take these courses as electives.

Master's

Computational Modeling & Simulation, MS

Requirements

Course Requirements

<http://cmisp.pitt.edu/course-requirements>

All students enrolled in the program will be required to satisfy the following requirements:

1. Two courses (3 credits each) in Numerical Methods
2. Two courses (3 credits each) in Scientific Computing/Programming
3. Two courses (3 credits each) from a participating department outside Computer Science, Math, and Statistics, in the Dietrich School of Arts and Sciences or the Swanson School of Engineering
4. 12 credits in a concentration area in a participating department in the School of Arts and Sciences or in the Swanson School of Engineering
5. Enrollment in the Computational Modeling and Simulation Seminar series for all fall and spring semesters in residence

A minimum of 24 credits from categories I-IV are required, there can be overlap in courses satisfying requirement IV and those satisfying I, II, and III.

Preliminary Exam

A student will satisfy the preliminary exam requirements by passing (grade B or higher) the six courses in areas I-III described above. In the case that a student received one grade below B in one of the three main areas, he/she can counter that with a grade of B or above in an additional approved course in that area. If a student receives two grades below B, he/she will no longer be able to continue in the program. Students who do not meet these requirements but who have an overall grade average of B or better, have the option of doing a literature-based Master's thesis.

Comprehensive Exam

The comprehensive exam will be taken by the end of the student's seventh semester at Pitt, and will focus on the progress that the student has made to date on his/her research. The comprehensive exam will consist of a written report prepared by the student on his/her research, followed by an oral examination. The exam will be administered by a committee of four faculty members, at least two of whom (including the student's advisor) will be from the Department of the student's concentration, and at least one of whom will be from an outside department. If a student does not pass the comprehensive exam, he/she will have the option of continuing in the program for another semester and submitting a Master's thesis based on independent research. The student's committee will decide on whether the thesis warrants awarding the MS degree.

Dissertation/Thesis

Every graduate student has to write a thesis or dissertation before being awarded a MS or PhD degree. Browse our publications section for recently posted theses, dissertations, and presentations. All theses and dissertations are submitted online. Visit the EDT Web site for more information on the process.

Course Requirements

<http://cmsp.pitt.edu/course-requirements>

A minimum of 24 credits of graduate level courses from categories I - IV will be required. It is anticipated that students entering the program will be able to complete the six core courses in categories I - III in their first year and the concentration requirements in the second year.

Computational Modeling and Simulation Seminar Series: All students enrolled in the program are expected to attend the Computational Modeling and Simulation seminar program each semester they are enrolled. Students will receive one credit for each term they are enrolled in the Seminar Series. Seminars will be held typically twice per month, during the academic year. Each enrolled student will be required to give a seminar in this series, at least six months before the PhD defense.

University Credit Requirement: All students in the program must satisfy the university's requirement of a minimum of 30 credits for an MS. At least 24 of these credits will be satisfied by the core program, including the concentration area, described above, and at least 4 credits will be satisfied by enrollment and participation in the Computational Modeling and Simulation seminar program. The remaining credits will be met by directed study (i.e., research).

Interdisciplinary Studies - Medical Informatics Concentration, MS

Requirements for the Master's Degree

Overlapping with ISP requirements of the Dietrich School of Arts and Sciences (A&S). Students should speak with their advisors to make sure they complete both sets of requirements.

Students pursuing the Master of Science degree in ISP must complete a minimum of 24 credits including:

(a) First year students are encouraged, but not required, to take the following:

- ISSP 2020 - TOPICS IN INTELLIGENT SYSTEMS (fall)

- ISSP 2030 - ADVANCED TOPICS IN INTELLIGENT SYSTEMS (spring)
- INFSCI 3005 - INTRODUCTION TO THE DOCTORAL PROGRAM

(b) The required courses:

- ISSP 2160 - FOUNDATIONS OF ARTIFICIAL INTELLIGENCE or

Two courses from the following:

- ISSP 2170 - MACHINE LEARNING or
- CS 2750 - MACHINE LEARNING
- ISSP 2230 - INTRO NATURAL LANGUAGE PROCESSING or
- CS 2731 - INTRO NATURAL LANGUAGE PROCESSING

(c) A theory course from both A and B

A

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- BIOST 2042 - INTRODUCTION TO STATISTICAL METHODS 2
- STAT 2131 - APPLIED STATISTICAL METHODS 1
- STAT 2132 - APPLIED STATISTICAL METHODS 2

B

- CS 2110 - THEORY OF COMPUTATION
- CS 2150 - DESIGN & ANALYSIS OF ALGORITHMS

(d) Four advanced courses numbered 2000 or higher

(must be approved by advisor)

(e) GPA of 3.0 or better

(f) MS-Level Project

Approved by the faculty after an oral prospectus presentation, involving significant research, design, or development work and a written report.

Concentration Requirements

<http://www.isp.pitt.edu/about/degrees>

The curriculum assumes that a student already has training in a health care field. If this is not so the faculty will select a set of courses that teaches the student basic medical knowledge, and the student may take these courses as electives.

Department of Linguistics

The Department of Linguistics offers the degrees of Master of Arts and Doctor of Philosophy in both linguistics and Applied Hispanic linguistics, with areas of concentration in applied linguistics and Sociolinguistics. The MA Program requires a minimum of 10 courses (30 credits). The Dietrich School of Arts and Sciences requires a minimum of 72 credits beyond the baccalaureate for a PhD degree.

Master of Arts in Linguistics
Doctor of Philosophy in Linguistics
Master of Arts and Doctor of Philosophy in Hispanic Linguistics
Doctor of Philosophy in Sociolinguistics

Students may fulfill requirements for the TESOL Certificate in conjunction with their graduate study or as a stand-alone post baccalaureate certificate.

Contact Information

Department Chair: Scott Kiesling
Main Office: 2816 Cathedral of Learning
412-624-5900
Fax: 412-624-6130
E-mail: lingpitt@pitt.edu
www.linguistics.pitt.edu

The best and most current information is at the department website. Potential applicants are encouraged to thoroughly explore this site for further information. **See especially the Graduate Handbook.**

Additional information concerning the department's graduate program may be obtained from the University of Pittsburgh, Department of Linguistics, Graduate Administrator, 2816 CL, Pittsburgh, PA 15260. Phone: 412-624-6568. Fax: 412-624-6338.

In addition to graduate and undergraduate education in the field of linguistics, the Department of Linguistics is responsible for the following programs and centers:

Less Commonly Taught Languages Center
Robert Henderson Language Media Center
TESOL Certificate Program
English Language Institute (non-credit)

Admissions

In order to be admitted to graduate standing in linguistics, students must meet the admission requirements of the Dietrich School of Arts and Sciences and have at least two years, or the equivalent, of university-level study of a second language. The Graduate Record Examination is required for all applicants. PhD applicants must also submit samples of written work in linguistics. To be considered for financial aid, complete applications should be received by December 15. Applicants for Hispanic linguistics must be fluent in Spanish in addition to the above admissions requirements (determined by interview following review of other application materials).

Financial Assistance

Funding is mainly through teaching assistantships, while occasionally there are research assistantships through grant funding. There are two to five such teaching assistantships each year, usually involving some sort of research work and sometimes teaching or faculty-teaching support. Some of the aid offered by the department is in the form of teaching assistantships in the Department of Linguistics in the English Language Institute, which is offered for both MA and PhD students. There are about two new positions per year. For all assistantships, applicants whose native language is not English may be eligible for two or three of these positions. For all assistantships, applicants are ranked mainly on the basis of their academic qualifications, but relevant teaching experience or research can help. Students in the Hispanic linguistics program teaching Spanish language courses must be enrolled in Methodology for Teaching Spanish (SPAN 2307). There are a total of 6 funded positions in Applied Hispanic linguistics.

Besides assistantships, there are a limited number of predoctoral fellowships from the Andrew Mellon Foundation and Provost's Humanities Fellowship program, for which PhD applicants in linguistics are eligible. Applicants should realize that these are very prestigious fellowships,

granted on the basis of a University-wide competition. Promising applicants are invited to apply based on their admissions materials. The application deadline is February 1. *For more information on these fellowships, see Fellowships and Traineeships in the A&S section of this catalog.*

Faculty

Dietrich School of Arts and Sciences Faculty

Doctoral

Linguistics, MA/PhD

The PhD programs in linguistics (also referred to as the MA/PhD program) combine a solid foundation in the core areas of linguistic theory (phonetics, phonology, syntax) with courses in specialized fields of applied linguistics, Hispanic linguistics and sociolinguistics/sociology of language. Within applied linguistics, students may choose from topics such as second language acquisition, language teaching methodology, and the development of teaching materials/tests. The department also offers a certificate in teaching English to speakers of other languages (TESOL). In sociolinguistics, students may focus on discourse analysis, variation and change, and socio-phonetics. In Hispanic linguistics, students may focus on phonetics, sociolinguistics, and second language acquisition.

Required Core Courses for the PhD (all concentrations)

The following courses are required of all students in the PhD program. Students entering with an MA degree from another institution may petition to have coursework from that MA degree apply to the PhD degree at Pitt (see also the Preliminary exam requirement for students with an existing MA).

Courses normally required to be taken in the first year:

- LING 2578 - PHONETICS AND PHONEMICS
- LING 2144 - RES METHODS IN APPLIED LING
- LING 2773 - MORPHOLOGY
- LING 2777 - SYNTACTIC THEORY
- LING 2579 - PHONOLOGY

Required courses that can be taken any time:

One course in sociolinguistics/language change.

- LING 2267 - SOCIOLINGUISTICS
- LING 2253 - PIDGIN AND CREOLE LANGUAGES

Required upper level course:

Choose one advanced level core course approved by the student's advisor and DGS or Chair.

Applied Linguistics PhD Course Requirements:

In addition to core requirements above.

Required Courses:

- LING 2146 - SECOND LANGUAGE ACQUISITION

- LING 2142 - THEORIES AND PRACTICES OF SECOND LANGUAGE TEACHING
- A course in psycholinguistics or first language development
- A course in statistics
 - One of the following:
 - LING 2147 - CUR ISSUES IN SECOND LANG LRNG
 - LING 2149 - ADV SECOND LANGUAGE ACQUISITION

Hispanic Linguistics PhD Requirements:

In addition to core requirements above.

Required Courses:

- LING 2394 - SPANISH DIALECTOLOGY
- LING 2391 - PHONOLOGY OF SPANISH
- Two Special Topics courses in Hispanic Linguistics
- A course in statistics

Other Hispanic Linguistics requirements:

Entrance requirement: Advanced Low Proficiency in Spanish as measured by an OPI or equivalent. Students are also interviewed by faculty in Spanish during the admissions process.

In core courses, students are encouraged to work on topics in Hispanic linguistics and to use Spanish sources.

Further specialization within Hispanic Linguistics:

Students may wish to focus on Applied Spanish Linguistics or Spanish Sociolinguistics, but these are not official ARCOs. The following are suggested courses.

Applied Spanish Linguistics:

- Second Language Acquisition
- Approaches and Methods of TESOL
- Techniques and Procedures of TESOL

Spanish Sociolinguistics:

- Language Contact
- Discourse Analysis
- Variation Analysis

Sociolinguistics PhD Course Requirements:

In addition to core requirements above.

Required Courses:

- LING 2267 - SOCIOLINGUISTICS (if not already taken)
- LING 2441 - FIELD METHODS IN LINGUISTICS

- SOC 2102 - SOCIOLOGICAL THEORY POST CLASSICAL
- A statistics course
- Two of the following:
- LING 2761 - DISCOURSE ANALYSIS
- LING 2274 - LANGUAGE CONTACT
- LING 2269 - CURRENT ISSUES IN SOCIOLINGUISTICS
- LING 2860 - INTRO TO HISTORICAL LINGUISTICS

Other MA/PhD Requirements:

Language requirement:

Native speakers of English:

1. three semesters of a language taught at the college level plus
2. at least one semester with a grade of B or better in a language that is not Germanic, Greek, Italic (Romance, including Latin), or Slavic.

Non-native speakers of English:

1. English-language proficiency
2. At least one semester with a grade of B or better in a language that is not Germanic, Greek, Italic (Romance, including Latin), or Slavic.

Candidates for the Hispanic Linguistics ARCO:

1. English-language proficiency
2. At least one semester with a grade of B or better in a language that is not Germanic, Greek, Italic (Romance, including Latin), or Slavic,
3. Satisfactorily completing the Spanish language proficiency required of candidates. See the DGS to set up a language exam.

Preliminary exam:

Students entering without an MA:

The preliminary exam is fulfilled by attaining a grade of B+ or better on the final exam of all core courses with a B+ grade or better, and by submitting a portfolio of written work from coursework. See the Graduate Handbook for procedures.

Students entering with an MA:

Students entering with an MA degree may petition to have core courses waived. In order to waive phonetics, phonology, morphology or syntax, a student must demonstrate knowledge by providing course syllabi and passing an oral interview. In order to fulfill the portfolio requirement when entering with an MA, a student must submit an identical portfolio as outlined above from their MA coursework by the end of their first semester of study. Students will be notified of the outcome by the end of the next semester.

Comprehensive exam:

Two comprehensive papers are required to fulfill the comprehensive exam requirement for the Linguistics PhD. The topics of the two papers must be substantially different. Although the topics can be in the same specialty of linguistics, at least one paper should involve linguistic form or structure (for example, by analyzing the acquisition of a particular syntactic construction, by investigating variation of a phonological variable, or by doing a theoretical analysis in syntax or phonology). Both papers have a paper and presentation portion, but only one of the presentations must be public in department colloquium. The second paper can be presented to the readers only, but it is possible to present it publicly.

Dissertation proposal:

When the student has successfully completed the PhD comprehensive examination, they must prepare a dissertation proposal and present it in a formal dissertation proposal defense. A dissertation proposal must have at least two main elements: a knowledge essay and a proposal. The dissertation advisor will determine exactly the format for these two elements. See the Graduate Handbook for procedures.

Dissertation:

After being admitted to candidacy, the student will conduct dissertation research and write a dissertation primarily in consultation with the main advisor, with secondary consultation with committee members when needed. A dissertation defense should be scheduled at least six months in advance. The dissertation draft should be submitted to the committee at least one month before the defense, and the defense draft must be approved by the advisor. See the Graduate Handbook for specific procedures and further advice.

Master's

Linguistics, MA

The degree programs in linguistics combine a solid foundation in the core areas of linguistic theory (phonetics, phonology, syntax) with courses in specialized fields of applied linguistics, Hispanic linguistics and sociolinguistics/sociology of language. Within applied linguistics, students may choose from topics such as second language acquisition, language teaching methodology, and the development of teaching materials/tests. The department also offers a certificate in teaching English to speakers of other languages (TESOL). In sociolinguistics, students may focus on discourse analysis, variation and change, and socio-phonetics. In Hispanic linguistics, students may focus on phonetics, sociolinguistics, and second language acquisition.

Requirements:

Required Courses for all linguistics MA degrees:

- LING 2578 - PHONETICS AND PHONEMICS
- LING 2579 - PHONOLOGY
- LING 2777 - SYNTACTIC THEORY
- LING 2144 - RES METHODS IN APPLIED LING
- One course in sociolinguistics/language change. Choose one from:
 - LING 2267 - SOCIOLINGUISTICS
 - LING 2860 - INTRO TO HISTORICAL LINGUISTICS
 - LING 2253 - PIDGIN AND CREOLE LANGUAGES
 - LING 2146 - SECOND LANGUAGE ACQUISITION

Other MA Requirements:

Comprehensive exam:

Students must attain a B+ in all core courses. If the grade is lower than a B+, a student must re-take the final exam the following year-or take an exam through other arrangements-and attain a grade of B+ on the exam, or retake the course.

Language requirement:

Proficiency in one second language is required for the MA degree. This requirement is satisfied by examination for students whose native language is English. Students whose native language is not English and who complete their MA work with a grade point average of B (3.0) or better will have fulfilled this requirement automatically.

Teaching English to Speakers of Other Languages (TESOL), MA

This one-year degree is available beginning in Fall 2020. It consists entirely of 30 credits (15 per semester) of coursework, and is intended for students who wish to teach English as a Second Language to adults both in the United States and internationally.

The curriculum is fixed and all courses are required.

Admission Requirements

The requirements for entry to the program will be the same as for the two-year MA.

Contact Information

Chair: Professor Scott Kiesling (kiesling@pitt.edu)

Admissions and Advisor One-year MA/TESOL and Two Year MA with TESOL Certificate: Dr. Alan Juffs (juffs@pitt.edu)

Program Requirements:

The degree program will require 30 credits. The following summarizes the sequences of courses.

Fall

- IL 2253 - PRIN/PRA FRGN LANG TESTNG ASSMNT
- LING 2144 - RES METHODS IN APPLIED LING
- LING 2142 - THEORIES AND PRACTICES OF SECOND LANGUAGE TEACHING
- LING 2148 - COMPUTER-ASSISTED LANGUAGE LEARNING (3 credits)
- LING 2195 - PRACTICUM ESL TEACHING
- LING 2579 - PHONOLOGY

Total 15 Credits

Spring

- LING 2738 - LINGUISTIC STRUCTURES OF ENGLISH
- LING 2143 - SEM LANG TCHNG MATLS DEVELOPMENT
- LING 2146 - SECOND LANGUAGE ACQUISITION
- LING 2147 - CUR ISSUES IN SECOND LANG LRNG
- LING 2195 - PRACTICUM ESL TEACHING
- LING 2579 - PHONOLOGY

Total 15 Credits

Note:

The LING 2195 - PRACTICUM ESL TEACHING (Fall and Spring) includes observation of classes in English as an additional language (EAL) in higher education contexts, supervised practice teaching of adult English language learners, application of course-work content and tools to teaching contexts, and interactions with EAL teaching faculty and students outside the classroom.

Department of Mathematics

The Department of Mathematics offers programs leading to Master of Arts, Master of Science, and Doctor of Philosophy degrees in the mathematical sciences. Students are given ample opportunity to attain scientific excellence by working with an active and broad-based research faculty in diverse areas of pure and applied mathematics..

Contact Information

Department Chair: Jon Rubin
Main Office: 301 Thackeray Hall
412-624-1175
Fax: 412-624-8397
E-mail: mathga@pitt.edu
www.mathematics.pitt.edu/

Additional information concerning the department's graduate program may be obtained from the University of Pittsburgh, Department of Mathematics, Graduate Administrator, 301 Thackeray Hall, Pittsburgh, PA 15260. Phone: 412-624-1175. Fax: 412-624-8397. E-mail: mathga@pitt.edu

Admissions

To qualify for admission to full graduate status, an applicant must have a bachelor's degree in mathematics or a closely related field, a minimum overall QPA of 3.0 (relative to a possible maximum of 4.0) in all undergraduate subjects, and a minimum QPA of 3.25 in the mathematics curriculum. It is desirable that the applicant's undergraduate background include courses in calculus, linear and abstract algebra, differential equations, and real and complex analysis. It is also strongly suggested that applicants provide their scores on the GRE General Test and, if possible, on the GRE Subject Test in mathematics.

Official TOEFL scores from the Educational Testing Service are required if you are an international student whose native language is not English. International applicants whose first language is not English must attain either a minimum TOEFL (administered by the Educational Testing Service) score of 577 (paper-based test), 90 (internet-based test), or an IELTS (administered by the University of Cambridge, Local Examinations Syndicate) score of 7.0. All applicants are required to submit official GRE scores and are highly encouraged to submit GRE Mathematics subject test scores.

Financial Assistance

All full-time PhD students receive financial assistance from the University for 5 years as long as they are in good standing. This funding is extendable to 6 years in special circumstances. Most hold appointments as teaching assistants (TAs) or teaching fellows (TFs). A few are graduate student researchers (GSRs) or Andrew Mellon fellows. Most of the TA commitments are made as a fall/spring package. Summer support is dependent upon the teaching needs of the department during the summer term, so there is no guarantee of more than two terms of support per year. No University support is available to Master students.

Faculty

Dietrich School of Arts and Sciences Faculty

Doctoral

Mathematics, PhD

Requirements for the PhD

A student must maintain a B average over 72 credit hours of course work and pass departmental preliminary and comprehensive examinations. The main requirement for the Doctor of Philosophy (PhD) degree in mathematics is the successful completion and defense of a dissertation embodying a substantial piece of original mathematical research. The main stages are listed below.

PhD Preliminary Examination: Students must pass a written preliminary examination on advanced linear algebra and multivariable calculus. The preliminary examination should be attempted as early as possible and must be passed by April of their second year for support to be extended for a third year.

Comprehensive Examination: Students must pass a PhD comprehensive examination demonstrating their competence in their chosen area of mathematics after approximately one year of course work beyond the preliminary examination or within three years of study.

Dissertation Overview: Following successful completion of the comprehensive examination, students file an application for admission to candidacy for the Doctor of Philosophy. At this stage, students present a proposed topic for doctoral research and a research work plan for its execution to be reviewed by their dissertation committee.

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

Most candidates will require from three to five years of full-time study to complete the degree. Part-time students may be allowed as many as 10 years to finish all requirements.

Additional information and details concerning examinations, requirements, and the advising system can be found in the departmental handbook.

Joint Degree

Mathematics and Computer Science, MA/MS

Requirements for the Dual Degree

The dual degree program requires the completion of a minimum of 45 credits of course work through either a thesis or non-thesis option. The total set of courses taken must include, as a subset, the course requirements for MA degree in mathematics and a MS degree in computer science.

Mathematics/Civil Engineering, MS/MSCE

Joint Master's Degree

A student is able to earn the Master of Science Civil Engineering degree and the Master of Science degree in mathematics at the same time. In general, 42 credits are required, and students must complete the fundamental courses in both areas.

Master's

Mathematics, MA

Degree Requirements

<http://www.mathematics.pitt.edu/graduate/graduate-handbook>

Requirements for the MA

<http://www.mathematics.pitt.edu/graduate/graduate-handbook#masters><http://www.mathematics.pitt.edu/graduate/graduate-handbook#masters>

The MA in mathematics requires completion of at least ten mathematics courses (30 credits) and an oral comprehensive examination. Six of the ten courses must be taken at the 2000-3000 level; the remaining ones may be those given by the department at the 1000 level or those cross-listed with other departments. Achievement of an overall course average of B or better is required for all courses.

The master's programs in applied mathematics contain several tracks, each having a selection of required and elective courses. The MA program requires 30 credits (minimum of 7 departmental, with 5 (of the 7) at the 2000 level or above) and an oral comprehensive examination. An MS option is available that requires a total of 30 credits and a thesis (24 course credits + 6 credits-thesis).

Requirements for the MS

<http://www.mathematics.pitt.edu/graduate/graduate-handbook#masters>

The MS in mathematics requires completion of at least eight mathematics courses (24 credits) and the completion and defense of a thesis in mathematics (6 credits). Six of the eight courses must be taken at the 2000-3000 level; the remaining ones may be those given by the department at the 1000 level or those cross-listed with other departments. Achievement of an overall course average of B or better is required for all courses.

The master's programs in applied mathematics contain several tracks, each having a selection of required and elective courses. The MA program requires 30 credits (minimum of 7 departmental, with 5 (of the 7) at the 2000 level or above) and an oral comprehensive examination. An MS option is available that requires a total of 30 credits and a thesis (24 course credits + 6 credits-thesis).

Mathematics, MS

Degree Requirements

<http://www.mathematics.pitt.edu/graduate/graduate-handbook>

Requirements for the MA

<http://www.mathematics.pitt.edu/graduate/graduate-handbook#masters><http://www.mathematics.pitt.edu/graduate/graduate-handbook#masters>

The MA in mathematics requires completion of at least ten mathematics courses (30 credits) and an oral comprehensive examination. Six of the ten courses must be taken at the 2000-3000 level; the remaining ones may be those given by the department at the 1000 level or those cross-listed with other departments. Achievement of an overall course average of B or better is required for all courses.

The master's programs in applied mathematics contain several tracks, each having a selection of required and elective courses. The MA program requires 30 credits (minimum of 7 departmental, with 5 (of the 7) at the 2000 level or above) and an oral comprehensive examination. An MS option is available that requires a total of 30 credits and a thesis (24 course credits + 6 credits-thesis).

Requirements for the MS

<http://www.mathematics.pitt.edu/graduate/graduate-handbook#masters>

The MS in mathematics requires completion of at least eight mathematics courses (24 credits) and the completion and defense of a thesis in mathematics (6 credits). Six of the eight courses must be taken at the 2000-3000 level; the remaining ones may be those given by the department at the 1000 level or those cross-listed with other departments. Achievement of an overall course average of B or better is required for all courses.

The master's programs in applied mathematics contain several tracks, each having a selection of required and elective courses. The MA program requires 30 credits (minimum of 7 departmental, with 5 (of the 7) at the 2000 level or above) and an oral comprehensive examination. An MS option is available that requires a total of 30 credits and a thesis (24 course credits + 6 credits-thesis).

Medieval and Renaissance Studies Program

Students doing graduate work in the Medieval and Renaissance periods require a particularly broad interdisciplinary background. To meet this need, the faculty involved in MRST at the University of Pittsburgh have instituted a certificate program that is designed to enrich the student's work in the major department while allowing the student to undertake inventive interdisciplinary projects.

Each year the MRST Program organizes a series of lectures featuring visiting national and international scholars and distinguished speakers from the Pittsburgh area. We collaborate with PCMRS, the Pittsburgh Consortium for Medieval and Renaissance Studies (www.pcmrs.org), in regularly bringing together faculty and graduate students from Pitt, Carnegie Mellon, Duquesne, and many other area universities.

Contact Information

Director: Christopher Nygren
Graduate Administrator: Briar Somerville
Main Office: 454 Cathedral of Learning
Phone: 412-624-6564
E-mail: kbs47@pitt.edu
<http://www.medren.pitt.edu/>

Admissions

Students who are already enrolled in a graduate degree program at Pitt can apply for the Certificate in Medieval and Renaissance Studies at any time during their graduate studies, but are encouraged to apply as early in their program of study as possible. Contact Graduate Administrator Briar Somerville at kbs47@pitt.edu for a certificate application form.

Requirements for the Certificate

For students wishing to complete the MRST certificate at the graduate level, the most important requirement is a research paper focused on medieval and/or Renaissance Studies. As specified by the University, a MA certificate also requires at least 15 credits (5 courses) and a PhD certificate requires 18 credits (6 courses). Many of these credits may be drawn from coursework already required for the student's degree in the home department (for instance, the requirements for English, HAA, or French and Italian). Working with the Director of MRST, the student will create an individually tailored course of study that gives consideration both to the requirements of home departments and to the importance of interdisciplinary study.

Faculty

Dietrich School of Arts and Sciences Faculty

Certificate

Medieval and Renaissance Studies Doctoral Certificate

This is a certificate program for MA or PhD students in one of the disciplines who desire to pursue additional interdisciplinary work in Medieval or Renaissance studies.

PhD Certificate Requirements

1. A PhD thesis of an interdisciplinary nature focused on medieval and/or Renaissance studies.
2. At least four graduate courses focused on medieval and/or Renaissance studies. We strongly encourage students to take courses outside of their home departments. In some cases-involving, for instance, infrequent course offerings or research abroad-students may petition the Director to reduce the number of courses required.

3. A reading knowledge of one language other than English. We also strongly recommend (but do not require) that PhD certificate candidates acquire a reading knowledge of Latin.
4. A one-page cover letter attached to the thesis. The letter should be addressed to the Program Director and should use direct language and specific examples. In this letter, we would like you to reflect on what you have learned from earning a certificate from the Program in Medieval and Renaissance Studies.

Medieval and Renaissance Studies Master's Certificate

This is a certificate program for MA or PhD students in one of the disciplines who desire to pursue additional interdisciplinary work in Medieval or Renaissance studies.

MA Certificate Requirements

1. A major interdisciplinary research paper in medieval and/or Renaissance studies. This may be either an MA thesis or a substantial term paper (20 - 30 pages).
2. At least two graduate courses focused on medieval and/or Renaissance studies. We strongly encourage students to take courses outside of their home departments. In some cases-involving, for instance, infrequent course offerings or research abroad-students may petition the Director to reduce the number of courses required.
3. We strongly recommend (but do not require) that MA certificate candidates acquire a reading knowledge of at least one language other than English.
4. A one-page cover letter attached to the research paper. The letter should be addressed to the Program Director and should use direct language and specific examples. In this letter, we would like you to reflect on what you have learned from earning a certificate from the Program in Medieval and Renaissance Studies.

Molecular Biophysics and Structural Biology Program

The Molecular Biophysics and Structural Biology graduate program at the University of Pittsburgh and Carnegie Mellon University educates students to conduct research at the interface between biology, chemistry, and physics. The disciplines of Molecular Biophysics and Structural Biology aim to unravel and explain biological phenomena and processes in atomic and molecular detail. Research carried out by program faculty covers a diverse range of topics in Molecular Biophysics and Structural Biology. Areas of study focus on understanding fundamental principles involved in reactions and regulatory interactions in biological systems. Our research projects attempt to answer the key questions, such as: How do proteins fold and can we prevent misfolding? Can we design proteins with novel functions? How does the coordinated interaction between proteins and nucleic acids lead to cellular differentiation and the formation of an organism? How do macromolecules assemble into molecular machines and viruses? How do these assemblies operate? How do signals traverse membranes?

Contact Information

University of Pittsburgh and Carnegie Mellon University
Molecular Biophysics and Structural Biology Graduate Program
Graduate Studies Office
3550 Terrace Street
M240 Scaife Hall
Pittsburgh, PA 15261
412-648-8957
Fax: 412-648-1077
E-mail: MBSBinfo@medschool.pitt.edu
www.mbsb.pitt.edu

Program Director: James Conway (UPSOM) and Gordon Rule (CMU)

Admission Requirements and Procedures

Students with at least a baccalaureate degree in physics, chemistry, and mathematics or cellular and molecular biology are encouraged to apply. Admissions are based upon the student's academic record, GRE scores, letters of recommendation, previous research experience, written statement of interest, and a personal interview. Applicants who are citizens of countries where English is not the official language (and the Province of Quebec in Canada) are required to submit evidence of English Language proficiency by submitting the official results of the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS). A minimum TOEFL score of 600 (paper) or 250 (computer) or 100 (iBT), or IELTS score of at least 7.00 is required for admission to the Program. We actively seek qualified applicants from underrepresented minorities and students with disabilities.

Additional information and a link to the online application can be found at <http://www.mbsb.pitt.edu/index.php/apply-for-the-mbsb-program>

Financial Assistance

All students receive complete financial support in the form of stipend, tuition, and health insurance.

Training Faculty

Dietrich School of Arts and Sciences Faculty

Course list

The curriculum stresses an interdisciplinary approach to learning and research in modern Molecular Biophysics and Structural Biology. Upon entering the program, each student is advised by a mentoring committee, explores research options through laboratory rotations, and then chooses a thesis advisor in the first year.

A list of available courses can be found at the following website: <http://www.mbsb.pitt.edu/index.php/training/curriculum>

Doctoral

Molecular Biophysics and Structural Biology, PhD

Degree Requirements

All students enter the Program in the fall session and after performing three rotations identify an advisor and area of research. Areas of research focus include: Macromolecular recognition; Virus, lipid and protein structure and interactions; Principles of protein structure and dynamics; Membrane proteins; Gene regulation and signaling; Cellular biophysics; Chemical structure and dynamics. Methodologies employed comprise NMR spectroscopy, X-ray crystallography, cryo electron microscopy, atomic force microscopy, mass spectrometry, infrared spectroscopy and computational molecular biology. Required coursework is completed during the first year. Students are required to complete the Comprehensive Exam by August 31 of their second year in the graduate program.

A minimum of 72 credits beyond the baccalaureate degree is required for the PhD degree. The 72 credits are completed by taking required and elective course work as well as dissertation research credits upon being admitted to candidacy.

Courses

- MSMBPH 2000 - LABORATORY RESEARCH ROTATIONS or
- MOLBPH 2000 - LABORATORY RESEARCH ROTATIONS - taken during the first fall, spring & summer term of the first year.
-
- INTBP 2000 - FOUNDATIONS OF BIOMEDICAL SCIENCE - taken during the fall term of the first year
-
- MSMBPH 2001 - MOL BIOPHYS 1: STRUCTURE or

- MOLBPH 2001 - MOL BIOPHYS 1: STRUCTURE - taken during the fall term of the first year
-
- MSMBPH 2012 - MB2: BIOMOL INTERC & DYNAMICS or
- MOLBPH 2012 - MB2: BIOMOL INTERC & DYNAMICS - taken during the spring term of the first year
-
- MSMBPH 2013 - MOL BIOPHYS 3: THEORY & SIMUL or
- MOLBPH 2013 - MOL BIOPHYS 3: THEORY & SIMUL - taken during the fall term of the second year
-
- INTBP 2290 - SCNTFC ETHCS RESPONSIBLE RES - taken during the summer term of the first year
- BIOST 2041 - INTRO TO STATISTICAL METHODS 1 - taken during the first summer semester of the first year
-
- MSMBPH 2020 - STRUCL BIOL/MOL BIOPHYS SEM or
- MOLBPH 2020 - STRUCL BIOL/MOL BIOPHYS SEM - taken every fall and spring term through graduation
-
- MSMBPH 2030 - DATA AND LITERATURE CLUB or
- MOLBPH 2030 - DATA AND LITERATURE CLUB - beginning with the spring term of the first year, D&L Club is taken every fall and spring term through graduation

Advanced Elective Courses (6 Credits Total)

The courses taken here will be chosen on an individual basis based on the background and interests of the individual student. During the first year, the choice will be made by the student in consultation with the First Year Advisor or Dissertation Advisor. Upon proper approval, the elective courses can be taken either at the University of Pittsburgh (both the Dietrich School of Arts & Sciences and the School of Medicine) as well as Carnegie Mellon University.

Additional information on the core curriculum can be found at

<http://www.mbsb.pitt.edu/index.php/training/curriculum>

- MSMBPH 2000 - LABORATORY RESEARCH ROTATIONS OR
- MOLBPH 2000 - LABORATORY RESEARCH ROTATIONS -taken during the first fall, spring, and summer semester of the first year.
-
- BIOSC 2810 - MACROMOLECULAR STRUCTURE AND FUNCTION -taken during the first fall semester of the first year.
-
- MSMBPH 2001 - MOLECULAR BIOPHYSICS 1: STRUCTURE OR
- MOLBPH 2001 - MOLECULAR BIOPHYSICS 1: STRUCTURE -taken during the first fall semester of the first year.
-
- MSMBPH 2002 - MOLECULAR BIOPHYSICS 2: THEORY AND SIMULATION OR
- MOLBPH 2002 - MOLECULAR BIOPHYSICS 2: THEORY AND SIMULATION -taken during the first spring semester of the first year.
-
- INTBP 2290 - SCIENTIFIC ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH -taken during the first summer semester of the first year.
-
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS -taken during the first summer semester of the first year.
-
- MSMBPH 2020 - STRUCTURAL BIOLOGY/MOLECULAR BIOLOGY SEMINAR OR
- MOLBPH 2020 - STRUCTURAL BIOLOGY/MOLECULAR BIOPHYSICS SEMINAR -taken every fall and spring semester through graduation.
-
- MSMBPH 2030 - DATA AND LITERATURE CLUB OR
- MOLBPH 2030 - DATA AND LITERATURE CLUB -taken every fall and spring semester through graduation.

- Advanced Elective Courses-6 credits total-with the permission of his/her advisor, students are permitted to choose from a number of courses offered at Pitt as well as CMU.

Additional Information

Terminal Masters Degree

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

Department of Music

The Department of Music offers the degrees of Master of Arts and Doctor of Philosophy in music.

The graduate program in music consists of four areas of concentration:

- Musicology
- Ethnomusicology
- Composition and Theory
- Jazz Studies

Students may combine work for the MA and PhD degrees with a program of theoretical, historical, or area studies specialization leading to a certificate in Cultural Studies, Medieval and Renaissance Studies, Global Studies, Asian Studies, Latin American Studies, European Union Studies, West European Studies, Russian and East European Studies, Film Studies or Gender, Sexuality, and Women's Studies.

Contact Information

Department Chair: Mathew Rosenblum

Main Office: 110 Music Building

412-624-4126

Fax: 412-624-4186

E-mail: musicdpt@pitt.edu, music.grad.info@pitt.edu

www.music.pitt.edu

Admissions inquiries concerning the department's graduate program may be obtained from the University of Pittsburgh, Department of Music, Director of Graduate Admissions, Dr. Amy Williams, 110 Music Building, Pittsburgh, PA 15260. Phone: 412-624-4120. Fax: 412-624-4186. E-mail: amywill@pitt.edu

Admissions

The deadline for receipt of all elements of the application is **January 5**.

Prospective students should apply online by filling out the online application form

(app.applyyourself.com/AYApplicantLogin/fl_ApplicantLogin.asp?id=up-as), paying the application fee and attaching pdf files of the statement of purpose, transcripts, resumé/CV and work samples. Applicants must include letters of recommendation with the online application. Please send all additional application materials (music scores, CDs, test scores) to:

University of Pittsburgh

School of Arts and Sciences

Department of Music

Amy Williams, Director of Graduate Admissions

110 Music Building

The elements of the application are:

1. *Application form* and \$50 application fee.
2. *Statement of purpose*, an essay of about two pages that describes the applicant's academic background and professional goals.
3. *Undergraduate and graduate transcripts* from all higher education institutions attended. These should be scanned and included with online application. Students will be required to forward official transcripts/translations at the time of matriculation (upon enrollment) to the Graduate School to clear transcript contingencies.
4. *CV or Résumé*.
5. *Three letters of recommendation*, preferably by persons who have taught the applicant in subjects related to the four research subdisciplines, rather than in performance lessons.
6. *Official scores of the general test of the Graduate Record Examination (GRE)*. Please note that international applicants from a country whose official language is not English are exempt from taking the GRE. All others are required to take the test (including international students who hold or will hold a degree from an English-language institution). Applicants are encouraged to take the test by November 1, if possible, so that scores can reach the department by January 5. For information, go to www.gre.org (<http://www.gre.org>). The University of Pittsburgh GRE code is 2927.
7. *Samples of work*. Applicants in historical musicology and ethnomusicology should submit two papers on an analytical, historical, or theoretical topic. Applicants in composition and theory should submit three scores and a CD of recent compositions, together with one paper on an analytical or theoretical topic. Applicants in jazz studies should submit a recording that demonstrates their ability to improvise on an original jazz composition and a jazz standard. They should also send a full score of an original work for a large jazz ensemble/orchestra and a full score of an original or standard composition for a small jazz ensemble (up to 9 players). Finally, they should submit a research paper on a style or period in the history of jazz. **Please note:** papers can be submitted online. However, in order to submit two papers, both must be merged into a single pdf document first and then submitted.
8. *TOEFL or IELTS Exam scores*. International applicants whose country's official language is not English must submit certified scores of one of these exams. A minimum TOEFL score of 90 (with at least a score of 22 in all of the four sections of speaking, listening, reading and writing) is required. The required minimum IELTS score is 7.0 (with at least 6.5 in each of its four sections).

For information on music department admissions, contact the department's Director of Graduate Admissions, Professor Amy Williams (amywill@pitt.edu). More general information can be found on the University Graduate Admissions (<http://www.asgraduate.pitt.edu/applicationadmission>) and the Graduate Studies (<http://www.asgraduate.pitt.edu>) home pages.

International students are urged to consult the website of the Office of International Services (<http://www.ois.pitt.edu>).

Financial Assistance

A graduate student receiving a fellowship or teaching assistantship/teaching fellowship from the University of Pittsburgh who maintains satisfactory progress toward the degree can expect to receive up to four years of financial aid; continuing students must request renewal of financial assistance for the following year no later than February 15. Students who have successfully passed the PhD comprehensive examinations in their fourth year may receive additional financial assistance if there are adequate funds. The department nominates the most outstanding candidates for University- and school-wide fellowships. Students seeking financial assistance must request consideration for aid at the time of application for admission; admission by itself carries no commitment of financial assistance.

Faculty

Dietrich School of Arts and Sciences Faculty

Doctoral

Music - Composition and Theory Concentration, PhD

Requirements for the PhD:

Credit Requirement: A minimum of 72 credit hours, including the master's degree, earned from any suitable combination of formal course work, independent study, and dissertation work as detailed in the department's Graduate Handbook which can be downloaded at www.music.pitt.edu/graduate.

The University will accept up to 24 transfer credits for graduate courses comparable in scope and content to those required by the department, as judged by the department's Director of Graduate Studies.

PhD candidates must also satisfy the following requirements (distinctions between the various program requirements are detailed):

Language Requirement: For Musicology, reading knowledge of German and one other research language besides English. For Ethnomusicology and Jazz Studies, reading knowledge of a language relevant to the field of specialization and chosen in consultation with the department's Director of Graduate Studies. For Composition and Theory, reading knowledge of one language besides English, chosen in consultation with the department's Director of Graduate Studies.

First Year Evaluation: At the end of the first year of graduate study all first-year students meet with the faculty at a regularly scheduled faculty meeting for an oral interview/evaluation of their progress in the program.

Preliminary Evaluation: The faculty formally evaluates each student in the first year in residence beyond the master's degree, to identify those students who may be expected to complete the PhD degree and to reveal areas of weakness in their preparation that need to be remedied.

Comprehensive Examination: Students take a written comprehensive examination normally during the third year at the completion of their formal course work. The examination in Musicology covers the history of Western music and musical analysis; in Ethnomusicology it covers the intellectual history, theory, and methodologies used in the field, as well as topics in the students' geocultural areas of interest; in Jazz Studies it covers jazz literature and history, performance, and jazz composition and analysis; in Composition and Theory it covers tonal and atonal analysis, 20th and 21st - century musical language, and orchestration.

Dissertation Overview: Following successful completion of the comprehensive examination, students prepare a written prospectus of the dissertation project for review by their dissertation committee. Approval of the overview brings admission to candidacy for the PhD degree.

Dissertation: Candidates in Musicology and Ethnomusicology submit a major work of original scholarship. Candidates in Jazz Studies submit a major work of original scholarship and produce a one-hour recital of original compositions. Candidates in Composition and Theory submit a large-scale composition and work of original scholarship in music theory.

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

Music - Ethnomusicology Concentration, PhD

Requirements for the PhD:

Credit Requirement: A minimum of 72 credit hours, including the master's degree, earned from any suitable combination of formal course work, independent study, and dissertation work as detailed in the department's Graduate Handbook which can be downloaded at www.music.pitt.edu/graduate.

The University will accept up to 24 transfer credits for graduate courses comparable in scope and content to those required by the department, as judged by the department's Director of Graduate Studies.

PhD candidates must also satisfy the following requirements (distinctions between the various program requirements are detailed):

Language Requirement: For Musicology, reading knowledge of German and one other research language besides English. For Ethnomusicology and Jazz Studies, reading knowledge of a language relevant to the field of specialization and chosen in consultation with the department's Director of Graduate Studies. For Composition and Theory, reading knowledge of one language besides English, chosen in consultation with the department's Director of Graduate Studies.

First Year Evaluation: At the end of the first year of graduate study all first-year students meet with the faculty at a regularly scheduled faculty meeting for an oral interview/evaluation of their progress in the program.

Preliminary Evaluation: The faculty formally evaluates each student in the first year in residence beyond the master's degree, to identify those students who may be expected to complete the PhD degree and to reveal areas of weakness in their preparation that need to be remedied.

Comprehensive Examination: Students take a written comprehensive examination normally during the third year at the completion of their formal course work. The examination in Musicology covers the history of Western music and musical analysis; in Ethnomusicology it covers the intellectual history, theory, and methodologies used in the field, as well as topics in the students' geocultural areas of interest; in Jazz Studies it covers jazz literature and history, performance, and jazz composition and analysis; in Composition and Theory it covers tonal and atonal analysis, 20th and 21st - century musical language, and orchestration.

Dissertation Overview: Following successful completion of the comprehensive examination, students prepare a written prospectus of the dissertation project for review by their dissertation committee. Approval of the overview brings admission to candidacy for the PhD degree.

Dissertation: Candidates in Musicology and Ethnomusicology submit a major work of original scholarship. Candidates in Jazz Studies submit a major work of original scholarship and produce a one-hour recital of original compositions. Candidates in Composition and Theory submit a large-scale composition and work of original scholarship in music theory.

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

Music - Jazz Studies Concentration, PhD

Requirements for the PhD:

Credit Requirement: A minimum of 72 credit hours, including the master's degree, earned from any suitable combination of formal course work, independent study, and dissertation work as detailed in the department's Graduate Handbook which can be downloaded at www.music.pitt.edu/graduate.

The University will accept up to 24 transfer credits for graduate courses comparable in scope and content to those required by the department, as judged by the department's Director of Graduate Studies.

PhD candidates must also satisfy the following requirements (distinctions between the various program requirements are detailed):

Language Requirement: For Musicology, reading knowledge of German and one other research language besides English. For Ethnomusicology and Jazz Studies, reading knowledge of a language relevant to the field of specialization and chosen in consultation with the department's Director of Graduate Studies. For Composition and Theory, reading knowledge of one language besides English, chosen in consultation with the department's Director of Graduate Studies.

First Year Evaluation: At the end of the first year of graduate study all first-year students meet with the faculty at a regularly scheduled faculty meeting for an oral interview/evaluation of their progress in the program.

Preliminary Evaluation: The faculty formally evaluates each student in the first year in residence beyond the master's degree, to identify those students who may be expected to complete the PhD degree and to reveal areas of weakness in their preparation that need to be remedied.

Comprehensive Examination: Students take a written comprehensive examination normally during the third year at the completion of their formal course work. The examination in Musicology covers the history of Western music and musical analysis; in Ethnomusicology it covers the intellectual history, theory, and methodologies used in the field, as well as topics in the students' geocultural areas of interest; in Jazz Studies it covers jazz literature and history, performance, and jazz composition and analysis; in Composition and Theory it covers tonal and atonal analysis, 20th and 21st - century musical language, and orchestration.

Dissertation Overview: Following successful completion of the comprehensive examination, students prepare a written prospectus of the dissertation project for review by their dissertation committee. Approval of the overview brings admission to candidacy for the PhD degree.

Dissertation: Candidates in Musicology and Ethnomusicology submit a major work of original scholarship. Candidates in Jazz Studies submit a major work of original scholarship and produce a one-hour recital of original compositions. Candidates in Composition and Theory submit a large-scale composition and work of original scholarship in music theory.

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

Music, PhD

Requirements for the PhD:

Credit Requirement: A minimum of 72 credit hours, including the master's degree, earned from any suitable combination of formal course work, independent study, and dissertation work as detailed in the department's Graduate Handbook which can be downloaded at www.music.pitt.edu/graduate.

The University will accept up to 24 transfer credits for graduate courses comparable in scope and content to those required by the department, as judged by the department's Director of Graduate Studies.

PhD candidates must also satisfy the following requirements (distinctions between the various program requirements are detailed):

Language Requirement: For Musicology, reading knowledge of German and one other research language besides English. For Ethnomusicology and Jazz Studies, reading knowledge of a language relevant to the field of specialization and chosen in consultation with the department's Director of Graduate Studies. For Composition and Theory, reading knowledge of one language besides English, chosen in consultation with the department's Director of Graduate Studies.

First Year Evaluation: At the end of the first year of graduate study all first-year students meet with the faculty at a regularly scheduled faculty meeting for an oral interview/evaluation of their progress in the program.

Preliminary Evaluation: The faculty formally evaluates each student in the first year in residence beyond the master's degree, to identify those students who may be expected to complete the PhD degree and to reveal areas of weakness in their preparation that need to be remedied.

Comprehensive Examination: Students take a written comprehensive examination normally during the third year at the completion of their formal course work. The examination in Musicology covers the history of Western music and musical analysis; in Ethnomusicology it covers the intellectual history, theory, and methodologies used in the field, as well as topics in the students' geocultural areas of interest; in Jazz Studies it covers jazz literature and history, performance, and jazz composition and analysis; in Composition and Theory it covers tonal and atonal analysis, 20th and 21st - century musical language, and orchestration.

Dissertation Overview: Following successful completion of the comprehensive examination, students prepare a written prospectus of the dissertation project for review by their dissertation committee. Approval of the overview brings admission to candidacy for the PhD degree.

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

Master's

Music - Composition and Theory Concentration, MA

Requirements for the MA:

All students must apply to and be admitted to the PhD program. Those who do not hold a Master's degree will first complete the necessary requirements for the MA. For the master's degree, students must earn 30 credits with a B average or better in courses numbered 2000 or above, and write a thesis (if required); the University will accept up to six transfer credits for courses comparable in scope and content to those required by the department, as judged by the department's Director of Graduate Studies. All entering graduate students enroll in at least four out of five available proseminars (MUSIC 2111, MUSIC 2121, MUSIC 2131, MUSIC 2141, MUSIC 2151) providing perspectives for scholarly research in the field as a whole and in the disciplines represented within the department. Much of the remainder of the MA curriculum consists of more specialized required and elective courses that are specified for each discipline, e.g., Orchestration, Electronic and Computer Music, and private tutorials in composition and analysis for students in Composition and Theory; Field and Lab, area courses and seminars for Ethnomusicology; Introduction to Jazz Literature, Advanced Jazz Composition and Analysis for Jazz Studies; and topical seminars for Musicology. Students in Musicology must demonstrate a reading knowledge of a second research language.

Music - Ethnomusicology Concentration, MA

Requirements for the MA:

All students must apply to and be admitted to the PhD program. Those who do not hold a Master's degree will first complete the necessary requirements for the MA. For the master's degree, students must earn 30 credits with a B average or better in courses numbered 2000 or above, and write a thesis (if required); the University will accept up to six transfer credits for courses comparable in scope and content to those required by the department, as judged by the department's Director of Graduate Studies. All entering graduate students enroll in at least four out of five available proseminars (MUSIC 2111, MUSIC 2121, MUSIC 2131, MUSIC 2141, MUSIC 2151) providing perspectives for scholarly research in the field as a whole and in the disciplines represented within the department. Much of the remainder of the MA curriculum consists of more specialized required and elective courses that are specified for each discipline, e.g., Orchestration, Electronic and Computer Music, and private tutorials in composition and analysis for students in Composition and Theory; Field and Lab, area courses and seminars for Ethnomusicology; Introduction to Jazz Literature, Advanced Jazz Composition and Analysis for Jazz Studies; and topical seminars for Musicology. Students in Musicology must demonstrate a reading knowledge of a second research language.

Music - Jazz Studies Concentration, MA

Requirements for the MA:

All students must apply to and be admitted to the PhD program. Those who do not hold a Master's degree will first complete the necessary requirements for the MA. For the master's degree, students must earn 30 credits with a B average or better in courses numbered 2000 or above, and write a thesis (if required); the University will accept up to six transfer credits for courses comparable in scope and content to those required by the department, as judged by the department's Director of Graduate Studies. All entering graduate students enroll in at least four out of five available proseminars (MUSIC 2111, MUSIC 2121, MUSIC 2131, MUSIC 2141, MUSIC 2151) providing perspectives for scholarly research in the field as a whole and in the disciplines represented within the department. Much of the remainder of the MA curriculum consists of more specialized required and elective courses that are specified for each discipline, e.g., Orchestration, Electronic and Computer Music, and private tutorials in composition and analysis for students in Composition and Theory; Field and Lab, area courses and seminars for Ethnomusicology; Introduction to Jazz Literature, Advanced Jazz Composition and Analysis for Jazz Studies; and topical seminars for Musicology. Students in Musicology must demonstrate a reading knowledge of a second research language.

Music - Musicology Concentration, MA

Requirements for the MA:

All students must apply to and be admitted to the PhD program. Those who do not hold a Master's degree will first complete the necessary requirements for the MA. For the master's degree, students must earn 30 credits with a B average or better in courses numbered 2000 or above, and write a thesis (if required); the University will accept up to six transfer credits for courses comparable in scope and content to those required by the department, as judged by the department's Director of Graduate Studies. All entering graduate students enroll in at least four out of five available proseminars (MUSIC 2111, MUSIC 2121, MUSIC 2131, MUSIC 2141, MUSIC 2151) providing perspectives for scholarly research in the field as a whole and in the disciplines represented within the department. Much of the remainder of the MA curriculum consists of more specialized required and elective courses that are specified for each discipline, e.g., Orchestration, Electronic and Computer Music, and private tutorials in composition and analysis for students in Composition and Theory; Field and Lab, area courses and seminars for Ethnomusicology; Introduction to Jazz Literature, Advanced Jazz Composition and Analysis for Jazz Studies; and topical seminars for Musicology. Students in Musicology must demonstrate a reading knowledge of a second research language.

Department of Neuroscience

The Center for Neuroscience (CNUP) Training program is an interschool PhD degree-granting program offered cooperatively by the School of Arts and Sciences (Neuroscience, NROSCI) and the School of Medicine (Neurobiology, MSNBIO). The program introduces students to the fundamental issues and experimental approaches in neuroscience and trains them in the theory and practice of laboratory research. Research interests of the training faculty focus on several prominent themes, including behavioral/systems/cognitive, cell and molecular, development/plasticity/repair, and the neurobiology of disease.

This large research-based training program offers outstanding opportunities for students to pursue research in laboratories within more than 30 different departments and University centers. Major features of the program include extensive collaborative interactions among its faculty members

and its affiliation with Auditory Neuroscience, the Brain Institute, the Center for the Neural Basis of Cognition (a joint program with Carnegie Mellon University), Conte Center for Translational Mental Health Research, Pittsburgh Hearing Research Center, Pittsburgh Institute for Neurodegenerative Diseases, Pittsburgh Center for Pain Research, and other on-campus research centers.

Training is also available for a master's degree through the Department of Neuroscience in the Dietrich School of Arts and Sciences. It is important to note that this is a departmental program rather than a component of CNUP. Thus, training is only available with faculty with primary or secondary appointments in the Department of Neuroscience. Applicants must also arrange for a faculty sponsor before their application will be considered. A more detailed explanation of the program requirements is available on the Department of Neuroscience Web site at <http://neuroscience.pitt.edu/programs/masters-program>

Contact Information

Center for Neuroscience
A206 Langley Hall
412-383-7582
Fax: 412-624-5753
E-mail: nrf26@pitt.edu
<http://www.cnup.pitt.edu/training/phd-program>

Admission Requirements and Procedures

Students are admitted into the CNUP training program on the assumption that they will be able to meet all requirements for the PhD degree. Those that are selected show evidence of a high level of intellectual talent, a strong interest in neuroscience, and a commitment to scholarship and research.

Admission decisions are based on many factors including the candidate's statement of interest and goals in the field of neuroscience, evidence of research experience and accomplishment, letters of recommendation, grades, and personal interviews. An outstanding record in one of these areas may compensate for poorer performance in another area. In general, successful applicants have a BS degree in biology, chemistry, computer science, mathematics, neuroscience, or psychology with a cumulative grade point average of at least 3.40 (on a 4.00 scale).

Additional information and a link to our on-line application can be found at: <http://www.cnup.pitt.edu/training/phd-program>

Financial Assistance

All students receive full stipend support and individual health benefits. This support is derived from University fellowships and numerous grants funded by the federal government and private agencies. Students in the program also have access to sponsorship on NIH training grants.

Training Faculty

Dietrich School of Arts and Sciences Faculty

Doctoral

Neuroscience, PhD

Overview of Degree Program

Neuroscience is the study of the structure and function of the nervous system. The field has emerged over the past two decades as one of the fastest-growing disciplines within the biomedical sciences, attracting people from many different disciplines in the natural sciences. By now, the study of mind and brain is arguably the most exciting scientific enterprise of our time.

Understanding the nervous system provides key insights into human nature as well as treatments for a host of devastating neurologic and psychiatric disorders. Our graduate program introduces students to the fundamental issues and experimental approaches in neuroscience and trains them in the theory and practice of laboratory research.

The CNUP Graduate Training Program has been designed to accomplish several objectives:

- To develop competence in conducting laboratory research including planning, executing, reporting, and defending an original piece of research relevant to the study of neuroscience.
- To develop general competence in neuroscience and specific expertise in one or more areas of neuroscience such as behavioral/systems/cognitive, cell and molecular, development/plasticity/repair, and neurobiology of disease.
- To develop a general professional competence in oral and written expression, necessary for a career in science and/or teaching.
- To develop fundamental skills in scientific reasoning required to redefine research questions and devise innovative multidisciplinary strategies as a means for adapting to the continually evolving landscape of neuroscience and neuroscience research.

In formulating the graduate training program, the faculty has been guided by several principles. First, the program should aid each student in the development of an individualized training program based on the student's background and interests.

Second, research experience should form the core of each student's training and as such should not be postponed by a lengthy period of time devoted exclusively to coursework.

Third, students should be able to complete the program in approximately five years.

Fourth, students should be evaluated in terms of those competencies that are important to a research scientist: designing, conducting and evaluating research, both their own and that of others.

Thus, the progress that a student makes in the program is considered primarily in terms of the student's performance as an investigator.

Degree Requirements

- A sequence of three core courses that are typically completed in the first year (Cellular and Molecular Neurobiology I & II and Systems Neurobiology)
- 2-3 elective courses (there are many from which to choose).
- A quantitative analysis/statistics course and an ethics course.
- Proseminar in Fall Term of Year 1 (informal weekly presentations by faculty of ongoing research).
- A Grant Writing course.
- Research seminar (regular attendance is required throughout graduate training).
- Journal Club (regular attendance at a broad-based student-run journal club is required until students have advanced to candidacy).

Other Requirements

- PhD Prelim Evaluation
- Year 2 Research Evaluation
- Comprehensive Exam
- Proposal/Overview
- Dissertation and Final Examination

Master's

Neuroscience, MS

The following sections outline the academic courses, the research experiences, and the oral and written examinations (herein referred to as "milestones") that the student must successfully complete prior to being awarded the master's degree. These requirements are described in terms of the academic and research accomplishments expected during each year of the student's progress through the program. Deviations from the outlined sequence and time schedule need to be approved by the Chair of the Graduate Advising Committee.

MS Degree Requirements

Credits: A minimum of 24 credit hours, including 12 credit hours of graduate course work in courses numbered 2000 or above.

- NROSCI 2102 - SYSTEMS NEUROBIOLOGY
- OR
- NROSCI 2011 - FUNCTIONAL NEUROANATOMY

- AND
- NROSCI 2100 - CELLULAR AND MOLECULAR NEUROBIOLOGY 1
- NROSCI 2101 - CELLULAR & MOLECULAR NEUROBIOLOGY 2
- OR
- NROSCI 2012 - NEUROPHYSIOLOGY
- NROSCI 2017 - SYNAPTIC TRANSMISSION
- A graduate-level course in statistics also is strongly recommended though not required

Additional

Students must also participate in a journal club every fall and spring term (this could be either a CNUP journal club or a more specialized journal club), and must attend the neuroscience seminar series (NROSCI 2106). A minimum grade of B is required to pass a course, and a cumulative grade point average of at least 3.0 must be maintained throughout the course of study.

Students must complete at least 12 credit hours of coursework toward the total of 30 credits required for the master's degree. Course credits completed before admission to the Department of Neuroscience Master's Degree program cannot be applied to the credit hour requirements required for the master's degree, although prior coursework may satisfy specific course requirements.

Students are also required to pass two milestones en route to the master's degree: the Reprint Exam and the Master's Thesis Defense. Specific details regarding these milestones are provided later in this document.

Yearly Sequence of Requirements and Expectations

Entering Students

Entering students should schedule an introductory meeting with the Chair of the Graduate Advising Committee (currently Dr. J. Patrick Card). The purpose of this meeting is to answer any questions that the student may have and to assist the student in getting settled in the program. Prior to the beginning of the student's first term, the student, with the aid of their research mentor and the Chair of the Graduate Advising Committee, outlines a complete plan of study leading to the Master's Degree.

First Year

The major objectives of the first year are to become actively engaged in laboratory research, to complete core course requirements, and to obtain sufficient experience to pass the Reprint Exam. Participation in journal clubs, research seminars, and involvement in critical assessment of the literature through readings with the mentor and peers is integral to meeting these objectives.

It is required that students participate in the following activities during the fall and spring terms of their first year:

1. laboratory research
2. core courses in neuroscience
3. journal club
4. neuroscience seminar series.

During the summer term at the end of their first year, students should focus primarily on research, although some course work may be appropriate (e.g., statistics). During the first year, the students typically register for 3-9 research credits of Directed Study (NROSCI 2902) per term; the students should register for this course pass/fail.

Students are required to submit a research progress report at the end of the first year of study. This report is due by the last day of final exam week of the second term.

The Reprint Exam (see Section 9.1) must be completed by May 31 of the first year of study.

This assumes that the student initiated study in the program at the beginning of the fall term. Because admission into the program is considered on a rolling basis, it is not unusual for students to enter the program in the spring or summer terms. In these instances, completion of the reprint examination should take place at the end of the first month following the second term of study.

Second Year

After completion of the first year, the only remaining requirements are to finish course requirements and complete a master's thesis project. A list of elective courses currently offered can be obtained from the administrative office. Selection of the coursework that will be used to satisfy the requirements of the program should be made in consultation with their mentor and is subject to approval by the Director of Graduate Studies. However, given the time constraints of completing the degree it is expected that research will be the principal focus of students throughout their program of study.

During each fall and spring term the student is enrolled in the program, the student must participate in:

1. research (registered for as 6-9 credits, NROSCI 2990, pass/fail)
2. journal club
3. neuroscience seminar series (NROSCI 2106).

Department of Philosophy

The Department of Philosophy offers the degrees of Master of Arts and Doctor of Philosophy.

It is possible for students in the Department of Philosophy to plan a combined program with the Department of History and Philosophy of Science by fulfilling specific requirements in each of the departments. The Departments of Classics, Philosophy, and History and Philosophy of Science jointly offer a graduate program leading to the MA and PhD degrees with an area of concentration in classics, philosophy, and ancient science.

Contact Information

Department Chair: James Shaw
Main Office: 1017 Cathedral of Learning
412-624-5775
Fax: 412-624-5377
E-mail: jrs164@pitt.edu
<http://www.philosophy.pitt.edu/>

Additional information concerning the department's graduate program may be obtained from the University of Pittsburgh, Department of Philosophy, Graduate Administrator, 1017 Cathedral of Learning, Pittsburgh, PA 15260. Phone: 412-624-5774. Fax: 412-624-5377. E-mail: jrs164@pitt.edu.

Admissions

Applicants for admission must submit transcripts of all college-level work, three letters of recommendation, a statement of purpose, a writing sample, and scores on the verbal, quantitative, and writing assessment-analytical sections of the Graduate Record Examination. International applicants whose first language is not English are required to submit either the TOEFL administered by the Educational Testing Service or the IELTS administered by the University of Cambridge, Local Examination Syndicate. The required minimum TOEFL score is 90 (with at least a score of 22 in all of the four sections of speaking, listening, reading, and writing). The required minimum IELTS score 7.0 (with at least 6.5 in each of its four sections). Applications will be accepted for fall term admission until January 10. The department admits students only for the fall term.

Financial Assistance

Many students in the PhD program are supported by fellowships or teaching assistantships/fellowships. The rates are set annually by the University. The department does not offer financial support to non-continuing MA students.

Faculty

Dietrich School of Arts and Sciences Faculty

Doctoral

Philosophy, PhD

Requirements for the PhD

The University requirement for the PhD is 72 credits. The department requires that 36 of these credits must be obtained by taking 12 seminars (including directed studies) offered by the philosophy department (or an approved seminar offered by another department) passed with a grade of at least B, and the remainder are typically satisfied by dissertation research.

Departmental requirements are fully spelled out in the *Handbook of Rules and Policies for Graduate Study in Philosophy at the University of Pittsburgh (PDF)*. In summary, these requirements include:

1. proficiency in French, German, Greek, or Latin, shown by passing a departmental translation examination
2. proficiency in basic and advanced logic, normally shown by passing (with a grade of at least B) PHIL 2500
3. proficiency in ethics, metaphysics and epistemology, and philosophy of science
4. proficiency in the history of philosophy, shown by doing three units, where a unit is a graduate seminar or departmental examination covering a historical topic

When these requirements have been satisfied, the student is comprehensively evaluated and starts working on a paper to serve as the basis for comprehensive examination, which is the student is expected to take by the end of his or her seventh term. Students who pass this examination are then allowed to form a dissertation committee and to present this committee a prospectus for a dissertation. If the prospectus is approved, the student is admitted to Ph.D. candidacy and proceeds to writing the dissertation. Once the dissertation is approved for examination, the student must pass a final oral exam on the dissertation and their research.

Teaching Internship

In order to qualify for the PhD, each graduate student must, under the supervision of the faculty, teach or lead discussion sections for at least two different courses. Teaching assistants and teaching fellows satisfy this requirement in the course of fulfilling their teaching duties. Special arrangements are made to enable other graduate students to satisfy this requirement.

Master's

Philosophy, MA

M.A. in Philosophy

The department has no regular terminal M.A. program. Except in extraordinary circumstances, students working towards an M.A. in Philosophy are Ph.D. students in other departments at the University who are seeking a "secondary M.A.". All M.A. students are supervised by the Director of Graduate Studies and must satisfy the following requirements:

A. The student must satisfy the Area Requirement in the field of metaphysics and/or epistemology, and in addition one of the other Area Requirements (i.e. either ethics or the philosophy of science), as described in §3.3 of this Handbook. These requirements may (but need not) be satisfied by taking the core courses for Ph.D. students (described in section 3.4 of this Handbook). But M.A. students may not take the M&E Core Seminar in the Fall term: courses in the Core Sequence are open to M.A. students only in the spring term.

B. The student must do at least two units of history (where a "unit" is defined in §3.5 of this Handbook), such that one is in ancient philosophy and the other in modern/nineteenth century philosophy.

C. The student must either pass the Basic Logic Exam or Phil 1500 (or a more advanced logic course), as described in §3.1 of this Handbook.

There is also a Course-Number Requirement, parallel to that described in §3.6 of the Handbook: i.e., the student must pass (with a grade of B or better) at least 10 courses (30 credits) offered by the Department, of which at least 6 courses (18 credits) must be 2000-level or 3000-level, and no more than four may be at the 1000-level. (Neither Directed nor Independent studies may count.) None of the courses used to fulfill these requirements can be among those used to fulfill requirements for another degree. All requirements for the M.A. degree should be completed within a period of four calendar years from the student's initial registration for graduate study.

When these requirements have been met, the student will be comprehensively evaluated by the Department and, if the evaluation is favorable, the Department will recommend the conferral of the M.A. degree. Students must register for at least one credit in the term of graduation and be registered for a minimum of three credits in the 12-month period preceding the graduation month. Note that the M.A. degree is only conferred upon students with an overall QPA of 3.0 or higher.

Secondary M.A. Programs in other departments

A secondary M.A. in philosophy is available to a student enrolled in a Ph.D. program in another department at the University. The student must satisfy requirements (A)-(C) and the Course-Number Requirement described in §8.1 of the Handbook. Note that **none** of the courses used to fulfill these requirements can be among those used for residence requirements for the student's "home" degree. When these requirements have been met, the student will be comprehensively evaluated by the Department and, if the evaluation is favorable, the Department will recommend conferral of the M.A. degree. The Department waives its Language Requirement and defers responsibility for residency and other University requirements to the student's "home" department.

Students enrolled in the regular Ph.D. program in the Department may pursue a secondary M.A. degree in other departments at the University. If the secondary M.A. would contribute significantly to the student's philosophical training, or form an integral part of their projected dissertation project, the student may submit a written request to the Graduate Committee that his or her pursuit of the secondary M.A. be officially endorsed by the Department. The Graduate Committee, with the approval of the Chair, may endorse the student's secondary M.A. in which case an additional year of financial support by the Department will be granted, and the timing of requirements will be appropriately adjusted.

Department of Physics and Astronomy

The Department of Physics and Astronomy offers the MS and PhD degrees in physics. The graduate program provides a broad experimental, observational, and theoretical foundation upon which students build careers as scientists prepared for both teaching and research at major academic, government and industrial laboratories, educators at universities and colleges, and as independent scientific entrepreneurs.

Contact Information

Main Office: 100 Allen Hall
412-624-9066 or 412-624-9000
Fax: 412-624-9163
E-mail: pagrad@pitt.edu
www.physicsandastronomy.pitt.edu

Research

The graduate programs in the Department of Physics and Astronomy are designed primarily for students who wish to obtain the PhD degree, although the MS degree is also offered without financial support. Both the PhD and the MS programs provide high-quality training for students. A set of core courses is to be taken by all graduate students unless the core course material has been demonstrably mastered in other ways. These core courses cover dynamical systems, electromagnetic theory, mathematical methods, quantum mechanics, and statistical physics & thermodynamics. In addition, elective courses are offered in several advanced areas of physics. PhD thesis topics may be chosen from a variety of research fields, including astrophysics/cosmology, condensed matter physics, particle physics, and physics education research. Topics in astrophysics/cosmology include: observational, numerical, and theoretical cosmology; dark matter and dark energy; galaxy formation and evolution; active galactic nuclei and quasars; galactic and intergalactic medium; stellar atmospheres; massive stars; supernovae; and physics of the early universe. Topics in condensed

matter physics include: biological physics; nanoscience; quantum information; quantum kinetics; quantum optics; quantum states of matter; semiconductor physics; soft condensed matter physics; statistical physics; superconductivity and superfluidity; and ultrafast optics. Topics in particle physics include: the origin of mass and flavor; the search for new symmetries of nature; neutrino physics; CP violation; heavy quarks; leptiquarks; supersymmetry; extra dimensions; baryogenesis; effective field theory; and strong interaction field theory. Topics in physics education research include: cognitive issues in learning physics; and development and evaluation of research-based curricula for introductory and advance physics courses. Multidisciplinary thesis research may also be carried out in, for example, particle astrophysics, biophysics, chemical physics, laser physics, materials science, nanoscience, and surface science. This research may be done in cooperation with faculty from other departments of the University.

Admissions

To be considered for admission, a student must have earned a baccalaureate degree; one of the physical sciences, mathematics, astronomy/astrophysics or engineering with relevant physics courses is required. Research experience is recommended but not required. Must have an impressive undergraduate record; and must submit a complete application. The application also serves as an application for financial aid from the department, if the candidate so desires. A complete application consists of the following. Application details are provided on our website under "How to Apply".

- An online application
- Transcripts (clear downloads) from all college-level institutions attended (unofficial until admitted)
- Proof of degree(s) either posted on the transcript or in another form
- Minimum GPA for admission with full status is 3.0 on a 4.0 scale
- Graduate Record Examination (GRE) scores General (currently required, check website for any changes) and Advanced Physics test (recommended)
- Brief statement of purpose, including rank ordered list of research preferences; in addition to list of textbooks used for physics class
- Evidence of any research experience (recommended but not required)
- Curriculum Vitae (optional)
- Three letters of recommendation
- International applicants only: TOEFL (Test of English as a Foreign Language) or IELTS scores and completed Certification of Financial Responsibility and International Graduate Student Supplemental Form for the Dietrich School of Arts and Sciences (Refer to department's graduate application details website for minimum score information)

Financial Aid

Financial aid is normally provided to graduate students through teaching or research assistantships. In addition, numerous competitive fellowships are available for students. All qualified applicants are entered into a pool for these fellowships. The department endeavors to support all students throughout their entire graduate career, provided good academic standing is maintained and progress is being made toward the degree.

Faculty

Dietrich School of Arts and Sciences Faculty

Doctoral

Physics, PhD

Requirements for the Doctor of Philosophy

The PhD program in physics, described in more detail in the referenced documents, aims to assure that graduates are well versed in the fundamentals of their fields, have a broad knowledge of contemporary developments, and are experts in the techniques and current state of the subject area of their research. Students are required to complete the six core courses (PHYS 2373, PHYS 2513, PHYS 2541, PHYS 2555, PHYS 2565, PHYS 2566) within the first two years of their program. Students that are already familiar with the material of one or several core courses may directly take the course exam(s) at the start of the term. Students entering with a Masters degree from another institution are encouraged to review Section A.5 of the departmental requirements document. At least four classes numbered above 3000 are also required for the degree. Teaching practice, presentation and

attendance of seminars, and writing and an oral presentation of a dissertation give candidates broad experience in the effective communication of their work.

A minimum of 72 graduate credits are required for the PhD degree.

The PhD preliminary evaluation, which also serves as the comprehensive examination for the MS, is based on final examination scores in the core graduate and/or advanced undergraduate subjects. All students are required to pass the preliminary examination by the end of the first year.

PhD students are also required to complete the PhD comprehensive examination, which is based on final examination scores in the core graduate courses. This examination should be passed within the first two years of residency. Students who were exempted from a particular core course are required to take the final examination in that course.

The PhD dissertation research, a major part of the PhD program, must contribute significantly to the advancement of knowledge in physics or astronomy. Students will be required to meet annually with their thesis committee and successfully defend their dissertation before this committee and the University community.

Master's

Physics, MS

Requirements for the Master of Science

A minimum of 30 credits (3.0 GPA) is required for the MS for both thesis and non-thesis options. The student must be in compliance with all of the University's degree requirements. At least four physics courses (12 credits) at the graduate 2000-level must be completed with a grade of B (3.00). A 3000-level course can be substituted for one of these, but only with the Academic Advisor's approval. At most, up to 12 credits of 1300-level undergraduate coursework listed in the "Advising" section of this document as acceptable for graduate credit may also be used to satisfy the department's 30-credit requirement. No more than six credits of graduate work completed at another institution may be accepted by the Graduate Committee toward the completion of the residence requirement. Credits earned for PHYS 2997 and PHYS 2998 may not be used to satisfy this requirement. No more than two non-physics graduate-level courses, approved in advance by the Director of Graduate Studies, will be considered for credit for the MS degree. Please refer to department's graduate website for details about the course and thesis options for this degree.

Department of Political Science

Overview of Department

The Department of Political Science offers the degrees of Master of Arts and Doctor of Philosophy. However, the MA degree functions primarily as a stepping-stone to the PhD. The department does not have a distinct MA program, and does not, except under very unusual circumstances, admit students for graduate study who seek a terminal Master of Arts degree. However, PhD students who, for various reasons, choose to discontinue their training after two years are eligible for a terminal MA, contingent upon the successful completion of the requirements outlined below.

Contact Information

Department Chair: Jonathan Woon
Main Office: 4600 Wesley W. Posvar Hall
412-648-7250
Fax: 412-648-7277
E-mail: polisci@pitt.edu
<http://www.polisci.pitt.edu>

Graduate Program

The Department of Political Science offers the degrees of Master of Arts and Doctor of Philosophy. However, the MA degree functions as a stepping-stone to the PhD. The department does not have a terminal MA program, and does not admit students for graduate study who seek a terminal Master of Arts degree. However, PhD students who, for various reasons, choose to discontinue their training after two years are eligible for a terminal MA, contingent upon the successful completion of the requirements outlined below.

The graduate program in political science incorporates five fields:

- American Politics
- Comparative Politics
- Mass Political Behavior
- Political Research Methodology
- World Politics (International Relations)

Students choose two of these fields as areas of specialization. Students may combine work for the MA and PhD degrees with a program of regional or global specialization leading to a certificate in Global Studies, Latin American studies, Asian studies, West European studies, or Russian and East European studies.

Admissions

Applicants for admission must submit transcripts of all college-level work, three letters of recommendation, a career statement, and scores on the verbal, quantitative, and writing assessment-analytical sections of the Graduate Record Examination. International applicants whose first language is not English are required to submit either the TOEFL administered by the Educational Testing or the IELTS administered by the University. For fall term admission and awards consideration, complete applications must be submitted by early January (see deadlines) 1. The department admits students only for the fall term.

Financial Assistance

Graduate students entering the program with a fellowship or teaching assistantship/teaching fellowship who have demonstrated high-quality graduate work and are maintaining good academic progress can expect to have financial aid renewed for up to five years. A graduate student who has not passed the PhD comprehensive examination in September of the fourth year of graduate work ordinarily is not eligible for additional financial assistance until these examinations are passed.

Faculty

Dietrich School of Arts and Sciences Faculty

Doctoral

Political Science, PhD

Requirements for the PhD

Credit Requirement: A minimum of 72 credit hours, including the master's degree, earned from any suitable combination of formal course work, independent study, research, teaching, or dissertation work as detailed elsewhere in this bulletin.

Students in the PhD program must choose two fields. The requirements for the first field are outlined above in the section regarding requirements for the MA. Unless otherwise stated below, students are required to complete at least four graduate seminars beyond the departmental core (PS 2000, PS 2010, PS 2030, and PS 2040) from one of the remaining five fields of study for their second field.

PhD Qualifying Examinations: At the conclusion of the first year, all students will face a "first year review" before the entire faculty. The faculty will review each student, based on his or her performance in the first year, to determine whether or not he or she should continue in the program. Students who have passed this review are considered to have passed the PhD Qualifying Examination.

Supervised Teaching Experience: Supervised teaching experience is an integral part of the doctoral program. Normally, teaching experience is gained by conducting recitation sections of an introductory course or by assisting a faculty member in an undergraduate course, followed by the teaching of one's own course, in the fourth or fifth year of study.

Comprehensive Examination: Students take a PhD comprehensive examination after approximately one year of coursework beyond the MA, comprising a written exam in both fields, with a possible oral exam if the results of the written exam are unclear.

Dissertation Overview: Following successful completion of the comprehensive examination, the student files an application for admission to candidacy for the Doctor of Philosophy degree. At this stage the student presents a proposed topic for doctoral research and a research design for its execution to be reviewed by the dissertation committee.

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

Master's

Political Science, MA

Requirements for the MA

For the MA, students must earn 30 hours of credit with a B average or better in courses numbered 1000 or above. At least half of these credits must be carried in courses numbered 2000 or above. All MA students are required to complete a 13-credit core-course sequence in theory and methods (PS 2000, PS 2010, PS 2030, and PS 2040), comprising graduate-level training in empirical analysis of political behavior and normative political thought. The remainder of the students' MA course work is used to develop competence in one of the main fields of political science the department offers.

Students must then pass a comprehensive examination, for MA purposes, covering two of six fields.

Department of Psychology

The department offers graduate training leading to a Doctor of Philosophy in psychology. Specialization in the fields of biological and health psychology, clinical psychology, cognitive psychology, developmental psychology, and social psychology is available, along with joint programs in clinical/developmental and clinical/health psychology. A specialization in Cognitive/Neuroscience is also available. The area of concentration in clinical psychology is accredited by the American Psychological Association.

Contact Information

Department Chair: Julie Fiez

Main Office: 3137 Sennott Square

412-624-4502

Fax: 412-624-4428

E-mail: psygrad@pitt.edu

<http://www.psychology.pitt.edu/graduate-studies>

Admissions

Applications for admission must be submitted online by December 1. Admission is in the fall only. Applicants for admission to graduate study in psychology must submit academic transcripts, 3 letters of recommendation, a statement of goals, and certified scores on the Graduate Record Examination. Applicants to the clinical and joint-clinical programs may also submit scores for the GRE Subject test which is recommended, not required. Students may obtain information concerning the dates and places of administration of the GRE from the Graduate Record Examination, Educational Testing Service, Princeton, NJ 08541-0001; from www.ets.org; or from the testing service of their own college or university. International students must submit certified TOEFL scores; the minimum acceptable score is 90 on the Internet-based exam.

As preparation for graduate study, the department recommends broad undergraduate training including courses in biology, mathematics, the physical sciences, the social sciences, and effective oral and written expression. The department recommends college-level mathematics and 12 credits of psychology, including experimental psychology, statistics, and, for applicants to the clinical program, abnormal psychology.

Financial Assistance

The Department of Psychology provides tuition and stipend support for students admitted to its graduate programs. Support may be in the form of a fellowship, research assistantship, or teaching assistantship. Qualified students are encouraged to apply for relevant fellowships. Historically, the department has been able to continue support for most students throughout their graduate training; however, funding is only guaranteed for four years.

Faculty

Dietrich School of Arts and Sciences Faculty

Doctoral

Psychology, PhD

Requirements for the PhD

A minimum of 72 credits is required for the PhD. The credits are readily earned in the course of completing the regular requirements. Up to 24 credits may be granted for a master's degree awarded by another institution.

In addition to the credit requirement, the PhD in psychology requires:

1. Demonstration of proficiency in the program-specific core and required courses as described in the following links: biological and health, clinical, cognitive, developmental, and social.
2. Demonstration of competence in research at the master's level, with an oral defense of a master's thesis or equivalent work. (This may be waived for students entering with a master's degree.)
3. Maintenance of a B average (3.0) in all course work.
4. A comprehensive examination in a field of specialization.
5. Demonstration of teaching competence in a formal course setting.
6. A dissertation based on empirical research.
7. An oral examination concerned primarily with the dissertation.

It is possible to complete these requirements in four years, although most students take four to six years to complete the work for a PhD.

Clinical Program Note: Clinical students are also required to complete a one-year internship in an approved setting. This internship normally takes place after the student has met the requirements for admission to doctoral candidacy. For this reason, the minimum time in which a PhD may be earned in clinical psychology is one year longer.

Supervised Teaching: Each student is required to fulfill a requirement of teaching at least one supervised course.

Master's

Psychology, MS

Requirements for the Master's Degree

Normally, students are only admitted for graduate study leading to the PhD. If a student wishes, he or she may also obtain a master's degree by submitting an approved master's thesis and fulfilling the 30 credit course requirement. Satisfactory completion of the program's specific core courses

(as described in the following links: biological and health, clinical, cognitive, developmental, and social) constitutes the comprehensive examination for the MS.

Department of Slavic Languages and Literatures

The Department of Slavic Languages and Literatures offers the degrees a Master of Arts (as a degree leading to the Doctor of Philosophy) and a Doctor of Philosophy, with an area of concentration in Russian literature and culture, including cinema. Students may combine work for the MA and PhD degrees with a program of regional specialization leading to a certificate in Russian and East European Studies; Cultural Studies; Film Studies; Gender, Sexuality, and Women's Studies; Jewish Studies; and others.

Eligible Slavic PhD students may apply, before taking the Slavic PhD comprehensive examinations, to transfer to Pitt's Interdisciplinary Film Studies PhD (with a concentration in Slavic), thereby working towards a single PhD in two disciplines. For information on the Interdisciplinary Film Studies PhD, see <http://www.english.pitt.edu/graduate/phd-film-studies>.

Contact Information

Department Chair: David J. Birnbaum
Main Office: 1417 Cathedral of Learning
412-624-5906
Fax: 412-624-9714
E-mail: slavic@pitt.edu
www.slavic.pitt.edu

Additional information concerning the department's graduate program may be obtained from the University of Pittsburgh, Department of Slavic Languages and Literatures, Graduate Administrator, 1417 Cathedral of Learning, Pittsburgh, PA 15260. Phone: 412-624-5227. Fax: 412-624-9714. E-mail: Pmf23@pitt.edu.

Admissions

Applicants for admission must submit transcripts of all college-level work, three letters of recommendation, a career statement, an academic writing sample, and scores on the verbal, quantitative, and writing assessment-analytical sections of the Graduate Record Examination. International applicants whose first language is not English are required to submit either the TOEFL administered by the Educational Testing or the IELTS administered by the University of Cambridge, Local Examinations Syndicate. Applications will be accepted for fall term admission until April 15. For awards consideration, applications must be completed by January 15. The department admits students only for the fall term. The department normally admits students only for the fall term.

Financial Assistance

Graduate students who have been admitted with a teaching or non-teaching fellowship for their first year of study will have their support renewed for at least an additional four years as long as 1) their teaching performance is satisfactory and 2) they are making regular progress in their graduate studies.

Faculty

<http://www.slavic.pitt.edu/people/faculty/index.php>

Doctoral

Slavic Languages and Literature, PhD

Requirements for the PhD

Credit Requirement: 72 graduate credits (36 beyond the MA), of which 12 may be dissertation credits; at least 60 credits must be completed by the end of the semester in which the examination is to be taken.

Approved Second Area: Nine-15 credits outside the department (but in the 72-credit total) in an approved second area (e.g., Russian and East European Studies, Cultural Studies, Film Studies, Study of Women, Gender and Sexuality, Jewish Studies, European literature, etc.).

Research Languages: A reading knowledge of both French and German is required before taking the PhD comprehensive exam.

PhD Qualifying Examinations: The MA comprehensive exam also serves as the PhD qualifying exam for those students who wish to pursue graduate work at the PhD level.

Supervised Teaching Experience: Supervised teaching experience is an integral part of the doctoral program. All PhD candidates have the opportunity to teach courses in language, literature, and culture, initially by assisting other instructors, and, at a more advanced stage, in stand-alone courses.

Comprehensive Examination: Students take a PhD comprehensive examination after approximately two years of coursework beyond the MA. For examination procedures visit <http://www.slavic.pitt.edu/graduate/examinations>.

Dissertation Overview: Following successful completion of the comprehensive examination, the student files an application for admission to candidacy for the Doctor of Philosophy. At this stage the student presents a proposed topic for doctoral research and a research design for its execution to be reviewed by the dissertation committee.

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

Master's

Slavic Languages and Literature, MA

Requirements for the MA

For the MA, students must earn 36 hours of graduate credit with a B average or better in courses numbered 1000 or above. At least half of these credits must be in courses numbered 2000 or above. All MA students are required to complete RUSS 2110 - INTRODUCTION TO THE STUDY OF LITERATURE 1, RUSS 2210 - STRUCTURE OF RUSSIAN, and RUSS 2230 - HISTORICAL GRAMMAR . Courses are chosen in consultation between the student and DGS and are subject to approval by the latter. The remainder of student coursework is used to develop competence in Russian literature and culture or in an approved second area (see below). MA candidates must also demonstrate a reading knowledge of either French or German before taking the MA comprehensive exam.

The MA comprehensive exam covers material from a reading list. For examination procedures see <http://www.slavic.pitt.edu/graduate/examinations>.

Department of Sociology

The Department of Sociology offers the degrees of Master of Arts and Doctor of Philosophy. However, a terminal Master's degree is infrequently awarded, as students awarded Master's Degrees usually continue in the Department to receive PhD Degrees.

The faculty conduct research and offer courses within two broadly defined areas: 1) social movements and 2) politics and culture. Within each of these areas, graduate students are able to pursue a variety of theoretical, substantive, and methodological interests.

Graduate students are encouraged to combine their work in sociology with multidisciplinary study in a particular area by enrolling in any of the following certificate programs: African Studies, Asian Studies, European Studies, Global Studies, Latin American Studies, Russian and Eastern European Studies, Cultural Studies, or Gender, Sexuality, and Women's Studies.

Contact Information

Department Chair: Suzanne Staggenborg
Main Office: 2406 Posvar Hall
412-648-7582
Fax: 412-648-2799
E-mail: suzstagg@pitt.edu
www.sociology.pitt.edu/graduate/

Additional information concerning the department's graduate program may be obtained from the University of Pittsburgh, Department of Sociology, Graduate Administrator, 4911 WWPB, Pittsburgh, PA 15260. Phone: 412-648-1399. E-mail: brd51@pitt.edu.

Admissions

Qualified students from any discipline are considered for admission. Qualifications include preparation for graduate-level work in sociological theory and both qualitative and quantitative research methods, including a required course in social science applications of multivariable regression models. Applicants must submit to the departmental director of graduate studies transcripts of all college-level work, three letters of recommendation, a career statement, a brief writing sample, and scores on the verbal, quantitative, and analytical sections of the Graduate Record Examination. International applicants are also required to submit TOEFL scores, unless they hold an undergraduate or graduate degree from an accredited U.S. college or university. All applications and application fees must be submitted on-line. Applications are accepted for fall term admission until March 15. The department admits students only for the fall term.

Financial Assistance

Teaching assistantships and fellowships, Andrew W. Mellon Predoctoral Fellowships, Foreign Language and Area Studies Fellowships (administered by the University Center for International Studies), Provost Development Fellowships, and graduate student research assistantships are available.

Faculty

<http://www.sociology.pitt.edu/faculty>

Doctoral

Sociology, PhD

Requirements for the PhD

Admission: Prerequisite for admission is a Bachelor of Arts degree or equivalent preparation (plus approval from the Admissions Committee). If a Student has not yet received a Master's Degree at the time of application, the Department will require the student to pursue a Master's Degree at the University of Pittsburgh. The requirements for the Master's Degree are listed below. Those students entering with an MA degree from another institution may petition the Admissions Committee for a transfer of credits but core courses are usually not waived.

Credit Requirement: The PhD program requires 72 credits earned from a combination of the required core course sequences, MA courses, additional graduate sociology seminars, and any suitable combination from course work, independent study, research, and dissertation work as detailed elsewhere in this bulletin.

Supervised Teaching Experience: Supervised teaching experience is an integral part of the doctoral program. Typically, teaching experience is gained by conducting recitation sections of an introductory course and, once the MA is completed and the student has conducted recitations, by teaching an undergraduate course with the guidance of a faculty mentor.

Comprehensive Examination: The PhD comprehensive examination is an individually designed review essay using relevant research literatures to develop research questions for the dissertation and to support those questions with appropriate methodological and theoretical "best practices" in the field and substantive findings related to the dissertation project.

Dissertation Overview: At this stage students will have selected, in consultation with their dissertation committee, a suitable dissertation topic. Students present a written prospectus to their committee describing the purpose, scope, and method of proposed study and the sources upon which it will be based. Students are encouraged to give careful thought early on in their graduate work to possible doctoral research topics and discuss their interests with related faculty.

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

Master's

Sociology, MA

Requirements for the Master's Degree

For the MA, students must earn 36 credits in approved graduate courses. The 36 credits must include completion of the nine credit core course sequence: Research Design, Social Theory, Qualitative Methods and Quantitative Methods, as well as at least 14 credits of elective graduate coursework in the sociology program with grades of B or better.

Students also write and defend a master's thesis for which they receive up to 6 credits.

Remaining credits may be earned with sociology electives (which may include 3 credits of directed study) or graduate coursework in other programs.

Department of Statistics

The Graduate Faculty offers various programs of study and research in statistics. Degree programs lead to the Master of Arts or Master of Science in applied statistics, the Master of Arts or Master of Science in statistics, and the Doctor of Philosophy in statistics. These may be pursued by full-time and part-time students. The department also provides courses for students engaged in graduate studies in other disciplines requiring statistics and for individuals requiring specialized statistical skills in the workplace. Full details of all programs and departmental regulations are available on the website at the address listed below.

Contact Information

Department Interim Chair: Satish Iyengar
Main Office: 1800 Wesley W. Posvar Hall
412-624-8368
Fax: 412-648-8814
Graduate Admissions Administrator: Denise Korzon
E-mail: jl240@pitt.edu
www.statistics.pitt.edu

Additional information concerning the department's graduate program may be obtained from the University of Pittsburgh, Department of Statistics, Academic Coordinator, 1800 Wesley W. Posvar Hall, Pittsburgh, PA 15260. Phone: 412-624-8368. E-mail: jl240@pitt.edu.

Admissions

<http://www.statistics.pitt.edu/graduate/admissions>

A basic requirement for admission to the graduate program in statistics is the completion of a bachelor's degree from an accredited institution in the United States or the completion of a level of education that the University of Pittsburgh deems comparable to a U.S. bachelor's degree. Applicants

whose native language is not English and who have not already completed a degree program in a U.S. college or university are required to submit either the TOEFL (administered by the Educational Testing Service) or the IELTS (administered by Cambridge University, Local Examinations Syndicate). Graduate Record Examination (GRE) scores are required.

Decisions regarding admission are based on the applicant's official credentials, grade point averages, and the availability of faculty and facilities to meet the applicant's expressed academic or research needs and interests. With limited space available, not all qualified applicants can be admitted.

The minimal course requirements for admission into the graduate programs of the Department of Statistics are:

- Three terms of calculus
- Linear algebra
- One year of probability and statistics, preferably an introductory mathematical statistics sequence

Students lacking some of these prerequisites may be admitted provisionally at the discretion of the Graduate Committee. In addition, students intending to pursue the PhD should either have taken a one-term course in advanced calculus, or be prepared to take such a course in the first year of graduate study.

Financial Assistance

<http://www.statistics.pitt.edu/graduate/financial-assistance>

Financial assistance for graduate students is provided in the form of teaching and research assistantships, fellowships, tuition scholarships, and loans. Application for financial aid should be made on the application form for admission to graduate study. All applications for financial assistance are reviewed in the department with award decisions made on the basis of prior academic excellence and achievement and perceived potential for contributions to the field of statistics.

Students applying for fellowships or assistantships for the fall term should file their applications no later than January 15 of the same year.

Requirements for the Master's Degree in Statistics or Applied Statistics

<http://www.stat.pitt.edu/graduate-programs>

The department encourages its students to obtain a broad background in statistics, including both methods and theory courses, regardless of whether they specialize in applied statistical methodology or in statistical theory. Consequently, two-term sequences in applied statistical methods (STAT 2131-STAT 2132) and intermediate mathematical statistics (STAT 2630-STAT 2640) are common to all master's degree programs offered by the department, and are also generally taken by students whose goal is the PhD in statistics.

Faculty

Dietrich School of Arts and Sciences Faculty

Doctoral

Statistics, PhD

Requirements for the PhD

The main requirement for the Doctor of Philosophy in statistics is the successful completion and defense of a dissertation making a substantial and original contribution to statistics, probability, or their application. Prior to embarking on their research, candidates must pass the qualifying exam (see Requirements for the Master's Degree above) at the PhD level. To be admitted to PhD candidacy, candidates must successfully pass an oral PhD Comprehensive examination over an area of research chosen in consultation with their advisory committee. The purpose of the comprehensive

examination is to demonstrate that students are able to understand, summarize, and make use of the statistical literature in an area of potential research that is of interest to them. Students who have found a specific topic for their dissertation are encouraged to combine the comprehensive examination with the presentation of the thesis proposal. Students who are not yet ready to present a proposal can still take the comprehensive exam, but must later submit a thesis proposal orally and in writing to their advisory committee.

Course requirements for the PhD are STAT 2631 - THEORY OF STATISTICS 1, STAT 2641 - ASYMPTOTIC METHODS IN STATISTICS, STAT 2661 - LINEAR MODELS THEORY 1, and STAT 2711-STAT 2712 (Probability Theory) or their equivalent. PhD candidates are also required to take at least three credits in statistical consulting; those students anticipating a career involving consulting are advised to take a substantial number of consulting credits. The remaining courses of the 72 credits required for the PhD will be decided in conjunction with the student's advisor and should consist of mainly formal courses prior to the commencement of research for the dissertation.

The department has no second language requirements for the PhD. Although not required, facility in the use of one or more computer programming languages, especially those used in writing statistical software (for example, SAS, R), is highly recommended.

Full-time graduate students usually take between four and five years to complete a PhD. Part-time students may be allowed as many as 10 years to finish all requirements. Additional information concerning examinations and requirements can be found in the Graduate and Professional Bulletin and the Kenneth P. Dietrich School of Arts and Sciences (A&S).

Master's

Applied Statistics, MA

Master of Arts

Department requirements for the Master of Arts in Applied Statistics are the completion of 33 credits, including the two year-long sequences STAT 2630-STAT 2640 and STAT 2131-STAT 2132 mentioned above, at least three credits in consulting, four courses (12 credits) in statistical methods or theory taken from a list of choices, and an approved two-course sequence (6 credits) taken at the graduate level in a discipline other than statistics. Students in our MA Statistics and MA Applied Statistics are required to pass the Preliminary Evaluation, which is equivalent to receiving grades of B or higher in the four core courses (STAT 2630, STAT 2640, STAT 2131, and STAT 2132). A student failing to meet the new grade requirement needs to re-take the necessary course(s). Students are allowed to repeat the same course twice. They will be terminated from the master's program if they fail to achieve a grade of B or higher on their second attempt.

The Master of Arts in Statistics differs from the Master of Arts in Applied Statistics by replacing the requirements of a two-course sequence in a discipline other than statistics and 3 credits in consulting with the requirement that three additional 3-credit graduate-level statistics courses be taken. Both master's degrees require completion of 33 credits and the passing of the Preliminary Evaluation as explained about.

Applied Statistics, MS

Master of Science

The requirements for the Master of Science, either in applied statistics or in statistics, are the same as the requirements for the corresponding Master of Arts, except that two 3-credit statistics courses are replaced by 6 credits of STAT 2001 - RESEARCH AND THESIS FOR MS DEGREE, and an oral defense of the thesis is required.

Statistics, MA

Master of Arts

Department requirements for the Master of Arts in Applied Statistics are the completion of 33 credits, including the two year-long sequences STAT 2630-STAT 2640 and STAT 2131-STAT 2132 mentioned above, at least three credits in consulting, four courses (12 credits) in statistical methods or theory taken from a list of choices, and an approved two-course sequence (6 credits) taken at the graduate level in a discipline other than statistics. Students in our MA Statistics and MA Applied Statistics are required to pass the Preliminary Evaluation, which is equivalent to receiving grades of B or higher in the four core courses (STAT 2630, STAT 2640, STAT 2131, and STAT 2132). A student failing to meet the new grade requirement

needs to re-take the necessary course(s). Students are allowed to repeat the same course twice. They will be terminated from the master's program if they fail to achieve a grade of B or higher on their second attempt.

The Master of Arts in Statistics differs from the Master of Arts in Applied Statistics by replacing the requirements of a two-course sequence in a discipline other than statistics and 3 credits in consulting with the requirement that three additional 3-credit graduate-level statistics courses be taken. Both master's degrees require completion of 33 credits and the passing of the Preliminary Evaluation as explained about.

Statistics, MS

Master of Science

The requirements for the Master of Science, either in applied statistics or in statistics, are the same as the requirements for the corresponding Master of Arts, except that two 3-credit statistics courses are replaced by 6 credits of STAT 2001 - RESEARCH AND THESIS FOR MS DEGREE, and an oral defense of the thesis is required.

Teaching of English to Speakers of Other Languages (TESOL) Program

TESOL is an acronym for Teachers of English to Speakers of Other Languages. Professionals in TESOL may be involved in teaching, administration, curriculum development, materials development, assessment, research, and advocacy. They work in a variety of contexts including various age levels, countries, and specialist areas such as English for specific purposes. This TESOL certificate program includes the study of: linguistics at an introductory level, structures of English, theories and practices of teaching second language, second language acquisition, materials and curriculum development, and assessment.

The Department of Linguistics offers two courses in the Teaching of English to Speakers of Other Languages (TESOL).

- Higher Education Course
- ESL Program Specialist Course

Application Deadline:

March 15 for the following fall term start date.

Certificate

TESOL Certificate

TESOL is an acronym for Teachers of English to Speakers of Other Languages. Professionals in TESOL may be involved in teaching, administration, curriculum development, materials development, assessment, research, and advocacy. They work in a variety of contexts including various age levels, countries, and specialist areas such as English for specific purposes. This TESOL certificate program includes the study of: linguistics at an introductory level, structures of English, theories and practices of teaching second language, second language acquisition, materials and curriculum development, and assessment.

The Department of Linguistics offers two courses in the Teaching of English to Speakers of Other Languages (TESOL).

- ESL Program Specialist Course
- Higher Education Course

ESL Program Specialist Course

Requirements

Any student who wished to earn the certificate must fulfill the following requirements:

Prerequisite

(or taken concurrently with the first certificate course)

LING 1000 - INTRODUCTION TO LINGUISTICS

Course Requirements

LING 2738 - LINGUISTIC STRUCTURES OF ENGLISH

LING 2142 - THEORIES AND PRACTICES OF SECOND LANGUAGE TEACHING

LING 2143 - SEM LANG TCHNG MATLS DEVELOPMENT

IL 2257 - TEACHING ENGLISH LANGUAGE LEARNERS

IL 2253 - PRIN/PRA FRGN LANG TESTNG ASSMNT

LING 2195 - PRACTICUM ESL TEACHING

Please note:

1. LING 2195 - PRACTICUM ESL TEACHING involves supervised language teaching concurrent with or following LING 2142 - THEORIES AND PRACTICES OF SECOND LANGUAGE TEACHING. Candidates fulfill the requirement by signing up for LING 2195 - PRACTICUM ESL TEACHING and teaching during that term in an informal ESL course run by the English Language Institute, OR, with permission of the TESOL Certificate advisor, another ESL teaching context.
2. The certificate candidate must earn a grade of B or higher in each certificate course.

Degree Prerequisite for Admission

Applicants must hold a baccalaureate degree or its foreign equivalent with a minimum grade point average of B (3.0 on a 4-point scale). Preference is given to applicants who have studied abroad, worked with international students, and/or have any EFL/ESL teaching experience (including volunteer).

Instructional I Prerequisite

Applicants must hold a Pennsylvania Instructional I certificate (or equivalent from another state) and be able to provide a copy as part of the application packet.

Additional Language Learning Prerequisite for Admission

Native Speakers of English:

Native speakers of English must have classroom foreign language learning experience equivalent to at least one year of college level study of a language other than English and/or have learned a foreign language during an overseas living/work experience.

Native Speakers of Other Languages:

- Recommendations for applicants who are non-native speakers of English are as follows:
- Recommended TOEFL Score: 95 or higher on the iBT TOEFL (Skill Requirements: Reading and Listening - High; Speaking and Writing - one skill must be at the level of Good)
- Recommended IELTS Score: 7 or higher on the IELTS (Skill Requirements: Speaking and Writing - combined minimum of 13)
- Admitted students in TESOL-related programs who are non-native speakers of English must have good spoken English skills as determined by a score of at least 4 on the International Teaching Assistant interview test administered by the University of Pittsburgh. These students must successfully complete the interview before graduating.

Transcripts and CV and Teaching Certificate

Undergraduate transcripts (and graduate if applicable) and a CV (including a list of references) must be submitted as part of the application. In addition, a copy of the applicant's state teaching certificate must be included in the application materials.

Plan of Study

Students must complete a TESOL certificate plan of study form after consultation with the TESOL Certificate advisor during the first term of study.

Completion of Requirements

When nearing completion of all TESOL certificate requirements, students must apply for graduation from the TESOL Certificate program through the Arts and Sciences Dean's Office. This graduation application is separate from any other degree graduation applications. Additional paperwork must be filed with the Pennsylvania Department of Education with the help of the TESOL Certificate advisor.

Suggested Sequence of Courses

Two-term Option

(entering in the fall term)

Fall:

- LING 1000 - INTRODUCTION TO LINGUISTICS (if needed)
- LING 2142 - THEORIES AND PRACTICES OF SECOND LANGUAGE TEACHING
- IL 2253 - PRIN/PRA FRGN LANG TESTNG ASSMNT

Spring:

- LING 2738 - LINGUISTIC STRUCTURES OF ENGLISH
- I&L (Teaching ELLs)
- LING 2143 - SEM LANG TCHNG MATLS DEVELOPMENT
- [Practicum]

Four-term Option

(entering in the fall term)

Fall:

- LING 1000 - INTRODUCTION TO LINGUISTICS (if needed)
- LING 2142 - THEORIES AND PRACTICES OF SECOND LANGUAGE TEACHING

Spring:

- LING 2738 - LINGUISTIC STRUCTURES OF ENGLISH

Fall:

- IL 2253 - PRIN/PRA FRGN LANG TESTNG ASSMNT
- [Practicum]

Spring:

- IL 2257 - TEACHING ENGLISH LANGUAGE LEARNERS
- LING 2143 - SEM LANG TCHNG MATLS DEVELOPMENT
- [Practicum]

***Note:**

Students must enter the program in the fall term. Students may complete LING 1000 - INTRODUCTION TO LINGUISTICS prior to the fall term, however.

Higher Education Course

Requirements

Higher Education Course Requirements

Any student who wishes to earn the certificate at the MA or PhD level:

Prerequisite

(or taken concurrently with the first certificate course)

- LING 1000 - INTRODUCTION TO LINGUISTICS

Course Requirements

- LING 2738 - LINGUISTIC STRUCTURES OF ENGLISH
- LING 2142 - THEORIES AND PRACTICES OF SECOND LANGUAGE TEACHING
- LING 2143 - SEM LANG TCHNG MATLS DEVELOPMENT
- LING 2146 - SECOND LANGUAGE ACQUISITION
- IL 2253 - PRIN/PRA FRGN LANG TESTNG ASSMNT
- LING 2195 - PRACTICUM ESL TEACHING
- *PhD students must take an additional 3 credit course approved by the TESOL Certificate Advisor*

Please Note:

1. LING 2195 - PRACTICUM ESL TEACHING involves supervised language teaching concurrent with or following LING 2142 - THEORIES AND PRACTICES OF SECOND LANGUAGE TEACHING . Teaching Assistants who are teaching in the English Language Institute automatically fulfill the Practicum requirements, but they must sign up for LING 2195 - PRACTICUM ESL TEACHING once during their teaching terms. Other candidates fulfill the requirement by signing up for LING 2195 - PRACTICUM ESL TEACHING and teaching during that term in an informal ESL course run by the English Language Institute, OR, with permission of the TESOL certificate advisor, another ESL teaching context.
2. The certificate candidate must earn a grade of B or higher in each certificate course.
3. Those applying for graduate degrees will completed the TESOL Certificate program application process after gaining acceptance to the degree program.

Degree Prerequisites for Admission

Applicants must hold a baccalaureate degree or its foreign equivalent with a minimum grade point average of B (3.0 on a 4-point scale). Preference is given to applicants who have studied abroad, worked with international students, and/or have any EFL/ESL teaching experience (including volunteer).

Additional Language Learning Prerequisite for Admission

Native Speakers of English:

Native speakers of English must have classroom foreign language learning experience equivalent to at least one year of college level study of a language other than English and/or have learned a foreign language during an overseas living/work experience.

Native Speakers of Other Languages:

- Recommendations for applicants who are non-native speakers of English are as follows:
- Recommended TOEFL Score: 95 or higher on the iBT TOEFL (Skill Requirements: Reading and Listening - High; Speaking and Writing - one skill must be at the level of Good)
- Recommended IELTS Score: 7 or higher on the IELTS (Skill Requirements: Speaking and Writing - combined minimum of 13)
- Admitted students in TESOL-related programs who are non-native speakers of English must have good spoken English skills as determined by a score of at least 4 on the International Teaching Assistant interview test administered by the University of Pittsburgh. These students must successfully complete the interview before graduating.

Transcripts and CV

Undergraduate transcripts (and graduate if applicable) and a CV (including a list of references) must be submitted as part of the application.

Plan of Study

Students must complete a TESOL certificate plan of study form after consultation with the TESOL Certificate advisor during the first term of study. The student then will work with academic advisor if earning a graduate degree, or the TESOL Certificate advisor if not in a degree program.

Completion of Requirements

When nearing completion of all TESOL certificate requirements, students must apply for graduation from the TESOL Certificate program through the Arts and Sciences Dean's Office. This graduation application is separate from any other degree graduation applications.

Suggested Sequence of Courses

Two-term Option

(entering in the fall term)

Fall:

- LING 1000 - INTRODUCTION TO LINGUISTICS (if needed)
- LING 2142 - THEORIES AND PRACTICES OF SECOND LANGUAGE TEACHING
- IL 2253 - PRIN/PRA FRGN LANG TESTNG ASSMNT
- Elective for PhD-level students

Spring:

- LING 2738 - LINGUISTIC STRUCTURES OF ENGLISH
- LING 2146 - SECOND LANGUAGE ACQUISITION
- LING 2143 - SEM LANG TCHNG MATLS DEVELOPMENT
- Practicum
- Elective for PhD-level students

Four-term Option

(entering in the fall term)

Fall:

- LING 1000 - INTRODUCTION TO LINGUISTICS (if needed)
- LING 2142 - THEORIES AND PRACTICES OF SECOND LANGUAGE TEACHING
- Elective for PhD-level students

Spring:

- LING 2738 - LINGUISTIC STRUCTURES OF ENGLISH
- LING 2146 - SECOND LANGUAGE ACQUISITION
- Elective for PhD-level students

Fall:

- IL 2253 - PRIN/PRA FRGN LANG TESTNG ASSMNT
- Elective for PhD-level students
- Practicum

Spring:

- Practicum
- LING 2146 - SECOND LANGUAGE ACQUISITION
- LING 2143 - SEM LANG TCHNG MATLS DEVELOPMENT

Note:

*Students must enter the program in the Fall term. Students may complete LING 1000 - INTRODUCTION TO LINGUISTICS prior to the fall term, however.

Department of Theatre Arts

The Department of Theatre Arts, founded in 1982, offers the MA, MFA, and PhD degrees, which integrate training and practice in the theater with scholarship and research in the liberal arts tradition. The minimal requirements for the degrees established by the Graduate Faculty and by A&S Graduate Studies, as described elsewhere in this bulletin, should be read in conjunction with the specific departmental requirements outlined in the Theatre Arts Graduate Handbook. A printed version may be requested by writing the Graduate Student Services Administrator: jjo48@pitt.edu

For additional information on these aspects of study in the theatre arts at Pitt, visit the department website: www.play.pitt.edu.

Contact Information

Website: www.play.pitt.edu

Theatre Box Office: 412-624-PLAY (7529)

Department Chair: Annmarie Duggan

E-mail: duggan@pitt.edu

Office: 1617C Cathedral of Learning

Phone: 412-624-7285

Fax: 412-624-6338

Director of Graduate Studies: Michelle Granshaw

E-mail: MKG31@pitt.edu

Office: 1601B Cathedral of Learning

Phone: 412-624-6467

Fax: 412-624-6338

Graduate Student Services Administrator: Joshua Oliver

E-mail: jjo48@pitt.edu

Office: 1617A Cathedral of Learning

Phone: 412-624-6568

Fax: 412-624-6338

Admissions

Applicants to the PhD program in Theatre and Performance Studies should demonstrate a desire for rigorous research at the PhD level; potential for teaching excellence; interest in the exploration of artistic practice; and capacity for creative and critical risk-taking (in terms of research, artistic practice, and teaching). An MA in theatre arts is not a prerequisite for admission to the program. The department admits some highly qualified students with BAs directly into the PhD program.

The MA in Theatre and Performance Studies is open to all qualified students who have completed an undergraduate degree or who will complete one prior to registration. An undergraduate major in theatre arts is not a prerequisite for admission to the program. The graduate faculty understands the MA degree as a preliminary to a PhD in Theatre and Performance Studies, although it may be undertaken for other reasons.

The MFA in Performance Pedagogy is open to all qualified applicants who have completed an undergraduate degree (or who will complete one prior to registration), along with an expectation of five or more years of professional theater experience. An undergraduate major in theatre arts is normally a prerequisite for admission to the program, though exceptions can be made if circumstances warrant. Because candidates will be teaching extensively during their residency, some teaching experience is preferred. Please note: applications for the MFA are accepted every other year.

Financial Assistance

The department offers a number of assistantships and fellowships involving teaching, administrative and technical work, assistance to faculty members, and combined duties. The requirements established by the Office of Admissions and Financial Aid must be met in order for students to be eligible for department teaching assistantships (TAs) and teaching fellowships (TFs). All students receiving TAs and TFs, receive a full aid package that includes tuition, health benefits, and a stipend. Doctoral students also are eligible for university fellowships, including the Provost's Humanities Fellowship and K. Leroy Irvis Fellowship.

Faculty

Dietrich School of Arts and Sciences Faculty

Doctoral

Theatre and Performance Studies in Theatre Arts, PhD

The PhD program in Theatre History and Performance Studies is distinguished by its emphases on historical and contemporary engagement with exigencies of mobility, ranging from exile, migration, and diaspora to translation and adaptation. The program prioritizes the transnational, the global, and the decolonial in theatre history and performance studies. Gender, race, ethnicity, and class function as primary areas of scholarly and artistic enquiry across historical, historiographical, literary, performance, and practice-based research methodologies. The program prioritizes the integration of scholarship with teaching and artistic practice.

The PhD program in Theatre History and Performance Studies trains scholars in historiographical methodology; performance studies; critical theory; historical, performance, and textual analysis. By the completion of their training, students are expected to demonstrate fluency with established scholarly paradigms of the field as well as facility with emergent and cross-disciplinary approaches. The rigorous five-year curriculum is comprised of departmental seminars offered by the graduate faculty and complemented by a range of seminars from across the University's thriving intellectual departments and communities, including History of Art and Architecture, Film Studies, the Center for Latin American Studies, the Global Studies Center, the Gender, Sexuality, and Women's Studies Program, and the Cultural Studies program, among others. The PhD program mentors a students' professionalization by actively supporting publication, conference participation, and membership in professional organizations. The program prepares students to participate in and contribute to scholarly conversations nationally and internationally.

The program's scholarly training is directly linked to teaching and artistic creation. All PhD students instruct a variety of undergraduate courses under mentorship of the faculty, which may include history, dramatic analysis, and/or performance. The PhD program is integral to the department's BA's stated goals of training the next generation of artist-citizens as well as to the creative and critical work of the department's production season. Graduate students often serve as undergraduate mentors and advisors as well as artistic collaborators with the faculty. Through the Special Option, PhD students are mentored on an individual basis towards enhancing a primary, or developing a secondary, fluency with artistic practice and production processes, most often in the area of directing, dramaturgy, or playwriting. The PhD program welcomes applicants with MAs, MFAs, and other Masters degrees.

The PhD program in Theatre History and Performance Studies develops versatile, flexible graduate students with unique creative and critical aptitudes. Graduates of the program are well-qualified and competitive candidates for academic positions at a variety of institutions, post-doctoral research opportunities, and non-academic employment sectors.

Degree Requirements

A minimum of three years or six terms of full-time residency is required. It is not possible to complete the degree on a part-time basis.

72 credit hours, of which 24 can be granted for an approved Master's degree or its equivalent, are required past the BA, made up of courses stipulated in the curriculum and electives (including independent study, directed study, in-training programs, and dissertation credits).

Students are required to demonstrate advanced knowledge in one foreign language sufficient to read criticism and drama in the language and sufficient to allow them to attend a play in the language and understand it reasonably well. The language requirement may be fulfilled in four ways.

of courses required (list core courses, etc.)

One, Two, or three sections of World Theatre (as designated by the Diagnostic Exam)

Nine seminar-level courses in history, literature, and critical theory of theatre and performance studies. During the first two semesters of a full-time PhD student's program, she or he must take at least three of these seminars in the Department of Theatre Arts.

At least seven of the nine required courses will be advanced graduate seminars in the Department of Theatre Arts (2000 series). The others may be graduate-level (2000 series) listed in any appropriate University department. Courses labeled "research," "directed study," or "independent study" cannot be used to fulfill this requirement, except by approval of the Graduate Faculty. The student's advisor will regularly monitor selection of courses, and approve the overall sequence chosen. No lower-level undergraduate courses numbered 0001-0999 may be applied toward a graduate degree.

PhD Prelim Evaluation

All students who enter the PhD program are required to take the preliminary examination. Students in their first year of doctoral study must take a minimum of three seminars in the department. Their work in those seminars shall constitute the basis for the prelim exam. The exam is designed to assess students' critical thinking, facility with methodology, and writing skills as well as ability to articulately discuss the course material in the selected seminars. ^[1]_{SEP}

Comprehensive Exam

By the end of their second year, students should begin to consider and discuss with faculty areas for their comprehensive exam that fall into the three categories: Critical Methodologies and Theoretical Discourses; Historical Discourses; Textual Discourses. ^[1]_{SEP} By the beginning of their third year, three areas of study should be approved. Through the comprehensive examination, students demonstrate both breadth and depth in regards to theatre and performance history, theory, and practice.

Proposal/overview

The prospectus proposes the subject and plan for the completion of the dissertation. The graduate faculty member who will serve as chair for the student's dissertation committee will provide guidance for the completion of the prospectus. Once the committee chair has approved the prospectus, the student will schedule a defense with all of the members of their PhD committee.

Dissertation and Final Examination

The University of Pittsburgh's *Graduate and Professional Bulletin* outlines the requirements for the final stage of the degree, which is the preparation and defense of a dissertation. This written work, which must embody an extended original investigation of a problem of significance to theatre arts or performance studies, is the capstone to the research program of a student's training.

Master's

Performance Pedagogy in Theatre Arts, MFA

Designed to equip working, professional actors with the tools to expand their employment opportunities in teaching at the college and university level, the MFA in Performance Pedagogy at the University of Pittsburgh offers a dynamic synthesis of teaching, practice, and scholarship.

This program is based on the premise that the professional actor has already gained a level of craft and broad experience that can become the foundation for solid teaching skills. Therefore, emphasis is placed on exploration and strengthening of pedagogical techniques as related to areas of acting and performance training.

Each student is given the mentorship of an experienced teacher of performance and works closely with the mentor to create opportunities for independent studies in pedagogy and curriculum development. Students gain experience applying theory to the practice of teaching acting and performance classes every semester, creating a course, conducting master class workshops, working on production assignments, and coaching or advising undergraduate students as needed. Students are encouraged to develop an area of specialty and to develop other areas of training in order to broaden their knowledge and remain competitive in the academic market.

Degree Requirements

The curriculum for the MFA degree in Performance Pedagogy centers around three focus areas:

1. Pedagogical Study
2. History/Literature/Criticism
3. Other Electives.

Each semester students are expected to carry a 15-credit load in addition to teaching two performance classes. Classroom teaching serves as fulfillment of the student's work obligation to the university in addition to providing a laboratory for applying the pedagogical ideas under study.

of courses required (list core courses, etc.)

60 credits are required for the program: 36-39 credits in pedagogy; 15 credits in History, Literature and Criticism; and 3-6 credits in electives. Core courses include: Techniques in Performance Pedagogy, Course Development, Production Mentorship, and Directed Studies in Pedagogy.

Thesis and Final Examination

The thesis project is the final requirement for the Performance Pedagogy degree. It is comprised of an original, created course plus a substantial written document that serves as a teaching guidebook for other instructors interested in using the thesis topic in the classroom. The thesis document identifies a pedagogical question, investigates that question through research or classroom work, and then identifies conclusions reached. Thesis documents should be written in such a way that a performance teacher could use the document as a study guide on the topic in question. Thesis documents typically range from 40-80 pages in length and are directly connected to the created course devised by the student.

Thesis planning occurs in the fall semester of the second year. The thesis document must be completed and approved by a two or three person committee selected by the student. An outline of the thesis proposal and the names of the thesis committee are due at the beginning of the final semester. At least one committee member must be from the performance faculty. All thesis documents require a committee signature page. The student must submit the final document (after committee approval) by the end of April of the graduating year. Students present an oral defense of the Thesis to their committee.

Dietrich School of Arts and Sciences Faculty

Last Name	First Name	Rank	Department	Highest Degree	Conferring Institution
Alter	Joseph	Professor	Anthropology	PhD	California, Berkeley, University of
Alvarado	Louis	Assistant Professor	Anthropology	PhD	New Mexico, Albuquerque, University of
Arkush	Elizabeth	Associate Professor	Anthropology	PhD	California, Los Angeles, University of
Bermann	Marc	Associate Professor	Anthropology	PhD	Michigan, Ann Arbor, University of
Brown	Laura	Assistant Professor	Anthropology	PhD	Michigan, Ann Arbor, University of

Constable	Nicole	Professor	Anthropology	PhD	California, Berkeley, University of
Drennan	Robert	Distinguished Professor	Anthropology	PhD	Michigan, Ann Arbor, University of
Hanks	Bryan	Associate Professor	Anthropology	PhD	Cambridge, University of
Hayden	Robert	Professor	Anthropology	PhD	State University of New York, Buffalo
Judd	Margaret	Associate Professor	Anthropology	PhD	University of Alberta
Lukacs	Gabriella	Associate Professor	Anthropology	PhD	Duke University
Matza	Tomas	Assistant Professor	Anthropology	PhD	Stanford University
Musante	Kathleen	Professor	Anthropology	PhD	Connecticut, Main, University of
Siegel	Michael	Professor	Anthropology	PhD	City University of New York, Graduate Center
Strathern	Andrew	Andrew Mellon Professor	Anthropology	PhD	Cambridge, University of
Wanderer	Emily	Assistant Professor	Anthropology	PhD	Massachusetts Institute of Technology
Arndt	Karen	Professor	Biological Sciences	PhD	California, Berkeley, University of
Ashman	Tia-Lynn	Distinguished Professor	Biological Sciences	PhD	California, Davis, University of
Ashmore	Lesley	Lecturer II	Biological Sciences	PhD	Pennsylvania, University of
Berman	Andrea	Assistant Professor	Biological Sciences	PhD	Yale University
Boyle	Jon	Associate Professor	Biological Sciences	PhD	Wisconsin, Madison, University of
Brodsky	Jeffrey	Professor/(Avinoff Professor)	Biological Sciences	PhD	Harvard University
Brouwer	Nathan	Lecturer II	Biological Sciences	PhD	Pittsburgh, Main, University of
Butela	Kristen	Lecturer II	Biological Sciences	PhD	Pittsburgh, Main, University of
Campbell	Gerard	Associate Professor	Biological Sciences	PhD	Leicester, University of
Carlson Rosenbaum	Anne	Assistant Professor	Biological Sciences	PhD	Washington, University of
Carson	Walter	Associate Professor	Biological Sciences	PhD	Cornell University Endowed Colleges
Chapman	Deborah	Associate Professor	Biological Sciences	PhD	Columbia University, Main Division

Czapski	Tiffany	Visiting Lab Instructor	Biological Sciences	PhD	Duquesne University
Damiani	Candice	Lecturer II	Biological Sciences	PhD	West Virginia University
Donovan	Samuel	Lecturer	Biological Sciences	PhD	Wisconsin, Madison, University of
Durrant	Jacob	Assistant Professor	Biological Sciences	PhD	California, San Diego, University of
Gardner	Kathryn	Lecturer	Biological Sciences	PhD	North Carolina, Chapel Hill, University of
Gharaibeh	Burhan	Lecturer II	Biological Sciences	PhD	Texas Tech University
Grabowski	Paula	Professor/(Assoc Invest Howard Hughes)	Biological Sciences	PhD	Colorado, Boulder, University of
Gribble	Suzanna	Lecturer II/Co-Director of Undergraduate Program	Biological Sciences	PhD	Utah, University of
Hainer	Sarah	Assistant Professor	Biological Sciences	PhD	Pittsburgh, Main, University of
Hatfull	Graham	Professor/(Eberly Family Prof)	Biological Sciences	PhD	Edinburgh, University of
Hildebrand	Jeffrey	Associate Professor	Biological Sciences	PhD	Virginia, University of
Jacobson	Lewis	Professor	Biological Sciences	PhD	Illinois, Urbana, University of
Kaplan	Craig	Associate Professor	Biological Sciences	PhD	Harvard University
Kaufmann	Nancy	Senior Lecturer	Biological Sciences	PhD	Harvard University
Kelsey	Ellen	Lecturer II	Biological Sciences	MS	Rochester, University of
Kiselyov	Kirill	Associate Professor	Biological Sciences	PhD	Russian Academy of Science, Moscow
Kitzes	Justin	Assistant Professor	Biological Sciences	PhD	California, Berkeley, University of
Kohl	Kevin	Assistant Professor	Biological Sciences	PhD	Utah, University of
Kuebbing	Sara	Assistant Professor	Biological Sciences	PhD	Tennessee, Knoxville, University of
Lawrence	Jeffrey	Professor & Chair	Biological Sciences	PhD	Washington University
Lee	Miler	Assistant Professor	Biological Sciences	PhD	Pennsylvania, University of
Legg	Alison	Senior Lecturer/Outreach Coordinator	Biological Sciences	PhD	Pittsburgh, Main, University of
McGreevy	Erica	Lecturer	Biological Sciences	PhD	Pittsburgh, Main, University of
O'Donnell	Allyson	Assistant Professor	Biological Sciences	PhD	Dalhousie University, Canada

Oke	Valerie	Senior Lecturer/Co-Director of Undergraduate Program/Assistant Chair	Biological Sciences	PhD	Harvard University
O'Reilly	Linda	Lecturer	Biological Sciences	PhD	University College Dublin
Payne	Kimberly	Lecturer	Biological Sciences	PhD	Pittsburgh, Main, University of
Peebles	Craig	Professor	Biological Sciences	PhD	Chicago, University of
Pipas	James	Professor and Herbert W. and Grace Boyer Chair	Biological Sciences	PhD	Florida State University
Polinko	Eric	Lecturer	Biological Sciences	PhD	Indiana University Bloomington
Rebeiz	Mark	Associate Professor	Biological Sciences	PhD	California, San Diego, University of
Roberts	Laurel	Senior Lecturer	Biological Sciences	PhD	Pittsburgh, Main, University of
Rosenberg	John	Professor	Biological Sciences	PhD	Massachusetts Institute of Technology
Saunders	William	Associate Professor	Biological Sciences	PhD	Johns Hopkins University
Schwacha	Anthony	Associate Professor	Biological Sciences	PhD	Harvard University
Stephenson	Jessica	Assistant Professor	Biological Sciences	PhD	Cardiff University Wales
Swigonova	Zuzana	Lecturer II	Biological Sciences	PhD	Rutgers University, New Brunswick
Turcotte	Martin	Assistant Professor	Biological Sciences	PhD	California, Riverside, University of
Van Demark	Andrew	Associate Professor	Biological Sciences	PhD	Johns Hopkins University
Wandelt	Jessica	Lecturer II	Biological Sciences	PhD	Arizona, University of
Warner	Marcie	Lecturer	Biological Sciences	PhD	Pittsburgh, Main, University of
Wetzel	Dan	Lecturer	Biological Sciences	PhD	Kentucky, University of
Wood	Corlett	Assistant Professor	Biological Sciences	PhD	Virginia, University of
Zapanta	Laura	Lecturer II	Biological Sciences	PhD	Pennsylvania State University, Main
Zawacki	Corinne	Associate Professor/PLE Director	Biological Sciences	PhD	Michigan, Ann Arbor, University of
Zhu	Xiaodong	Lecturer	Biological Sciences	PhD	Pittsburgh, Main, University of
Amemiya	Shigeru	Associate Professor	Chemistry	PhD	Tokyo, University of

Asher	Sanford	Distinguished Professor	Chemistry	PhD	California, Berkeley, University of
Bandik	George	Senior Lecturer	Chemistry	PhD	Pittsburgh, Main, University of
Brummond	Kay	Professor	Chemistry	PhD	Harvard University
Childers	William	Assistant Professor	Chemistry	PhD	Emory University
Chong	Lillian	Associate Professor	Chemistry	PhD	California, San Francisco, University of
Coalson	Rob	Professor	Chemistry	PhD	Harvard University
Cooper	N. John	Professor	Chemistry	DPhil	Oxford, University of
Curran	Dennis	Distinguished Service Professor/(Bayer Prof)	Chemistry	PhD	Rochester, University of
Deiters	Alexander	Professor	Chemistry	PhD	Munster, University of
Floreancig	Paul	Professor	Chemistry	PhD	Stanford University
Fortney	Carol	Lecturer	Chemistry	PhD	Pittsburgh, Main, University of
Garrett-Roe	Sean	Assistant Professor	Chemistry	PhD	California, Berkeley, University of
Grabowski	Joseph	Associate Professor	Chemistry	PhD	Colorado, Boulder, University of
Horne	William	Associate Professor	Chemistry	PhD	Scripps Research Institute
Huston	Ericka	Senior Lecturer	Chemistry	PhD	Maryland, College Park, University of
Hutchison	Geoffrey	Associate Professor	Chemistry	PhD	Northwestern University
Islam	Kabirul	Assistant Professor	Chemistry	PhD	Indian Institute of Science, India
Jordan	Kenneth	Distinguished Professor and Richard King Mellon Professor	Chemistry	PhD	Massachusetts Institute of Technology
Koide	Kazunori	Associate Professor	Chemistry	PhD	California, San Diego, University of
Laaser	Jennifer	Assistant Professor	Chemistry	PhD	Wisconsin, Madison, University of
Lambrecht	Daniel	Assistant Professor	Chemistry	PhD	Tubingen, University of
Liu	Haitao	Associate Professor	Chemistry	PhD	California, Berkeley, University of
Liu	Peng	Assistant Professor	Chemistry	PhD	California State University, Los Angeles

Liu	Xinyu	Assistant Professor	Chemistry	PhD	Swiss Federal Institute of Technology
Maleckar	Susan	Lecturer	Chemistry	PhD	Pittsburgh, Main, University of
Meyer	Tara	Associate Professor	Chemistry	PhD	Iowa, University of
Michael	Adrian	Professor	Chemistry	PhD	Emory University
Millstone	Jill	Associate Professor	Chemistry	PhD	Northwestern University
Morris	Hannah	Lecturer	Chemistry	PhD	Pittsburgh, Main, University of
Nelson	Scott	Professor	Chemistry	PhD	Rochester, University of
Rosi	Nathaniel	Professor	Chemistry	PhD	Michigan, Ann Arbor, University of
Hernández Sánchez	Raúl	Assistant Professor	Chemistry	PhD	Harvard University
Saxena	Sunil	Professor	Chemistry	PhD	Cornell University Endowed Colleges
Star	Alexander	Professor	Chemistry	PhD	Tel Aviv University
Wagner II	Eugene	Senior Lecturer	Chemistry	PhD	North Georgia, University of
Waldeck	David	Professor	Chemistry	PhD	Chicago, University of
Wang	Yiming	Assistant Professor	Chemistry	PhD	UC Berkley
Ward	Michelle	Lecturer II	Chemistry	PhD	Pittsburgh, Main, University of
Weber	Stephen	Professor	Chemistry	PhD	McGill University
Wilcox	Craig	Professor	Chemistry	PhD	California Institute of Technology
Wipf	Peter	Distinguished University Professor	Chemistry	PhD	Zurich, University of
Bromberg	Jacques	Assistant Professor	Classics	PhD	Pennsylvania, University of
Hoenig	Christina	Associate Professor	Classics	PhD	Cambridge, University of
Jones	Nicholas	Professor	Classics	PhD	California, Berkeley, University of
Possanza	D. Mark	Associate Professor	Classics	PhD	North Carolina, Chapel Hill, University of
Wildberg	Christian	Andrew W. Mellon Professor	Classics	PhD	Cambridge, University of
Bruce	Caitlin	Assistant Professor	Communication	PhD	Northwestern University
Clarke	Lynn	Lecturer	Communication	PhD	Northwestern University

Johnson	Paul	Assistant Professor	Communication	PhD	Iowa, University of
Kuchinskaya	Olga	Associate Professor	Communication	PhD	California, San Diego, University of
Malin	Brenton	Associate Professor	Communication	PhD	Iowa, University of
Marshall	David	Associate Professor	Communication	PhD	Johns Hopkins University
Matheson	Calum	Assistant Professor	Communication	PhD	North Carolina, Chapel Hill, University of
Mitchell	Gordon	Associate Professor	Communication	PhD	Northwestern University
Olson	Lester	Professor	Communication	PhD	Wisconsin, Madison, University of
Zboray	Ronald	Professor	Communication	PhD	New York University
Ahn	Daniel	Assistant Professor	Computer Science	PhD	Illinois, Urbana, University of
Chang	Shi-Kuo	Professor	Computer Science	PhD	California, Berkeley, University of
Childers	Bruce	Professor	Computer Science	PhD	Virginia, Main, University of
Chrysanthis	Panos	Professor	Computer Science	PhD	Massachusetts, Amherst, University of
Farnan	Nicholas	Lecturer	Computer Science	PhD	Pittsburgh, Main, University of
Hauskrecht	Milos	Professor	Computer Science	PhD	Massachusetts Institute of Technology
Hwa	Rebecca	Associate Professor	Computer Science	PhD	Harvard University
Kosiyatrakul	Thumrongsak	Lecturer	Computer Science	PhD	Syracuse University, Main
Kovashka	Adriana	Assistant Professor	Computer Science	PhD	Texas, Austin, University of
Labrinidis	Alexandros	Associate Professor	Computer Science	PhD	Maryland, College Park, University of
Lange	John	Associate Professor	Computer Science	PhD	Northwestern University
Lee	Adam	Associate Professor	Computer Science	PhD	Illinois, Urbana, University of
Litman	Diane	Professor	Computer Science	PhD	Rochester, University of
Melhem	Rami	Professor	Computer Science	PhD	Pittsburgh, Main, University of
Misurda	Jonathan	Lecturer II	Computer Science	PhD	Pittsburgh, Main, University of
Mosse	Daniel	Professor	Computer Science	PhD	Maryland, College Park, University of

Pruhs	Kirk	Professor	Computer Science	PhD	Wisconsin, Madison, University of
Ramirez	John	Senior Lecturer	Computer Science	PhD	Pittsburgh, Main, University of
Wang	Jingtao	Assistant Professor	Computer Science	PhD	California, Berkeley, University of
Wiebe	Janyce	Professor	Computer Science	PhD	State University of New York, Buffalo
Zhang	Youtao	Associate Professor	Computer Science	PhD	Arizona, University of
Znati	Taieb	Professor	Computer Science	PhD	Michigan State University
Cheng	Bei	Assistant Instructor	East Asian Languages and Literatures	MA	Iowa, University of
Exley	Charles	Assistant Professor	East Asian Languages and Literatures	PhD	Yale University
Fan	Fan	Visiting Assistant Instructor	East Asian Languages and Literatures	MS	Indiana University Bloomington
Hsieh	Wan-Ching	Assistant Instructor	East Asian Languages and Literatures	MEd	Pennsylvania, University of
Joo	Kyungok	Assistant Instructor	East Asian Languages and Literatures	MA	Columbia University
Kanisawa Kowalchuck	Noriko	Assistant Instructor	East Asian Languages and Literatures	MEd	Pittsburgh, Main, University of
Kim	Mi-Hyun	Lecturer	East Asian Languages and Literatures	PhD	Hawaii, Manoa, University of
Kyung Jung	Boo	Assistant Instructor	East Asian Languages and Literatures	Unknown	Unknown
Luft	Stephen	Lecturer	East Asian Languages and Literatures	PhD	Ohio State University Main
Nara	Hiroshi	Professor	East Asian Languages and Literatures	PhD	Kansas, Main, University of
Oshimo	Junzo	Assistant Instructor	East Asian Languages and Literatures	MEd	Pittsburgh, Main, University of
Oyler	Elizabeth	Associate Professor	East Asian Languages and Literatures	PhD	Stanford University
Qian	Kun	Assistant Professor	East Asian Languages and Literatures	PhD	Cornell University Endowed Colleges
Shin	Seung-hwan	Visiting Assistant Professor	East Asian Languages and Literatures	PhD	Pittsburgh, Main, University of

Sun	Cecile	Professor	East Asian Languages and Literatures	PhD	Indiana University Bloomington
Takabatake Howard	Sachiko	Assistant Instructor	East Asian Languages and Literatures	MA	Indiana, Pennsylvania, University of
Xu	Yi	Associate Professor	East Asian Languages and Literatures	PhD	Arizona, University of
Albanesi	Stefania	Professor	Economics	PhD	Northwestern University
Beeson	Patricia	Professor	Economics	PhD	Oregon, University of
Becker	Neal	Senior Lecturer	Economics	PhD	Pittsburgh, Main, University of
Beresteanu	Arie	Associate Professor	Economics	PhD	Northwestern University
Berkowitz	Daniel	Professor	Economics	PhD	Columbia University, Main Division
Coen Pirani	Daniele	Associate Professor	Economics	PhD	Rochester, University of
Cook	Jason	Assistant Professor	Economics	PhD	Cornell University
DeJong	David	Professor	Economics	PhD	Iowa, University of
Gihleb	Rania	Assistant Professor	Economics	PhD	Boston University
Giuntella	Osea	Assistant Professor	Economics	PhD	Boston University
Hanley	Douglas	Assistant Professor	Economics	PhD	Pennsylvania, University of
Hewitt	David	Lecturer	Economics	PhD	California, Irvine, University of
Huffman	David	Professor	Economics	PhD	California, Berkeley, University of
Husted	Steven	Professor Emeritus	Economics	PhD	Michigan State University
La Nauze	Andrea	Assistant Professor	Economics	PhD	Melbourne, University of
Maksymenko	Svitlana	Senior Lecturer	Economics	PhD	Temple University
Maloy	James	Lecturer II	Economics	PhD	London, University of
Moroni	Sofia	Assistant Professor	Economics	PhD	Yale University
Mylovanov	Tymofiy	Associate Professor	Economics	PhD	Wisconsin, Madison, University of
Rawski	Thomas	Professor Emeritus	Economics	PhD	Harvard University
Richard	Jean-Francois	Distinguished University Professor	Economics	PhD	Université catholique de Louvain
Rigotti	Luca	Associate Professor	Economics	PhD	Yale University
Ripoll	Marla	Professor	Economics	PhD	Rochester, University of

Shamdasani	Yogita	Assistant Professor	Economics	PhD	Columbia University
Shaver	Kevin	Lecturer	Economics	PhD	Washington University
Shertzer	Allison	Assistant Professor	Economics	PhD	California, Los Angeles, University of
Teper	Roece	Associate Professor	Economics	PhD	Tel Aviv University
Treado	Carey	Lecturer	Economics	PhD	Pittsburgh, Main, University of
van Weelden	Richard	Associate Professor	Economics	PhD	Yale University
Vesterlund	Lise	Andrew Mellon Professor	Economics	PhD	Wisconsin, Madison, University of
Wallace	Elizabeth	Lecturer II	Economics	MA	Pittsburgh, Main, University of
Walsh	Randall	Professor	Economics	PhD	Duke University
Wang	Stephanie	Associate Professor	Economics	PhD	Princeton University
Wilson	Alistair	Associate Professor	Economics	PhD	New York University
Wolfe	Katherine	Lecturer II	Economics	MA	Pittsburgh, Main, University of
Zabelina	Margarita	Lecturer	Economics	PhD	Emory University
Zincenko	Federico	Assistant Professor	Economics	PhD	California, Los Angeles, University of
Anderson	Erin	Assistant Professor	English	PhD	Pittsburgh, Main, University of
Anderson	Mark	Associate Professor	English	PhD	Rochester, University of
Andrade	Susan	Associate Professor	English	PhD	Michigan, Ann Arbor, University of
Arac	Jonathan	Andrew Mellon Professor	English	PhD	Harvard University
Aziz	Jeffrey	Senior Lecturer	English	PhD	Pittsburgh, Main, University of
Best	Mark	Lecturer II	English	PhD	Indiana University Bloomington
Bialostosky	Don	Professor	English	PhD	Chicago, University of
Bickford	Tyler	Associate Professor	English	PhD	Columbia University, Main Division
Boone	Troy	Associate Professor	English	PhD	Rochester, University of
Bove	Carol	Senior Lecturer	English	PhD	State University of New York, Binghamton

Bove	Paul	Distinguished Professor	English	PhD	State University of New York, Binghamton
Bright	Curtis	Associate Professor	English	PhD	Yale University
Campbell	Peter	Assistant Professor	English	PhD	Illinois, Urbana, University of
Campbell-Tanner	Lori	Senior Lecturer	English	PhD	Duquesne University
Carlson	Sten	Senior Lecturer	English	MFA	Pittsburgh, Main, University of
Carr	Jean	Associate Professor	English	PhD	Michigan, Ann Arbor, University of
Carr	Stephen	Associate Professor	English	PhD	Michigan, Ann Arbor, University of
Cheong	Fiona	Associate Professor	English	MFA	Cornell University Endowed Colleges
Clarke	Robin	Lecturer II	English	MFA	Pittsburgh, Main, University of
Clift	Robert	Assistant Professor	English	PhD	Indiana University Bloomington
Coles	Nicholas	Associate Professor	English	PhD	State University of New York, Buffalo
Cruz	Angie	Assistant Professor	English	MFA	New York University
Edelman	Barbara	Senior Lecturer	English	MFA	Pittsburgh, Main, University of
Farkas	Angela	Lecturer	English	PhD	Pittsburgh, Main, University of
Gill-Peterson	Julian	Assistant Professor	English	PhD	Rutgers University, New Brunswick
Glazener	Nancy	Professor	English	PhD	Stanford University
Glover	Geoffrey	Lecturer II	English	PhD	Carnegie-Mellon University
Grace	Jean	Senior Lecturer	English	PhD	Pittsburgh, Main, University of
Gramm	Marylou	Senior Lecturer	English	PhD	New York University
Gwiazda	Piortr	Professor	English	PhD	New York University
Harvey	Yona	Assistant Professor	English	MFA	Pittsburgh, Main, University of
Hayes	Terrance	Professor and Toi Derricotte Chair	English	MFA	Pittsburgh, Main, University of
Holding	Cory	Assistant Professor	English	PhD	Illinois, Urbana, University of
Horton	Zachary	Assistant Professor	English	PhD	California, Santa Barbara, University of

Johnson	Hannah	Associate Professor	English	PhD	Princeton University
Judy	Ronald	Professor	English	PhD	Minnesota, Twin Cities, University of
Kemp	Mark	Senior Lecturer	English	PhD	Pittsburgh, Main, University of
Knapp	James	Professor	English	PhD	Connecticut, Main, University of
Kothari	Geeta	Senior Lecturer	English	MA	New York University
Kramer	Mark	Senior Lecturer	English	MFA	Pittsburgh, Main, University of
Laskas	Jeanne	Professor	English	MFA	Pittsburgh, Main, University of
Lavin	Matthew	Clinical Assistant Professor	English	PhD	Iowa, University of
Leavens	Sarah	Lecturer	English	MFA	Mansfield State College
Lee	Jennifer	Senior Lecturer	English	MFA	Pittsburgh, Main, University of
Lowenstein	Adam	Professor	English	PhD	Chicago, University of
Lychack	William	Associate Professor	English	MFA	Michigan, Ann Arbor, University of
Maccabe	Colin	Distinguished Professor	English	PhD	Cambridge, University of
Majumdar	Neepa	Associate Professor	English	PhD	Indiana University Bloomington
Maraj	Louis	Assistant Professor	English	PhD	Ohio State, Main, The University of
Martin	Dawn	Professor	English	PhD	Massachusetts, Amherst, University of
Matway	Elizabeth	Senior Lecturer	English	PhD	Pittsburgh, Main, University of
McDermott	Ryan	Associate Professor	English	PhD	Virginia, Main, University of
McMillan	Daniel	Lecturer II	English	MFA	Pittsburgh, Main, University of
McWhorter	Thomas	Lecturer II	English	MFA	Utah, University of
Meyer	Michael	Professor	English	MEd	California, Berkeley, University of
Miller	Benjamin	Assistant Professor	English	PhD	City University of New York, Graduate Center
Murray	Amy	Lecturer II	English	PhD	Pittsburgh, Main, University of
Myers	Shaundra	Assistant Professor	English	PhD	Maryland, College Park, University of

Newborg	Beth	Senior Lecturer	English	MA	Pittsburgh, Main, University of
Oaks	Jeffrey	Senior Lecturer	English	MFA	Pittsburgh, Main, University of
O'Brien	Pamela	Lecturer II	English	MA	Gannon University
Och	Dana	Senior Lecturer	English	PhD	Pittsburgh, Main, University of
Patterson	Alison	Lecturer II	English	PhD	Pittsburgh, Main, University of
Pitts	Elizabeth	Assistant Professor	English	PhD	North Carolina State University
Puri	Shalini	Professor	English	PhD	Ithaca College
Reich	Elizabeth	Assistant Professor	English	PhD	Rutgers University
Reyn	Irina	Associate Professor	English	MFA	Bennington College
Rogers	Gayle	Professor	English	PhD	Northwestern University
Salzer	Kenneth	Lecturer II	English	PhD	Rochester, University of
Satyavolu	Uma	Lecturer II	English	PhD	West Virginia University
Scott	Khirsten	Assistant Professor	English	PhD	Louisville, University of
Scott Jr	William	Associate Professor	English	PhD	Johns Hopkins University
Skrzycki	Cynthia	Senior Lecturer	English	MA	American University
Smith	Ellen	Senior Lecturer	English	PhD	Duquesne University
Trachtenberg	Peter	Associate Professor	English	MA	City University of New York, Graduate Center
Twynning	John	Professor	English	PhD	East Anglia, University of
Vee	Annette	Assistant Professor	English	PhD	Wisconsin, Madison, University of
Waldron	Jennifer	Associate Professor	English	PhD	Princeton University
Weikle-Mills	Courtney	Associate Professor	English	PhD	Ohio State University Main
West	Michael	Professor	English	PhD	Harvard University
Whitney	Brenda	Senior Lecturer	English	PhD	Pittsburgh, Main, University of
Coleman	James	Assistant Professor	French and Italian Languages and Literatures	PhD	Yale University
Delfini	Cinzia	Visiting Lecturer	French and Italian Languages and Literatures	MA	Pittsburgh, Main, University of
Denman	Lorraine	Lecturer	French and Italian Languages and Literatures	MA	Pittsburgh, Main, University of

Doshi	Neil	Assistant Professor	French and Italian Languages and Literatures	PhD	Michigan, Ann Arbor, University of
Hogg	Chloe	Assistant Professor	French and Italian Languages and Literatures	PhD	Pennsylvania, University of
Insana	Lina	Associate Professor	French and Italian Languages and Literatures	PhD	Pennsylvania, University of
Iozzia	Alberto	Visiting Assistant Professor	French and Italian Languages and Literatures	Unknown	Unknown
Kosinski	Renate	Distinguished Professor	French and Italian Languages and Literatures	PhD	Princeton University
Mecchia	Giuseppina	Associate Professor	French and Italian Languages and Literatures	PhD	Princeton University
Pettersen	David	Associate Professor	French and Italian Languages and Literatures	PhD	California, Berkeley, University of
Reeser	Todd	Professor	French and Italian Languages and Literatures	PhD	Michigan, Ann Arbor, University of
Savoia	Francesca	Professor	French and Italian Languages and Literatures	PhD	California, Los Angeles, University of
Ung	Kaliane	Visiting Assistant Professor	French and Italian Languages and Literatures	MA	New York University
Walsh III	John	Associate Professor	French and Italian Languages and Literatures	PhD	Harvard University
Wells	Brett	Senior Lecturer	French and Italian Languages and Literatures	PhD	Stanford University
Beaulieu	Julie	Lecturer	Gender, Sexuality, and Women's Studies	PhD	Pittsburgh, Main, University of
Abbott	Mark	Professor	Geology and Environmental Science	PhD	Minnesota, Twin Cities, University of
Bain	Daniel	Associate Professor	Geology and Environmental Science	PhD	Johns Hopkins University
Capo	Rosemary	Associate Professor	Geology and Environmental Science	PhD	California, Los Angeles, University of
Elliott	Emily	Professor	Geology and Environmental Science	PhD	Johns Hopkins University
Harbert	William	Professor	Geology and Environmental Science	PhD	Stanford University
Jones	Charles	Senior Lecturer	Geology and Environmental Science	PhD	Oxford, University of

McQuarrie	Nadine	Professor	Geology and Environmental Science	PhD	Arizona, University of
Ramsey	Michael	Professor	Geology and Environmental Science	PhD	Arizona State University
Shelef	Eitan	Assistant Professor	Geology and Environmental Science	PhD	Stanford University
Stewart	Brian	Associate Professor	Geology and Environmental Science	PhD	California, Los Angeles, University of
Werne	Josef	Professor	Geology and Environmental Science	PhD	Northwestern University
Whittinghill	Kyle	Lecturer	Geology and Environmental Science	PhD	Minnesota, Twin Cities, University of
Batista	Viktoria	Lecturer	German	PhD	Kansas, Main, University of
Brand	Benjamin	Visiting Lecturer	German	PhD	Brown University
Colin	Amy	Associate Professor	German	PhD	Yale University
Gallagher	Maureen	Visiting Assistant Professor	German	PhD	Massachusetts, Amherst, University of
Halle	Randall	Klaus Jonas Professor	German	PhD	Wisconsin, Madison, University of
Harms	Viktoria	Lecturer	German	PhD	Pittsburgh, Main, University of
Kurash	Jaclyn	Lecturer	German	PhD	The Ohio State University
Lukic	Anita	Visiting Assistant Professor	German	PhD	Indiana University
Lyon	John	Professor	German	PhD	Princeton University
Malandro	Ulrike	Instructor	German	Unknown	Unknown
Muenzer	Clark	Associate Professor	German	PhD	Princeton University
von Dirke	Sabine	Associate Professor	German	PhD	Stanford University
Balderston	Daniel	Andrew Mellon Professor	Hispanic Languages and Literatures	PhD	Princeton University
Branche	Jerome	Professor	Hispanic Languages and Literatures	PhD	New Mexico, University of
Calahorrano	Paola	Visiting Lecturer	Hispanic Languages and Literatures	PhD	Boston University
Carvalho	Ana Paula	Lecturer II	Hispanic Languages and Literatures	MA	Pittsburgh, Main, University of

Clifton	Teresa	Lecturer	Hispanic Languages and Literatures	PhD	Brown University
Duchesne-Winter	Juan	Professor	Hispanic Languages and Literatures	PhD	State University of New York, Stony Brook
Kim	Junyoung	Assistant Professor	Hispanic Languages and Literatures	PhD	Cornell University Statutory Colleges
Lamana	Gonzalo	Associate Professor	Hispanic Languages and Literatures	PhD	Duke University
Lima-Vales	Dolores	Lecturer	Hispanic Languages and Literatures	PhD	Maryland, College Park, University of
Monasterios	Elizabeth	Professor	Hispanic Languages and Literatures	PhD	Toronto, University of
Rivera	Serena	Visiting Assistant Professor	Hispanic Languages and Literatures	PhD	Massachusetts, Dartmouth, University of
Sotomayor	Aurea	Professor	Hispanic Languages and Literatures	PhD	Stanford University
Tenorio	David	Assistant Professor	Hispanic Languages and Literatures	PhD	California, Davis, University of
Viranuvat	Apanchanit	Visiting Lecturer	Hispanic Languages and Literatures	MA	Brown University & Universidad Complutense de Madrid
Adal	Raja	Assistant Professor	History	PhD	Harvard University
Andrews	G. Reid	Distinguished Professor	History	PhD	Wisconsin, Madison, University of
Archibald	Elizabeth	Lecturer II	History	PhD	Yale University
Blain	Keisha	Associate Professor	History	PhD	Princeton University
Finley	Alexandra	Assistant Professor	History	PhD	William & Mary, College of
Frykman	Niklas	Assistant Professor	History	PhD	Pittsburgh, Main, University of
Glasco	Laurence	Associate Professor	History	PhD	State University of New York, Buffalo
Gobat	Michel	Professor	History	PhD	Chicago, University of
Gotkowitz	Laura	Associate Professor	History	PhD	Chicago, University of
Greenwald	Maurine	Associate Professor	History	PhD	Brown University
Hagerty	Bernard	Senior Lecturer	History	PhD	Pittsburgh, Main, University of
Hammond	Leslie	Senior Lecturer	History	PhD	Pittsburgh, Main, University of

Hill	James	Assistant Professor	History	PhD	William & Mary, College of
Holstein	Diego	Professor	History	PhD	Hebrew University of Jerusalem
Hoock	Holger	Carroll J. Amundson Professor	History	DPhil	Oxford, University of
Klots	Alissa	Assistant Professor	History	PhD	Rutgers University
Livezeanu	Irina	Associate Professor	History	PhD	Michigan, Ann Arbor, University of
Lovett	Laura	Associate Professor	History	PhD	California, University of
Mostern	Ruth	Associate Professor	History	PhD	California, Berkeley, University of
Musekamp	Jan	Associate Professor	History	DPhil	European University Viadrina
Nappi	Carla	Andrew W. Mellon Chair	History	PhD	Princeton University
Novosel	Anthony	Senior Lecturer	History	PhD	Pittsburgh, Main, University of
Pickett	James	Assistant Professor	History	PhD	Princeton University
Putnam	Lara	Professor	History	PhD	Michigan, Ann Arbor, University of
Rediker	Marcus	Distinguished Professor	History	PhD	Pennsylvania, University of
Roberts	Alaina	Assistant Professor	History	PhD	Indiana University
Roege	Pernille	Assistant Professor	History	PhD	Cambridge, University of
Ruck	Robert	Professor	History	PhD	Pittsburgh, Main, University of
Smith	Randy	Lecturer II	History	PhD	Pittsburgh, Main, University of
Stoner	John	Senior Lecturer	History	PhD	Columbia University, Main Division
Syed	Amir	Assistant Professor	History	PhD	Michigan, University of
Thum	Gregor	Associate Professor	History	PhD	European University Viadrina
Tsoukas	Liann	Senior Lecturer	History	PhD	Indiana University Bloomington
Warsh	Molly	Associate Professor	History	PhD	Johns Hopkins University
Webel	Mari	Assistant Professor	History	PhD	Columbia University, Main Division
Zeng	Zhaojin	Assistant Professor	History	PhD	Texas, Austin, University of
Allen	Colin	Distinguished Professor	History and Philosophy of Science	PhD	California, Los Angeles, University of

Chirimuuta	Mazviita	Assistant Professor	History and Philosophy of Science	PhD	Cambridge, University of
Dietrich	Michael	Professor	History and Philosophy of Science	PhD	California, San Diego, University of
Fuller	Jonathan	Assistant Professor	History and Philosophy of Science	PhD/MD	Toronto, University of
Gilton	Marian	Assistant Professor	History and Philosophy of Science	PhD	California, Irvine, University of
Lennox	James	Professor Emeritus	History and Philosophy of Science	PhD	Toronto, University of
Machery	Edouard	Distinguished Professor	History and Philosophy of Science	PhD	Paris VIII, University of
Mitchell	Sandra	Distinguished Professor	History and Philosophy of Science	PhD	Pittsburgh, Main, University of
Norton	John	Distinguished Professor	History and Philosophy of Science	PhD	New South Wales, University of
Palmieri	Paolo	Associate Professor	History and Philosophy of Science	PhD	London, University of
Woodward	James	Distinguished Professor	History and Philosophy of Science	PhD	Texas, Austin, University of
Armstrong	C. Drew	Associate Professor	History of Art and Architecture	PhD	Columbia University, Main Division
Bender	Gretchen	Senior Lecturer	History of Art and Architecture	PhD	Bryn Mawr College
Ellenbogen	Joshua	Associate Professor	History of Art and Architecture	PhD	Chicago, University of
Gao	Minglu	Research Professor	History of Art and Architecture	PhD	Harvard University
Gerhart	Karen	Professor	History of Art and Architecture	PhD	Kansas, Main, University of
Jones	Shirin	Assistant Professor	History of Art and Architecture	PhD	Harvard University
Josten	Jennifer	Associate Professor	History of Art and Architecture	PhD	Yale University
Langmead	Alison	Clinical Associate Professor	History of Art and Architecture	PhD	Columbia University
McCloskey	Barbara	Professor	History of Art and Architecture	PhD	Northwestern University

McCoy	Michelle	Assistant Professor	History of Art and Architecture	PhD	California, Berkeley, University of
Nygren	Christopher	Assistant Professor	History of Art and Architecture	PhD	Johns Hopkins University
Rajagopalan	Mrinalini	Associate Professor	History of Art and Architecture	PhD	California, Berkeley, University of
Savage	Kirk	Professor	History of Art and Architecture	PhD	California, Berkeley, University of
Smith	Terence	Andrew Mellon Professor	History of Art and Architecture	PhD	Sydney, University of
Taylor	Alexander	Assistant Professor	History of Art and Architecture	PhD	Oxford, University of
Weis	H. Anne	Associate Professor	History of Art and Architecture	PhD	Bryn Mawr College
Attia	Amani	Senior Lecturer	Linguistics	PhD	Alexandria, University of
Fricke	Melinda	Assistant Professor	Linguistics	PhD	California, Berkeley, University of
Gooden	Shelome	Associate Professor	Linguistics	PhD	Ohio State University Main
Han	Na-Rae	Lecturer	Linguistics	PhD	Pennsylvania, University of
Heath	Jevon	Lecturer	Linguistics	PhD	California, Berkeley, University of
Juffs	Alan	Professor	Linguistics	PhD	McGill University
Kanwit	Matthew	Assistant Professor	Linguistics	PhD	Indiana University Bloomington
Kiesling	Scott	Professor	Linguistics	PhD	Georgetown University
Mauk	Claude	Senior Lecturer	Linguistics	PhD	Texas, Austin, University of
McCormick	Dawn	Senior Lecturer	Linguistics	PhD	Pittsburgh, Main, University of
Mizera	Gregory	Lecturer	Linguistics	PhD	Pittsburgh, Main, University of
Ortega-Llebaria	Marta	Assistant Professor	Linguistics	PhD	Indiana University Bloomington
Park	Karen	Assistant Professor	Linguistics	PhD	Oxford, University of
Soudi	Abdesalam	Lecturer	Linguistics	PhD	Pittsburgh, Main, University of
Athanas	Angela	Lecturer II	Mathematics	MA	Pittsburgh, Main, University of
Belhachemi	Rachid	Lecturer	Mathematics	PhD	Oklahoma State University

Caginalp	Gunduz	Professor	Mathematics	PhD	Cornell University Endowed Colleges
Chadam	John	Professor	Mathematics	PhD	Massachusetts Institute of Technology
Chen	Ming	Assistant Professor	Mathematics	PhD	Brown University
Chen	Xinfu	Professor	Mathematics	PhD	Minnesota, University of
Constantine	Gregory	Professor	Mathematics	PhD	Illinois, Chicago, University of
Deblois	Jason	Assistant Professor	Mathematics	PhD	Texas, Austin, University of
Doiron	Brent	Associate Professor	Mathematics	PhD	Ottawa, University of
Ermentrout	G. Bard	Distinguished University Professor	Mathematics	PhD	Chicago, University of
Everest	Thomas	Lecturer	Mathematics	PhD	Pittsburgh, Main, University of
Gartside	Paul	Professor	Mathematics	PhD	Oxford, University of
Hajlasz	Piotr	Professor	Mathematics	PhD	Warsaw, University of
Hales	Thomas	Andrew Mellon Professor	Mathematics	PhD	Princeton University
Hockensmith	Daniel	Lecturer	Mathematics	PhD	Illinois, Urbana, University of
Ion	Bogdan	Associate Professor	Mathematics	PhD	Princeton University
Jiang	Huiqiang	Associate Professor	Mathematics	PhD	New York University
Kaveh	Kiumars	Associate Professor	Mathematics	PhD	Toronto, University of
Layton	William	Professor	Mathematics	PhD	Tennessee, Knoxville, University of
Lennard	Christopher	Associate Professor	Mathematics	PhD	Kent State University, Main
Lewicka	Marta	Associate Professor	Mathematics	PhD	Scuola Internazionale Superiore di Studi Avanzati
Manfredi	Juan	Professor	Mathematics	PhD	Washington University
Neilan	Michael	Associate Professor	Mathematics	PhD	Tennessee, Knoxville, University of
Pakzad	Mohammadreza	Associate Professor	Mathematics	PhD	École normale supérieure de Cachan
Pan	Yibiao	Professor	Mathematics	PhD	Princeton University
Popescu	Roxana-Irina	Lecturer	Mathematics	PhD	Pittsburgh, Main, University of
Rabier	Patrick	Professor	Mathematics	PhD	Paris VI-Curie, University of
Rubin	Jonathan	Professor	Mathematics	PhD	Brown University

Schikorra	Armin	Assistant Professor	Mathematics	PhD	RWTH Aachen University
Sparling	George	Associate Professor	Mathematics	PhD	London, University of
Swigon	David	Associate Professor	Mathematics	PhD	Rutgers University, New Brunswick
Trenchea	Catalin	Associate Professor	Mathematics	PhD	Iasi University
Trofimov	Evgueni	Lecturer	Mathematics	PhD	Pittsburgh, Main, University of
Vainchtein	Anna	Professor	Mathematics	PhD	Cornell University Statutory Colleges
Wang	Dehua	Professor	Mathematics	PhD	Chicago, University of
Wang	Linhong	Lecturer	Mathematics	PhD	Temple University
Wheeler	Jeffrey	Lecturer II	Mathematics	PhD	Memphis State University
Xiong	Sheng	Lecturer	Mathematics	PhD	Temple University
Yao	Song	Assistant Professor	Mathematics	PhD	Purdue University, Main
Yotov	Ivan	Professor	Mathematics	PhD	Rice University
Asai	Rika	Lecturer	Music	PhD	Indiana University
Ayyagari	Shalini	Assistant Professor	Music	PhD	California, Berkeley, University of
Bloechl	Olivia	Professor	Music	PhD	Pennsylvania, University of
Cassaro	James	Professor	Music	MA	Cornell University
Gantt	Nicole Mitchell	William S. Dietrich II Endowed Chair	Music	MM	Northern Illinois University
Helbig	Adriana	Associate Professor	Music	PhD	Columbia University, Main Division
Heller	Michael	Associate Professor	Music	PhD	Harvard University
Johnson	Aaron	Assistant Professor	Music	PhD	Columbia University, Main Division
Moe	Eric	Andrew W. Mellon Professor	Music	PhD	California, Berkeley, University of
Pierson	Marcelle	Lecturer	Music	PhD	Chicago, University of
Root	Deane	Professor	Music	PhD	Illinois, Urbana, University of
Rosenblum	Mathew	Professor	Music	PhD	Princeton University
Wang	Dan	Assistant Professor	Music	PhD	Chicago, University of
Weintraub	Andrew	Professor	Music	PhD	California, Berkeley, University of

Williams	Amy	Associate Professor	Music	PhD	State University of New York, Buffalo
Zahab	Roger	Senior Lecturer	Music	MM	State University of New York, Stony Brook
Artim	Debra	Lecturer	Neuroscience	PhD	Pittsburgh, Main, University of
Barrionuevo	German	Professor	Neuroscience	MD	Buenos Aires, Universidad de
Cohen	Marlene	Associate Professor	Neuroscience	PhD	Stanford University
Colby	Carol	Professor	Neuroscience	PhD	Massachusetts Institute of Technology
Dong	Yan	Professor	Neuroscience	PhD	Chicago, University of
Fanselow	Erika	Lecturer	Neuroscience	PhD	Duke University
Grace	Anthony	Distinguished Professor	Neuroscience	PhD	Yale University
Johnson	Jon	Professor	Neuroscience	PhD	Stanford University
Meriney	Stephen	Professor	Neuroscience	PhD	Connecticut, Main, University of
Moghaddam	Bitá	Professor	Neuroscience	PhD	Kansas, Main, University of
Oswald	Anne Marie	Assistant Professor	Neuroscience	PhD	Ottawa, University of
Schluter	Oliver	Assistant Professor	Neuroscience	MD	Hannover, University of
Sesack	Susan	Professor	Neuroscience	PhD	Eastern Connecticut State University
Sorrells	Shawn	Assistant Professor	Neuroscience	PhD	Stanford University
Stricker	Edward	Distinguished University Professor	Neuroscience	PhD	Yale University
Sved	Alan	Professor	Neuroscience	PhD	Massachusetts Institute of Technology
Batterman	Robert	Distinguished Professor	Philosophy	PhD	Michigan, Ann Arbor, University of
Berry	Thomas	Senior Lecturer	Philosophy	PhD	Pittsburgh, Main, University of
Brandom	Robert	Distinguished Professor	Philosophy	PhD	Princeton University
Dorst	Kevin	Assistant Professor	Philosophy	PhD	Massachusetts Institute of Technology
Engstrom	Stephen	Professor	Philosophy	PhD	Chicago, University of
Gallow	Jeffrey	Assistant Professor	Philosophy	PhD	Michigan, Ann Arbor, University of

Gupta	Anil	Distinguished Professor and Alan Ross Anderson Chair	Philosophy	PhD	Pittsburgh, Main, University of
Lewinsohn	Joseph	Assistant Professor	Philosophy	PhD	New York University
Manders	Kenneth	Professor Emeritus	Philosophy	PhD	California, Berkeley, University of
McDowell	John	Distinguished University Professor	Philosophy	MA	Oxford, University of
Pallikkathayil	Japa	Associate Professor	Philosophy	PhD	Harvard University
Rescher	Nicholas	Distinguished University Professor	Philosophy	PhD	Princeton University
Ricketts	Thomas	Professor	Philosophy	PhD	Michigan, Ann Arbor, University of
Shaw	James	Associate Professor	Philosophy	PhD	Harvard University
Shumener	Erica	Assistant Professor	Philosophy	PhD	New York University
Stanton	Kate	Assistant Professor	Philosophy	PhD	Yale University
Theunissen	Lisa Nandi	Associate Professor	Philosophy	PhD	Columbia University
Thompson	Michael	Professor	Philosophy	PhD	California, Los Angeles, University of
Whiting	Jennifer	Distinguished Professor	Philosophy	PhD	Cornell University Endowed Colleges
Wilson	Mark	Distinguished Professor	Philosophy	PhD	Harvard University
Badenes	Carlos	Associate Professor	Physics and Astronomy	PhD	Universidad Politécnica de Puerto Rico
Batell	Brian	Assistant Professor	Physics and Astronomy	PhD	Minnesota, Twin Cities, University of
Bezanson	Rachel	Assistant Professor	Physics and Astronomy	PhD	Yale University
Boudreau	Joseph	Professor	Physics and Astronomy	PhD	Wisconsin, Madison, University of
Boyanovsky	Daniel	Professor	Physics and Astronomy	PhD	California, Santa Barbara, University of
Broccio	Matteo	Lecturer II	Physics and Astronomy	PhD	Messina, University of
Clark	Russell	Senior Lecturer	Physics and Astronomy	PhD	Louisiana State University in Shreveport
Danko	Istvan	Lab Instructor	Physics and Astronomy	PhD	Vanderbilt University
Devaty	Robert	Associate Professor	Physics and Astronomy	PhD	Cornell University
D'Urso	Brian	Assistant Professor	Physics and Astronomy	PhD	Harvard University

Dutt	Gurudev	Associate Professor	Physics and Astronomy	PhD	Michigan, Ann Arbor, University of
Dytman	Steven	Professor	Physics and Astronomy	PhD	Carnegie-Mellon University
Freitas	Ayres	Associate Professor	Physics and Astronomy	PhD	Hamburg, University of
Frolov	Sergey	Associate Professor	Physics and Astronomy	PhD	Illinois, Urbana, University of
Good	Melanie	Lecturer	Physics and Astronomy	PhD	University of Pittsburgh
Han	Tao	Distinguished Professor	Physics and Astronomy	PhD	Wisconsin, Madison, University of
Hatridge	Michael	Assistant Professor	Physics and Astronomy	PhD	California, Berkeley, University of
Hillier	Desmond	Professor	Physics and Astronomy	PhD	Australian National University
Hong	Tae Min	Assistant Professor	Physics and Astronomy	PhD	California, Santa Barbara, University of
Kosowsky	Arthur	Professor	Physics and Astronomy	PhD	Chicago, University of
Leibovich	Adam	Professor	Physics and Astronomy	PhD	California Institute of Technology
Levy	Jeremy	Distinguished Professor	Physics and Astronomy	PhD	California, Santa Barbara, University of
Liu	Wensheng	Professor	Physics and Astronomy	PhD	Texas, Austin, University of
Maher	James	Distinguished Service Professor	Physics and Astronomy	PhD	Yale University
Mong	Roger	Assistant Professor	Physics and Astronomy	PhD	California, Berkeley, University of
Mueller	James	Professor	Physics and Astronomy	PhD	Cornell University Endowed Colleges
Naples	Donna	Professor	Physics and Astronomy	PhD	Maryland, University of
Nero	David	Lecturer II	Physics and Astronomy	PhD	Toledo, University of
Newman	Jeffrey	Professor	Physics and Astronomy	PhD	California, Berkeley, University of
Paolone	Vittorio	Professor	Physics and Astronomy	PhD	California, Davis, University of
Pekker	David	Assistant Professor	Physics and Astronomy	PhD	Illinois, Urbana, University of
Petek	Hrvoje	Richard King Mellon Professor	Physics and Astronomy	PhD	California, Berkeley, University of
Purdy	Thomas	Assistant Professor	Physics and Astronomy	PhD	California, Berkeley, University of

Roskies	Ralph	Professor	Physics and Astronomy	PhD	Princeton University
Salman	Hanna	Associate Professor	Physics and Astronomy	PhD	Hebrew University of Jerusalem
Savinov	Vladimir	Professor	Physics and Astronomy	PhD	Minnesota, Twin Cities, University of
Schulte-Ladbeck	Regina	Professor	Physics and Astronomy	Dr. rer. nat.	Heidelberg, University of
Singh	Chandralekha	Professor	Physics and Astronomy	PhD	California, Santa Barbara, University of
Snoke	David	Professor	Physics and Astronomy	PhD	Illinois, Urbana, University of
Swanson	Eric	Professor	Physics and Astronomy	PhD	Toronto, University of
Turnshek	David	Professor	Physics and Astronomy	PhD	Arizona, University of
Wood-Vasey	William	Associate Professor	Physics and Astronomy	PhD	California, Berkeley, University of
Wu	Xiao-Lun	Professor	Physics and Astronomy	PhD	Cornell University Endowed Colleges
Zentner	Andrew	Professor	Physics and Astronomy	PhD	Ohio State University Main
Aklin	Michael	Assistant Professor	Political Science	PhD	New York University
Ames	Barry	Andrew Mellon Professor	Political Science	PhD	Stanford University
Bonneau	Christopher	Professor	Political Science	PhD	Michigan State University
Ding	Yue	Assistant Professor	Political Science	PhD	Harvard University
Fernandez-Vazquez	Pablo	Assistant Professor	Political Science	PhD	New York University
Finkel	Steven	Daniel Wallace Professor	Political Science	PhD	State University of New York, Stony Brook
Gochman	Charles	Associate Professor	Political Science	PhD	Michigan, Ann Arbor, University of
Goodhart	Michael	Professor	Political Science	PhD	California, Los Angeles, University of
Hays	Jude	Associate Professor	Political Science	PhD	Minnesota, Twin Cities, University of
Hurwitz	Jonathan	Professor Emeritus	Political Science	PhD	Minnesota, Duluth, University of
Kanthak	Kristin	Associate Professor	Political Science	PhD	Iowa, University of
Linden	Ronald	Professor Emeritus	Political Science	PhD	Princeton University

Long	Meridith	Lecturer	Political Science	PhD	Vanderbilt University
Lotz	Andrew	Lecturer	Political Science	PhD	Pittsburgh, Main, University of
MacKenzie	Michael	Assistant Professor	Political Science	PhD	British Columbia, University of
Morgenstern	Scott	Associate Professor	Political Science	PhD	San Diego, University of
Paler	Laura	Assistant Professor	Political Science	PhD	Columbia University, Main Division
Peters	B. Guy	M Falk Professor	Political Science	PhD	Michigan State University
Savun	Burcu	Associate Professor	Political Science	PhD	Rice University
Sbragia	Alberta	Professor	Political Science	PhD	Wisconsin, Madison, University of
Shineman	Victoria	Assistant Professor	Political Science	PhD	New York University
Spaniel	William	Assistant Professor	Political Science	PhD	Rochester, University of
Spoon	Jae-Jae	Associate Professor	Political Science	PhD	Michigan, Ann Arbor, University of
West	Emily	Assistant Professor	Political Science	PhD	New York University
Woon	Jonathan	Professor	Political Science	PhD	Stanford University
Binning	Kevin	Assistant Professor	Psychology	PhD	California, Los Angeles, University of
Brownell	Celia	Professor	Psychology	PhD	Minnesota, Duluth, University of
Ciccocioppo	Melinda	Lecturer	Psychology	PhD	Pittsburgh, Main, University of
Cohn	Jeffrey	Professor	Psychology	PhD	Maryland, College Park, University of
Coutanche	Marc	Assistant Professor	Psychology	PhD	Pennsylvania, University of
Erickson	Kirk	Associate Professor	Psychology	PhD	Illinois, Urbana, University of
Fiez	Julie	Professor	Psychology	PhD	Washington University
Forest	Amanda	Assistant Professor	Psychology	PhD	Waterloo, University of
Fraundorf	Scott	Assistant Professor	Psychology	PhD	Illinois, Urbana, University of
Ganger	Jennifer	Lecturer	Psychology	PhD	Massachusetts Institute of Technology
Gianaros	Peter	Professor	Psychology	PhD	Pennsylvania State University, Main

Hanson	Jamie	Assistant Professor	Psychology	PhD	Wisconsin, Madison, University of
Hasler	Jennifer	Lecturer	Psychology	PhD	Arizona, University of
Inagaki	Tristen	Assistant Professor	Psychology	PhD	California, Los Angeles, University of
Iverson	Jana	Professor	Psychology	PhD	Chicago, University of
Kamarck	Thomas	Professor	Psychology	PhD	Oregon, Main, University of
Kucinski	Barbara	Lecturer II	Psychology	PhD	Pittsburgh, Main, University of
Lausberg	Cynthia	Senior Lecturer	Psychology	PhD	Pittsburgh, Main, University of
Levine	John	Professor	Psychology	PhD	Wisconsin, Madison, University of
Libertus	Melissa	Assistant Professor	Psychology	PhD	Duke University
Manuck	Stephen	Distinguished University Professor	Psychology	PhD	Vanderbilt University
Marsland	Anna	Associate Professor	Psychology	PhD	Pittsburgh, Main, University of
McCall	Robert	Professor	Psychology	PhD	Illinois, Urbana, University of
Nelson-LeGall	Sharon	Professor	Psychology	PhD	Illinois, Chicago Circle, University of
Nokes-Malach	Timothy	Associate Professor	Psychology	PhD	Illinois, Chicago Circle, University of
Orehek	Edward	Assistant Professor	Psychology	PhD	Maryland, College Park, University of
Perfetti	Charles	Distinguished University Professor	Psychology	PhD	Michigan, Ann Arbor, University of
Pogue-Geile	Michael	Professor	Psychology	PhD	Indiana University Bloomington
Resnick	Lauren	Distinguished University Professor	Psychology	EdD	Harvard University
Roecklein	Kathryn	Associate Professor	Psychology	PhD	Uniformed Services University of the Health Sciences
Rottman	Benjamin	Assistant Professor	Psychology	PhD	Yale University
Sayette	Michael	Professor	Psychology	PhD	Rutgers University, New Brunswick
Schneider	Walter	Professor	Psychology	PhD	Indiana University South Bend
Schumann	Karina	Assistant Professor	Psychology	PhD	Waterloo, University of
Schunn	Christian	Professor	Psychology	PhD	Carnegie-Mellon University

Shaw	Daniel	Distinguished Professor	Psychology	PhD	Virginia, Main, University of
Silk	Jennifer	Associate Professor	Psychology	PhD	Temple University
Strauss	Mark	Associate Professor	Psychology	PhD	Illinois, Urbana, University of
Streeter	Sybil	Lecturer	Psychology	PhD	Pittsburgh, Main, University of
Tokowicz	Natasha	Associate Professor	Psychology	PhD	Pennsylvania State University, Main
Votruba-Drzal	Elizabeth	Associate Professor	Psychology	PhD	Northwestern University
Warren	Tessa	Associate Professor	Psychology	PhD	Massachusetts Institute of Technology
Wright	Aidan	Assistant Professor	Psychology	PhD	Pennsylvania State University, Main
Birnbaum	David	Professor	Slavic Languages and Literatures	PhD	Harvard University
Condee	Nancy	Professor	Slavic Languages and Literatures	PhD	Yale University
Duraskovic	Ljiljana	Lecturer	Slavic Languages and Literatures	PhD	Ohio State University Main
Juharyan	Victoria	Visiting Assistant Professor	Slavic Languages and Literatures	PhD	Princeton University
Klimova-Magnotta	Olga	Visiting Lecturer	Slavic Languages and Literatures	PhD	Pittsburgh, Main, University of
Michalkova	Marcela	Director of the Slovak Studies Program	Slavic Languages and Literatures	PhD	The Ohio State University
Padunov	Vladimir	Associate Professor	Slavic Languages and Literatures	PhD	Cornell University Endowed Colleges
Platt	Jonathan	Assistant Professor	Slavic Languages and Literatures	PhD	Columbia University, Main Division
Swan	Oscar	Professor	Slavic Languages and Literatures	PhD	California, Berkeley, University of
Wright	J.D.	Visiting Lecturer	Slavic Languages and Literatures	PhD	Pittsburgh, Main, University of
Bamyeh	Mohammed	Professor	Sociology	PhD	Wisconsin, Madison, University of
Banerjee	Tarun	Assistant Professor	Sociology	PhD	State University of New York, Stony Brook
Blee	Kathleen	Distinguished Professor	Sociology	PhD	Wisconsin, Madison, University of

Bloom	Joshua	Assistant Professor	Sociology	PhD	California, Los Angeles, University of
Brush	Lisa	Professor	Sociology	PhD	Wisconsin, Madison, University of
Duck	Waverly	Associate Professor	Sociology	PhD	Wayne State University
Hughes	Melanie	Associate Professor	Sociology	PhD	Ohio State University Main
Markoff	John	Distinguished University Professor	Sociology	PhD	Johns Hopkins University
Moss	Dana	Assistant Professor	Sociology	PhD	California, Irvine, University of
Murphy	Michael	Assistant Professor	Sociology	PhD	Brown University
Paterson	Mark	Assistant Professor	Sociology	PhD	Bristol, University of
Romesberg	Daniel	Senior Lecturer	Sociology	PhD	Pittsburgh, Main, University of
Singh	Vijai	Professor	Sociology	PhD	Wisconsin, Madison, University of
Smith	Jacquelyn	Professor	Sociology	PhD	Notre Dame, University of
Staggenborg	Suzanne	Professor	Sociology	PhD	Northwestern University
Bao	Junshu	Lecturer I	Statistics	PhD	South Carolina, University of
Bodenschatz	Carl	Senior Lecturer	Statistics	PhD	Texas, Austin, University of
Chen	Kehui	Associate Professor	Statistics	PhD	California, Davis, University of
Cheng	Yu	Associate Professor	Statistics	PhD	Wisconsin, Madison, University of
Iyengar	Satish	Professor	Statistics	PhD	Stanford University
Mentch	Lucas	Assistant Professor	Statistics	PhD	Cornell University
Ren	Zhao	Assistant Professor	Statistics	PhD	Yale University
Sampson	Allan	Professor	Statistics	PhD	Stanford University
Stoffer	David	Professor	Statistics	PhD	California, Davis, University of
Croot	Cynthia	Associate Professor	Theatre Arts	MFA	Columbia University, Main Division
Downs	Gian	Lecturer	Theatre Arts	MFA	Brandeis University
Duggan	Annmarie	Professor	Theatre Arts	MFA	Arizona, University of
George	Kathleen	Professor	Theatre Arts	PhD	Pittsburgh, Main, University of
Gilmer	Karen	Lecturer	Theatre Arts	MFA	Boston University
Granshaw	Michelle	Associate Professor	Theatre Arts	PhD	Washington, University of

McKelvey	Patrick	Assistant Professor	Theatre Arts	PhD	Brown University
Walker	Bria	Assistant Professor	Theatre Arts	MFA	National Theatre Conservatory

Joseph M. Katz Graduate School of Business

The Joseph M. Katz Graduate School of Business creates and disseminates knowledge that enhances the quality of the management of organizations. The Katz School, through faculty research programs and our doctoral program, produces high-quality research in areas of importance and infuses knowledge created by this research into all programs, but especially the MBA and related professional programs. Our school's reputation, primarily resulting from our MBA programs and our doctoral program, allows us to attract international, national, regional, and campus partners, with whom collaboration results in specialty professional programs with the MBA program as a foundation. This includes areas such as international business, technology management/engineering, and the health sciences. Our culture of teamwork, adaptability, and flexibility permits the school to readily adapt to future environments and strategic opportunities.

The Katz School is accredited by AACSB-the International Association for Management Education.

Contact Information

University of Pittsburgh
Joseph M. Katz Graduate School of Business
Assistant Dean for MBA and Executive Programs
301 Mervis Hall
Pittsburgh, PA 15260
412-648-1508
E-mail: mba@katz.pitt.edu
www.katz.business.pitt.edu

Application Procedures

Please refer to individual program descriptions in this section for further information regarding application procedures for MBA and MS programs and the doctoral program.

Degree Options

The Katz School awards the Master of Business Administration (MBA) as well as Master of Science (MS) degree programs and the Doctor of Philosophy (PhD). Fulltime and part-time programs are available in the following areas: finance, management of information systems, marketing, operations management, organizational behavior and human resources management, and strategy.

In addition to the above degrees, the Katz School offers a number of dual and joint degree options for students who wish to specialize and add a second professional degree to the MBA:

- MS in Accounting
- MS in Customer Insights
- MS in Finance
- MS in Supply Chain
- MBA and MS in the Management of Information Systems
- MBA with Business Analytics
- MBA and Master of International Business
- MBA and Master of Management of Information Systems
- MBA and Master of Public and International Affairs
- MBA and Master of International Development
- MBA and MS degrees in Engineering
- MBA and Master of Health Administration
- MBA and Master of Social Work
- MBA and Juris Doctorate

For further information regarding these dual- and joint-degree programs, please refer to MBA Program Descriptions.

In cooperation with the University of Pittsburgh's College of Business Administration, the Katz School offers accelerated BSBA and MS programs.

- 3+1/BS in Business Administration/MS in Accounting
- 3+1/BS in Business Administration/MS in Management of Informations Systems

Special Academic Opportunities

The Katz School offers the following special opportunities/programs:

Professional Workshops

Students participate in a variety of workshops throughout the program. During the Transition Module, students take a self-assessment to identify strengths and weaknesses in various managerial skills. Results of this capability assessment and career evaluation exercise help students determine those workshops that will be most beneficial to them such as presentation skills, project management, conflict resolution, creativity, problem solving, and time management.

Study Abroad

As part of a 6-credit MBA international elective course, students spend four to six weeks studying at a school in another country (past countries include the Czech Republic and India).

International Field Studies

As part of a 3-credit international elective course, MBA and MS students spend a week or more in another part of the world studying business culture and practices and visiting different companies in other parts of the world. Regions visited include Asia, Europe, and Latin America.

Corporate Connections

There are also a number of programs that bring CEOs of major firms to the Katz School to meet and interact with students including Best Practice Partners, Executive Faculty, Executive Women's Panel, Executive Spotlight, and the Katz on Wall Street Panel.

Graduation

A special Katz School graduation ceremony for all graduating Master's and doctoral students is held at the end of April on campus.

Doctoral Program

The theoretically based, managerially relevant doctoral program in business administration seeks to prepare students for careers in research and teaching in management and related areas at leading business schools and universities. This is accomplished by fostering a learning environment in which students can achieve intellectual growth and fulfillment. Successful completion of the doctoral program therefore entails much more than the satisfaction of a set of formal requirements. Doctoral students are expected to assess their knowledge and skills in regular consultation with the faculty and to develop a set of educational experiences that will fulfill their needs and facilitate the pursuit of personal goals.

Contact Information

University of Pittsburgh
Joseph M. Katz Graduate School of Business
Doctoral Program
Director

Application Procedures

All application materials must be submitted by January 1 of the year of expected entry into the program. The basic prerequisite for admission to the doctoral program is the equivalent of an American bachelor's degree. Many applicants also have advanced degrees and professional experience. Scores on the GMAT or GRE (as well as on the TOEFL for international students) are required, along with recommendation letters and transcripts.

Financial Aid

Most financial aid for doctoral students is in the form of an assistantship that requires research and some teaching. The assistantship provides a stipend, tuition remission, and health insurance. Assistantships are available to domestic as well as international students. Funds associated with specific research projects are sometimes available to students, and faculty often help students obtain funding for dissertation research.

Sequence of Study

Progress to the PhD consists of: the seminar phase, comprehensive examinations, teaching requirement, and the dissertation. Students complete course work in the seminar phase. This is the time during which the student sets scholarly standards and goals. Every student prepares a written statement called the Field Statement upon declaring the student's areas of study. This is also the time to form relationships with faculty members and begin developing research skills.

Most doctoral courses involve research projects and the majority of students, including all those with assistantships, work on faculty research from an early stage. A minimum of 72 post baccalaureate credits is required for the PhD degree. A maximum of 30 credits from a previously earned master's degree may be applied.

Formal requirements in the seminar phase are:

- Work to ensure a basic level of competence in the disciplines and functions relevant to management. Students choose 6 credits of MBA course work. Some or all of these requirements may be exempted depending on educational background and doctoral course objectives.
- Eight courses in the major area of study and three courses in the minor area of study or a seven course research methodology minor.
- A 6-credit teaching requirement.
- At least four courses in research methodology or a seven course research methodology minor.
- A grade point average of 3.3.
- A preliminary evaluation (comprehensive examinations).

Comprehensive examinations are written and oral examinations in both the major and minor area of study. Each student's exams are designed individually, focusing on the area(s) of study. The student is expected to demonstrate comprehensive ability, meaning the ability to synthesize and build on all that the student has learned.

Dissertation

Doctoral students are required to demonstrate their capacity to engage in a sustained research effort by completing a doctoral dissertation. The dissertation entails an independent investigation of a problem of acknowledged significance and size in a management-related area. Only if the dissertation is judged to demonstrate such competence, after a formal defense in a final oral examination, does the department recommend the awarding of a degree.

For more details on requirements of doctoral students, see Regulations Pertaining to Doctoral Degrees.

Teaching

All Katz doctoral students are required to teach six credits as the primary instructor, at the University of Pittsburgh as part of their graduation requirements.

Timeline to Graduation

Most students earn the PhD in four years. The seminar phase typically lasts two years, while the comprehensive exams and the dissertation together require an additional two years to complete.

Statute of Limitations

The statute of limitations represents the maximum time permitted for the fulfillment of all requirements for the PhD degree. The statute of limitations is as follows:

1. Comprehensive examinations must be completed no later than the seventh term of study.
2. The dissertation overview examination must be successfully completed before the end of the fourth year.
3. The dissertation defense must be completed successfully before the end of the sixth year.

Exceptions to the Katz Doctoral Program statute of limitations, not to exceed the University of Pittsburgh's statute of limitations, must be approved by the Katz Doctoral and Research Committee.

Placement

The Katz School's goal is to place PhD graduates in universities that consistently produce highquality business research, and a successful record has been established in this regard.

Individual Curriculum Design

Students must choose from the following areas of study leading to the PhD in Business Administration:

- Accounting
- Business Analytics and Operations
- Finance
- Information Systems and Technology Management
- Marketing
- Organizational Behavior and Human Resource Management
- Strategic Management

Within the framework of these standard areas, every PhD student plans a unique, individual area of study. A student may choose any of the areas as a primary (major) area of study or as a secondary (minor) area of study. Each of the areas of study provides additional choices to meet student interests and developmental needs. All have subspecialties; all explore a range of current topics. In addition, to expand the option in the core areas, students are invited to draw on courses and research opportunities at the Katz School, as well as other parts of the University, and other institutions.

Two goals must be balanced in planning an individual program. One is to acquire a sound body of knowledge in recognized disciplines and methods. The other is to choose a mix of courses, mentors, and research topics geared to the student's own interests and talents. Ideally, this will lead to a truly original dissertation, followed by a career of meaningful research.

MBA and Master's Programs

The following section details the full range of programs for students interested in pursuing an MBA, an MS, or an MBA and another degree at the same time. Unless otherwise noted, additional information regarding these programs may be obtained by contacting the Admissions Office.

Contact Information

Joseph M. Katz Graduate School of Business
Director of Master's Admissions
301 Mervis Hall

412-648-1508
Fax: 412-648-1659
E-mail: admissions@katz.pitt.edu
www.katz.business.pitt.edu/form/contact

Application Procedures

<https://www.katz.business.pitt.edu/apply>

Applicants should have earned an undergraduate degree from an accredited U.S. college or university or its international equivalent and should demonstrate quantitative competence via academic coursework and GMAT or GRE. Applicants should be able to demonstrate excellent communication and interpersonal skills that are evaluated through written essays, test scores, and/or a personal interview.

The Graduate Management Admission Test (GMAT) or the Graduate Record Exam (GRE) is required, and for international applicants, the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS) is also a requirement. International applicants should also see the section on *Admissions of International Students* in the front section of this bulletin.

Financial Assistance

The primary sources of financial assistance for incoming full-time Katz MBA students are tuition scholarships and loans. Limited scholarships are available for the MS programs.

Merit-based scholarships are awarded in various dollar amounts and are directly applied against tuition charges. Katz School scholarships are available to full-time U.S. citizens, U.S. permanent residents, and international students. Award notifications are mailed along with the official admission decision. While consideration for scholarship candidate is independent of the admissions decision, there is no additional application required.

There are several educational loan programs available for students. All of them offer very reasonable interest rates.

Tuition and Fees

Financial Information

Actual tuition for the one-year MBA and two-year MBA programs is approximately the same. However, students in the two-year MBA program will incur additional cost in academic fees, as they will be attending the equivalent of one additional term.

Master's Program Academic Standards

The following section details academic standards for the full-time Masters programs.

Good Academic Standing

In order to maintain good academic standing, a cumulative grade point average of 3.00 or above in all courses applicable to the degree is required throughout the program and for graduation from the Katz program.

Academic Probation and Dismissal Policy

Any student whose GPA falls below 3.00 at any time during the program may be subject to academic probation and/or dismissal from the full-time program. Exceptions to the school's guidelines and procedures may be considered only through written petition to the assistant dean for Master's programs.

Dean's List

The Dean's List for full-time students is compiled at the end of each term and consists of 20 percent of the student body with the highest grade point averages (3.75 or above).

Other Academic Honors

The Katz School recognizes high academic achievement and leadership through the following honors and awards.

Albert Wesley Frey Prize is awarded to a full-time MBA student for the highest academic performance among all full-time graduating students.

Beta Gamma Sigma is an international honor society recognizing the outstanding academic achievements of students enrolled in collegiate business and management programs.

Brosius Creativity Award is awarded to those students demonstrating exceptional creativity in their program of study.

Dean's Outstanding Student Service Award is awarded at graduation to an MBA student for exemplary service and leadership.

Marshall Alan Robinson Prize is awarded at graduation to a full-time MBA student who has demonstrated academic and professional excellence in the MBA program.

Outstanding Professional MBA Student of the Year Award is awarded at graduation for exemplary academic performance and leadership.

Outstanding Master of Science Student of the Year Award is awarded at graduation for exemplary academic performance and leadership.

Outstanding Supply Chain Management Masters Student Award is awarded at graduation for exemplary academic performance and leadership.

Peter Stipanovich Award is awarded to the outstanding full-time MBA student in finance.

Sheth Scholar in Marketing is awarded to two students each year for exemplary performance in marketing course work.

Vincent W. Lanfear Prize is awarded to a professional MBA student for highest academic performance among all professional graduating students.

Transfer of Graduate-Level Courses

Students are permitted to transfer up to 6 graduate credit hours (for MS) and 17 graduate credit hours (for the one year program), 19 (for the two year program) from other AACSB-accredited graduate business programs. However, these credits may not have been applied to another degree. If a student earned a degree at another school, the student must verify by letter that the courses desired for transfer did not apply to that degree; if a degree was not earned then a letter is not necessary. All courses must be completed with a grade of "B" or higher to be eligible for transfer consideration.

If a student wishes to have previously earned graduate credits applied to the Masters degree as transfer credits, the appropriate forms must be completed and returned to the school's student records office. The appropriate faculty members will inform the student of the results after a review.

If a student must relocate during his or her studies at the Katz School, one-third of the total required credits may be taken at an AACSB-accredited graduate business program to complete the graduate business degree at the University of Pittsburgh. Courses taken at other institutions must be approved by the Katz School faculty. It is therefore recommended that each course be pre-approved for transfer before enrollment.

A student must have earned two-thirds of their total required credits from the University of Pittsburgh in order to qualify for a Masters degree from the Katz School. Note that all transfer credits are subject to the guidelines imposed by the statute of limitations.

Statute of Limitations

The Katz School requires completion of all degree requirements within four years of original registration. Under extraordinary circumstances, this statute may be extended, one year at a time, to a maximum of six years. The program director, upon written request, will consider extension of the statute of limitations. A detailed request must be filed before the end of the statutory period. Under no circumstances will a student be allowed more than six years to complete the degree.

This statute of limitations also governs the acceptability of transfer credits. Credits earned outside the Katz School must have been earned within the four-year period of the date of graduation. Credits more than four years old but less than six years as of graduation will be considered for acceptance upon written petition to the associate dean.

Academic Integrity

All students are expected to adhere to the school's *Code of Academic Standards*, copies of which are available in the dean's office. These standards follow the University's guidelines with several procedure changes. Students may also contact the school's academic integrity officer for advice or clarification of academic integrity guidelines.

Career Management

The Career Management team assists all masters students. The mission is to be a collaborative career management partner with both students and corporate recruiters, as well as an industry leader in professional development. The team is committed to providing advice in a manner that is designed to tailor a career path to fit each student's unique strengths and professional competencies, and develop and execute a job search plan to secure employment post-graduation. More information on the career management team can be found at <https://www.katz.business.pitt.edu/recruiters-and-companies>

Masters Programs & Student Services

The goal of the MBA and MS Programs team is exceptional student satisfaction. The **Masters Program Office** staff are subject matter experts who assist advisors and faculty in the delivery of various Masters Programs: One-Year Full Time MBA, Two-Year Full Time MBA, Part Time MBA, Corporate MBA Programs, Special International Programs and Specialized MS Programs. The team also manages student events and activities, including Orientation, Academic Workshops and Professional Skills Development. The Program Office also manages matriculation, registration, curriculum delivery and graduation processes for Masters students.

The Program advisors are part of the Program Office Student Services team. The advisors are responsible for advising students regarding requirements and procedures of their program. The advisors will verify degree requirements, and are responsible for making sure students stay on track for graduation. The academic advisors work very closely with the career advisors to ensure overall cohesiveness.

Faculty

Katz Graduate School of Business Faculty

Programs & Courses

Master's

Executive Master of Business Administration, MBA

The Executive MBA (EMBA Worldwide) Program is offered in Pittsburgh. We offer the academic rigor of the Katz MBA, but in a format tailored to experience professionals. Whether our students work in upper management at a corporation, are the founder of a budding startup, or come from a technical background such as engineering or medicine, EMBA Worldwide is designed to help them elevate their careers to new heights.

The program begins in May and ends in October of the subsequent year. Students complete a minimum of 48 academic credits. In addition, the Global Executive Forums (GEF) make Katz EMBA Worldwide a truly global experience. You'll travel to two locations (Shanghai and São Paulo) for a week of study, cultural development activities, and visits with Katz EMBA Worldwide alumni and guest speakers.

For additional program information, contact us via phone: 412-648-1600, e-mail embaprogram@katz.pitt.edu or visit www.emba.pitt.edu.

Program Requirements

- BACC 2256 - STRATEGIC COST MANAGEMENT
- BACC 2801 - FINANCIAL ACCOUNTING
- BFAE 2801 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISIONS
- BFIN 2306 - FINANCIAL MANAGEMENT
- BMKT 2306 - MARKETING MANAGEMENT
- BMIS 2811 - INFORMATION TECHNOLOGY AND BUSINESS VALUE
- BIND 2556 - DOING BUSINESS IN CHINA
- BOAH 2422 - MANAGING HUMAN RESOURCES IN A GLOBAL ECONOMY
- BOAH 2801 - ORG BEHAV: LDRSHP & GRP EFFECT
- BQOM 2531 - GLOBAL SUPPLY CHAIN MANAGEMENT
- BQOM 2801 - STATSTCL ANAL: UNCERT
- BQOM 2811 - DCSN TECHN LGY IN MFG & OPERATNS
- BSEO 2034 - SUSTAINABILITY AND CORPORATE RESPONSIBILITY
- BSEO 2407 - STRATEGIC MANAGEMENT
- BSPP 2016 - STRATEGIC VISIONING FOR A GLOBAL FUTURE
- BSPP 2328 - THE BUSINESS OF HUMANITY - STRATEGIC MANAGEMENT

Executive Masters of Business Administration Healthcare, MS

The Katz-UPMC Executive MBA in Healthcare (EMBA Healthcare) is designed for healthcare professionals who are seeking to advance their careers; it equips students with the skills and tools that they need to lead healthcare organizations into the future. It is designed for experienced professionals who are looking to take the next step in their careers. The University of Pittsburgh Joseph M. Katz Graduate School of Business and UPMC (University of Pittsburgh Medical Center) created the Katz-UPMC Executive MBA in Healthcare Program to prepare individuals to lead healthcare organizations. The program emphasizes the management and technical skills that healthcare professionals need the most.

The EMBA Healthcare Program begins in May and ends in December of the subsequent year. Students take 48 credits, including 36 credits in the core MBA curriculum, and 12 credits of electives and practicum. Students will meet once a month for two full-day sessions at the University of Pittsburgh's campus. Some courses will be interspersed with guided study or distance learning.

For additional information, contact us via phone: 412-648-1600, e-mail embaprogram@katz.pitt.edu or visit www.emba.pitt.edu.

Program Requirements

- BFIN 2306 - FINANCIAL MANAGEMENT
- BMIS 2911 - HEALTHCARE INFORMATION TECHNOLOGY
- BACC 2802 - FINANCIAL ACCOUNTING IN HEALTHCARE ORGANIZATIONS
- BACC 2256 - STRATEGIC COST MANAGEMENT
- BFAE 2850 - HEALTHCARE ECONOMICS
- BIND 2101 - PRACTICUM FOR EMBA HEALTHCARE STUDENTS
- BMKT 2554 - MARKETING DESIGN AND ANALYSIS
- BORG 2402 - LEADING PEOPLE IN HEALTHCARE ORGANIZATIONS
- BQOM 2533 - GLOBAL SUPPLY CHAIN MANAGEMENT
- BQOM 2801 - STATSTCL ANAL: UNCERT
- BQOM 2821 - HEALTH INSURANCE AND RISK MANAGEMENT
- BSEO 2901 - STRATEGY, MISSION AND VALUES

Master of Business Administration - One-Year Program, MBA

MBA Degree Requirements

Students in the one-year program must fulfill the following requirements in order to receive the full-time MBA degree:

1. A minimum of 51 credits of approved graduate work
2. The appropriate distribution of required core courses and elective courses
3. A minimum cumulative grade point average (GPA) of 3.0

Students in the two-year program must fulfill the following requirements in order to receive the full-time MBA degree:

1. A minimum of 57 credits of approved graduate work
2. The appropriate distribution of required core courses and elective courses
3. A minimum cumulative grade point average (GPA) of 3.00

MBA Core Curriculum

The following core courses are required of all full-time MBA students:

- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BIND 2444 - MANAGEMENT SIMULATION CAPSTONE
- BQOM 2421 - DECISION TECHN IN MFG & OPER MGT
- BFIN 2409 - FINANCIAL MANAGEMENT I
- BMIS 2409 - INFORMATION SYSTEMS
- BMKT 2409 - MARKETING MANAGEMENT
- BSPP 2409 - STRATEGIC MANAGEMENT
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM

Note:

The remaining credits required for the degree are to be taken in the student's area of study and in other elective course work.

Areas of Study

In place of majors, the Katz School offers areas of study in finance, management of information systems, marketing, organizational behavior and human resource management, operations management strategy, and doctoral studies. Students can customize their MBA to suit their career goals by choosing from a wide array of electives in these fields.

Students may also choose to take elective courses through other professional schools at the University including the School of Law, the Swanson School of Engineering, the School of Social Work, the Graduate School of Public and International Affairs, and the School of Information Sciences.

A description of each of the areas of study follows:

Finance

The study of finance is designed to prepare students for managerial careers in corporate finance, investment analysis, financial consulting, and financial institutions. The coursework presents an integrated treatment of the economic foundations of finance, and the functions of capital markets and financial institutions. The courses provide a thorough understanding of how capital and financial markets operate, and how to manage corporate assets and financial claims in the marketplace.

Management of Information Systems

An MBA with a focus in information systems (IS) prepares students to lead and manage by helping them develop their ability to recognize and capitalize on opportunities to use information systems to increase efficiency, support growth, and enable innovation. Though course and project work related to the specification, evaluation, and management of technology-enabled business initiatives, the IS concentrations available within the Katz MBA program prepare student for careers as leaders in both the IS functional area (e.g. CIO, CTO, Director of IT) and in other business areas that rely heavily on information technology for success (e.g. Supply Chain Management, Customer Analytics/Marketing Research, Financial Operation management, etc.).

Students seeking a stronger foundation in the management of IS and greater depth in their MBA specialty should consider the Katz MBA/MS-MIS Dual Degree program. This program combines a full set of MBA courses, a core of IS technical and management courses, and a range of specializations including: IS Management, Supply Chain Management, Customer Analytics, Entrepreneurship/New Venture Creation, and Healthcare and IS.

Marketing

This area of study is designed to prepare students for careers in marketing management. Marketing is a critical decision area not only in commercial (for profit) organizations but also in healthcare, government, educational, and other non-profit institutions. Among the topics discussed are marketing strategy, new product development, marketing research, pricing, distribution, advertising and promotion, brand management, and global marketing.

Organizational Behavior and Human Resources Management

Organizational behavior and human resources management focuses on understanding human behavior at work and developing effective management strategies for maximizing the human capital within organizations. This program examines current issues such as employee involvement, high-performance work systems, and the use of teams within organizations.

Strengths of this area are its interdisciplinary nature that relies on a solid grounding in the behavioral sciences, applied statistics, and economics.

Operations Management, Decision Sciences, and Artificial Intelligence

The "operations" function of a firm deals with the effective production and distribution of goods and services, and thus forms an integral part of the management activity in industries as diverse as banking, financial services, software, telecommunications, electronics, and automobiles. An MBA with a focus in operations prepares students for a line job in such industries as well as for a career in management consulting.

Strategy

Organizations of all sizes and degrees of complexity depend on the planning and implementation skills of their general managers for the attainment of their objectives. The strategic planning and policy field is concerned with the development of frameworks and processes for analyzing and responding to strategic problems and opportunities confronting corporate-level executives and managers of business units.

Ethical Leadership and Public Affairs

This area focuses on the management of public affairs and corporate social policies. Most business firms operate in complex environments where governmental regulations, public policies, social pressure groups, legal and political systems, technological innovations, and ethical standards directly affect managerial decision-making. The strategies and techniques for coping with these environmental forces and for managing a firm's external social relations are given special attention in a series of advanced courses.

Part-Time/Evening MBA Program

The evening program offers nearly the same curriculum and encompasses the same teaching philosophies as the full-time MBA program. The MBA can be earned in three years by taking approximately 6 credits per term. The program runs year-round with fall, spring, and summer trimesters of 13 or 14 weeks each. Classes are conducted on weekday evenings and select weekends.

Admissions

Students are admitted in the fall, spring, and summer terms. Applicants should check the school's Web site for preferred deadlines.

Candidates must have a bachelor's degree from an accredited U.S. school or the non-U.S. equivalent, and demonstrated quantitative competence via academic coursework and GMAT or GRE. Applicants should be able to demonstrate excellent communication and interpersonal skills that are evaluated through written essays, test scores, and/or personal interview.

The Graduate Management Admission Test (GMAT) or the Graduate Record Exam (GRE) is required, and for international applicants, the Test of English as a Foreign Language (TOEFL) or International English Language Testing System (IELTS) is also a requirement.

Tuition and Fees

<http://www.ir.pitt.edu/tuition/index.php>

Evening MBA students pay on a per credit basis each term (1.5-8.5 credits considered part-time). In addition to the University-wide fees, a professional workshop fee is required each term.

Academic Probation and Dismissal Policy

If the student's GPA falls below 3.0 upon completion of 12 credits or any time thereafter, the student will be subject to academic probation and/or dismissal from the program. Exceptions to the school's guidelines and procedures may be considered only through written petition to the assistant dean for MBA programs.

Part-Time/Evening Degree Requirements

All students must fulfill the following requirements in order to receive the part-time MBA degree:

1. A minimum of 51 credits of approved graduate work
2. The appropriate distribution of required core courses and elective courses
3. A minimum cumulative grade point average (GPA) of 3.0

Part-Time/Evening MBA Core Curriculum

The following core courses (totaling 22.5 credits) are required of all evening MBA students. Electives are similar to the full-time MBA offerings.

- BACC 2401 - FINANCIAL ACCOUNTING
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BIND 2444 - MANAGEMENT SIMULATION CAPSTONE
- BFIN 2409 - FINANCIAL MANAGEMENT I
- BMKT 2409 - MARKETING MANAGEMENT
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BMIS 2409 - INFORMATION SYSTEMS
- BQOM 2421 - DECISION TECHN IN MFG & OPER MGT
- BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM
- BSPP 2409 - STRATEGIC MANAGEMENT

One-Year Program

In 1963, the Katz School launched a unique MBA program that presented the classical two-year American MBA format in one calendar year. This is not a general management program, but contains full concentration in all business disciplines-all conducted in parallel with the core of business, arts and sciences, and logistically integrated by the world-class faculty dedicated to the merger of research and teaching.

The one-year MBA is typically for people who do not require an internship to reach their career goals. It begins in May and ends in April and, through its module format, covers the same ground that a traditional MBA program does in two years.

Master of Business Administration - Two-Year Program, MBA

MBA Degree Requirements

Students in the one-year program must fulfill the following requirements in order to receive the full-time MBA degree:

1. A minimum of 51 credits of approved graduate work
2. The appropriate distribution of required core courses and elective courses
3. A minimum cumulative grade point average (GPA) of 3.0

Students in the two-year program must fulfill the following requirements in order to receive the full-time MBA degree:

1. A minimum of 57 credits of approved graduate work
2. The appropriate distribution of required core courses and elective courses
3. A minimum cumulative grade point average (GPA) of 3.00

MBA Core Curriculum

The following core courses are required of all full-time MBA students:

- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BIND 2444 - MANAGEMENT SIMULATION CAPSTONE
- BQOM 2421 - DECISION TECHN IN MFG & OPER MGT
- BFIN 2409 - FINANCIAL MANAGEMENT I
- BMIS 2409 - INFORMATION SYSTEMS
- BMKT 2409 - MARKETING MANAGEMENT
- BSPP 2409 - STRATEGIC MANAGEMENT
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM

Note:

The remaining credits required for the degree are to be taken in the student's area of study and in other elective course work.

Areas of Study

In place of majors, the Katz School offers areas of study in finance, management of information systems, marketing, organizational behavior and human resource management, operations management strategy, and doctoral studies. Students can customize their MBA to suit their career goals by choosing from a wide array of electives in these fields.

Students may also choose to take elective courses through other professional schools at the University including the School of Law, the Swanson School of Engineering, the School of Social Work, the Graduate School of Public and International Affairs, and the School of Information Sciences.

A description of each of the areas of study follows:

Finance

The study of finance is designed to prepare students for managerial careers in corporate finance, investment analysis, financial consulting, and financial institutions. The coursework presents an integrated treatment of the economic foundations of finance, and the functions of capital markets and financial institutions. The courses provide a thorough understanding of how capital and financial markets operate, and how to manage corporate assets and financial claims in the marketplace.

Management of Information Systems

An MBA with a focus in information systems (IS) prepares students to lead and manage by helping them develop their ability to recognize and capitalize on opportunities to use information systems to increase efficiency, support growth, and enable innovation. Though course and project work related to the specification, evaluation, and management of technology-enabled business initiatives, the IS concentrations available within the Katz MBA program prepare student for careers as leaders in both the IS functional area (e.g. CIO, CTO, Director of IT) and in other business areas that rely heavily on information technology for success (e.g. Supply Chain Management, Customer Analytics/Marketing Research, Financial Operation management, etc.).

Students seeking a stronger foundation in the management of IS and greater depth in their MBA specialty should consider the Katz MBA/MS-MIS Dual Degree program. This program combines a full set of MBA courses, a core of IS technical and management courses, and a range of specializations including: IS Management, Supply Chain Management, Customer Analytics, Entrepreneurship/New Venture Creation, and Healthcare and IS.

Marketing

This area of study is designed to prepare students for careers in marketing management. Marketing is a critical decision area not only in commercial (for profit) organizations but also in healthcare, government, educational, and other non-profit institutions. Among the topics discussed are marketing strategy, new product development, marketing research, pricing, distribution, advertising and promotion, brand management, and global marketing.

Organizational Behavior and Human Resources Management

Organizational behavior and human resources management focuses on understanding human behavior at work and developing effective management strategies for maximizing the human capital within organizations. This program examines current issues such as employee involvement, high-performance work systems, and the use of teams within organizations.

Strengths of this area are its interdisciplinary nature that relies on a solid grounding in the behavioral sciences, applied statistics, and economics.

Operations Management, Decision Sciences, and Artificial Intelligence

The "operations" function of a firm deals with the effective production and distribution of goods and services, and thus forms an integral part of the management activity in industries as diverse as banking, financial services, software, telecommunications, electronics, and automobiles. An MBA with a focus in operations prepares students for a line job in such industries as well as for a career in management consulting.

Strategy

Organizations of all sizes and degrees of complexity depend on the planning and implementation skills of their general managers for the attainment of their objectives. The strategic planning and policy field is concerned with the development of frameworks and processes for analyzing and responding to strategic problems and opportunities confronting corporate-level executives and managers of business units.

Ethical Leadership and Public Affairs

This area focuses on the management of public affairs and corporate social policies. Most business firms operate in complex environments where governmental regulations, public policies, social pressure groups, legal and political systems, technological innovations, and ethical standards

directly affect managerial decision-making. The strategies and techniques for coping with these environmental forces and for managing a firm's external social relations are given special attention in a series of advanced courses.

Part-Time/Evening MBA Program

The evening program offers nearly the same curriculum and encompasses the same teaching philosophies as the full-time MBA program. The MBA can be earned in three years by taking approximately 6 credits per term. The program runs year-round with fall, spring, and summer trimesters of 13 or 14 weeks each. Classes are conducted on weekday evenings and select weekends.

Admissions

Students are admitted in the fall, spring, and summer terms. Applicants should check the school's Web site for preferred deadlines.

Candidates must have a bachelor's degree from an accredited U.S. school or the non-U.S. equivalent, and demonstrated quantitative competence via academic coursework and GMAT or GRE. Applicants should be able to demonstrate excellent communication and interpersonal skills that are evaluated through written essays, test scores, and/or personal interview.

The Graduate Management Admission Test (GMAT) or the Graduate Record Exam (GRE) is required, and for international applicants, the Test of English as a Foreign Language (TOEFL) or International English Language Testing System (IELTS) is also a requirement.

Tuition and Fees

<http://www.ir.pitt.edu/tuition/index.php>

Evening MBA students pay on a per credit basis each term (1.5-8.5 credits considered part-time). In addition to the University-wide fees, a professional workshop fee is required each term.

Academic Probation and Dismissal Policy

If the student's GPA falls below 3.0 upon completion of 12 credits or any time thereafter, the student will be subject to academic probation and/or dismissal from the program. Exceptions to the school's guidelines and procedures may be considered only through written petition to the assistant dean for MBA programs.

Part-Time/Evening Degree Requirements

All students must fulfill the following requirements in order to receive the part-time MBA degree:

1. A minimum of 51 credits of approved graduate work
2. The appropriate distribution of required core courses and elective courses
3. A minimum cumulative grade point average (GPA) of 3.0

Part-Time/Evening MBA Core Curriculum

The following core courses (totaling 22.5 credits) are required of all evening MBA students. Electives are similar to the full-time MBA offerings.

- BACC 2401 - FINANCIAL ACCOUNTING
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BIND 2444 - MANAGEMENT SIMULATION CAPSTONE
- BFIN 2409 - FINANCIAL MANAGEMENT I
- BMKT 2409 - MARKETING MANAGEMENT
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS

- BMIS 2409 - INFORMATION SYSTEMS
- BQOM 2421 - DECISION TECHN IN MFG & OPER MGT
- BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM
- BSPP 2409 - STRATEGIC MANAGEMENT

Two-Year Program

The two-year MBA program is built on the solid foundation of the established one-year program. Students begin in August, add a professional internship during the summer, and return in the subsequent fall. After finishing the core curriculum, students may choose up to 34.5 credits from electives across the school. Graduation takes place in April of the second year.

The two-year MBA is typically for people who wish to develop their professional focus, and who need an internship to confirm and advance that professional focus. Individualized coaching and mentoring programs are designed to support the professional growth and development of each student.

PhD

Business Administration, PhD

Area of Accounting

Doctoral

Accounting

The Katz Accounting Doctoral Program discipline prepares graduates to succeed as accounting scholars and educators at top business schools in the United States and abroad. The program features rigorous coursework, thorough research training and close working relationships between doctoral students and faculty to prepare students to be leading accounting academics. Our graduates have an excellent track record of placements at research-oriented business schools and in succeeding in those environments.

Accounting students must complete a total of 15 seminars/courses (17 courses if they do not exempt the MBA course requirement). This includes eight courses in their major area of study within accounting, at least four courses in research methodology, and at least three courses in a minor area of study. Students may instead choose to complete eight courses in their major area and seven total courses in research methodology for a research methodology minor. Students should choose individually approved seminars and courses from the enclosed list of Katz seminars and courses, as well as from approved University of Pittsburgh seminars and courses. Finally, on a limited basis students may also cross-register into approved seminars and courses at other institutions to support their overall program of study. Each program of study must be approved by the student's faculty advisor and the Director of the Katz Doctoral Program. Any subsequent seminar/course changes must also be approved.

To achieve the fifteen course total, accounting doctoral students typically complete Katz accounting doctoral seminars (BACC 3000 and above) that may include the courses listed below. Students will take additional coursework in areas such as Finance, Econometrics, Game Theory, Cognitive Psychology, Experimental Design and other areas as appropriate. These remaining courses toward the student's program of study must be approved in advance by the Accounting faculty and the Katz Doctoral Program Director. Students are also required to register for independent study courses and independent dissertation work/credits to complete the degree requirements.

Accounting doctoral students are provided with up to five years (14 terms) of financial support in the form of Graduate Student Assistantship, Teaching Assistant or Teaching Fellow. Typically students provide research assistance to their faculty mentors for approximately four years and provide teaching and teaching assistance for up to one year. The financial assistance is awarded one year at a time.

Curriculum

The following accounting seminars are offered by the Katz Doctoral Program (subject to student enrollment):

- BACC 3001 - INTRODUCTION TO ACCOUNTING RESEARCH
- BACC 3010 - INDEPENDENT STUDY IN ACCOUNTING
- BACC 3014 - EXPERIMENTAL RESEARCH IN ACCOUNTING
- BACC 3017 - ACCOUNTING WORKSHOP
- BACC 3021 - ARCHIVAL RESEARCH IN MANAGERIAL ACCOUNTING
- BACC 3025 - CAPITAL MARKETS RESEARCH IN ACCOUNTING
- BACC 3050 - CRITICAL THINKING IN ACCOUNTING
- BACC 3052 - CRITICAL THINKING IN ACCOUNTING II
- BACC 3099 - READINGS IN ACCOUNTING
- FTDF 0000 - FULL-TIME DISSERTATION STUDY

Master's

Accounting and Business Analytics, MS (STEM-designated)

Differentiate yourself with this STEM-designated program which prepares students to pass the CPA while gaining technical skills in multivariate data analysis, data programming, data mining, and database management. In addition, the program prepares students to pass the CPA Exam, both by covering the content areas of the exam and by satisfying the 150 credit-hour requirement of Pennsylvania and many other U.S. states. Students enrolled in this program must complete the appropriate number of prerequisite, required, and elective courses according to program requirements, and maintain a minimum GPA of 3.0.

Required Courses (Required total: 31.5 credits):

- BACC 2251 - FORENSIC ACCOUNTING
- BACC 2558 - NON-PROFIT AND GOVERNMENTAL ACCOUNTING
- BACC 2252 - CORPORATE TAX ACCOUNTING AND PLANNING
- BACC 2525 - FINANCIAL STATEMENT ANALYSIS
- BSEO 2315 - BUSINESS LAW
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BQOM 2557 - MULTIVARIATE DATA ANALYSIS 1
- BMIS 2588 - DATA BASE MANAGEMENT
- BQOM 2578 - DATA MINING
- BACC 2523 - ACCOUNTING DATA ANALYTICS

Programming course (choose one):

- BMIS 2542 - DATA PROGRAMMING WITH PYTHON
- BMIS 2526 - DATA PROGRAMMING WITH R

Elective Courses (Required minimum 1.5 credits):

The additional 1.5 elective credits will allow students to participate in an internship for credit experience, complete other accounting or business analytics elective courses or an Experience-Based Learning course.

Programming course (choose one):

- BMIS 2542 - DATA PROGRAMMING WITH PYTHON
- BMIS 2526 - DATA PROGRAMMING WITH R

Accounting, MS

The Master of Science in Accounting is a 30 credit program designed to be completed in two terms, on a full-time basis. The program prepares students for leadership roles in financial accounting and managerial accounting. Students gain general business knowledge and specialized accounting skills necessary for success. In addition, the program prepares students to pass the CPA Exam, both by covering the content areas of the exam and by satisfying the 150 credit-hour requirement of Pennsylvania and many other U.S. states. Students enrolled in this program must complete the appropriate number of prerequisite, required, and elective courses according to program requirements, and maintain a minimum GPA of 3.0.

Required Courses (Required total: 24 credits):

- BACC 2251 - FORENSIC ACCOUNTING
- BACC 2558 - NON-PROFIT AND GOVERNMENTAL ACCOUNTING
- BACC 2254 - ADVANCED FINANCIAL ACCOUNTING
- BACC 2258 - STRATEGIC COST MANAGEMENT
- BACC 2252 - CORPORATE TAX ACCOUNTING AND PLANNING
- BACC 2525 - FINANCIAL STATEMENT ANALYSIS
- BSEO 2315 - BUSINESS LAW
- BACC 2559 - INDIVIDUAL TAX ACCOUNTING AND PLANNING

Elective Courses (Required minimum: 6 credits):

- BACC 2542 - ACCOUNTING AND FINANCE LAW
- BACC 2543 - TAX POLICY 1
- BACC 2544 - TAX POLICY 2
- BACC 2557 - ACCOUNTING RESEARCH AND WRITING
- BACC 2541 - SEC REPORTING AND DISCLOSURE
- BACC 2466 - RISK MANAGEMENT AND COMPLIANCE ISSUES FACING INTERNATIONAL ORGANIZATIONS
- BACC 2534 - CONTROLLERSHIP
- BACC 2540 - INTERNATIONAL TAXATION
- BACC 2523 - ACCOUNTING DATA ANALYTICS
- BACC 2524 - INTERNAL AUDIT: RISK & ADVISORY
- BACC 2100 - MACC INTERNSHIP

Area of Business Analytics and Operations

Certificate

Business Analytics Certificate

The Graduate Certificate in Business Analytics is designed as a 15-credit program with a curriculum comprised of core and elective coursework in applied business analytics. Students who have completed an undergraduate degree are welcome to apply.

Experience-Based Learning (EBL) Requirement

The Business Analytics certificate program will have a strong EBL component. All students in the program will be involved in projects that focus on solving business problems, which involve data management, modeling, programming, and decision analysis.

Curriculum

The curricular requirements of the Graduate Certificate in Business Analytics will help students develop the necessary knowledge of business analysis for the specialization.

Core: 12 Credits

- BQOM 2578 - DATA MINING
or
- BUSSCM 1760 - DATA MINING
- BQOM 2557 - MULTIVARIATE DATA ANALYSIS 1
- BQOM 2512 - ADVANCED DECISION TECHNOLOGY
- BMIS 2588 - DATA BASE MANAGEMENT
And Select One:
- BMIS 2542 - DATA PROGRAMMING WITH PYTHON
or
- BMIS 2526 - DATA PROGRAMMING WITH R

Electives: 3 Credits

- BQOM 2537 - FORECASTING
- BQOM 2559 - APPLIED SIMULATION AND OPTIMIZATION
- BQOM 2558 - MULTIVARIATE DATA ANALYSIS 2
- BMIS 2542 - DATA PROGRAMMING WITH PYTHON *If not taken as required*
- BMIS 2526 - DATA PROGRAMMING WITH R *If not taken as required*
- **Other Business Analytics electives proposed by areas can be counted as elective(s) with MPC approval**

Doctoral

Business Analytics and Operations

The Business Analytics and Operations discipline offers flexible options for a doctoral student in a variety of related research topics including Supply Chain Management, Data Mining and Business Analytics, Decision Sciences, Project Management, Revenue Management, Simulation Methodology, Stochastic Modeling and Applied Statistical Methods, and Business Analytics. These programs require coursework for two years, followed by a period of dissertation-related research. The doctoral program prepares students for a career in teaching and research at institutions of higher learning.

Business Analytics and Operations students must complete a total of 15 seminars/courses (17 courses if they do not exempt the MBA course requirement). This includes eight courses in their major area of study within Business Analytics and Operations, at least four courses in research methodology, and at least three courses in a minor area of study. Students may instead choose to complete eight courses in their major area and seven total courses in research methodology for a research methodology minor. Students should choose individually approved seminars and courses from the enclosed list of Katz seminars and courses (BQOM 3000 and above), as well as from approved University of Pittsburgh seminars and courses. Finally, on a limited basis students may also cross-register into approved seminars and courses at other institutions to support their overall program of study. Each program of study must be approved by the student's faculty advisor and the Director of the Katz Doctoral Program. Any subsequent seminar/course changes must also be approved.

To achieve the fifteen course total, Business Analytics and Operations doctoral students will complete Katz doctoral seminars (BQOM 3000 and up) that may include Linear and Nonlinear Programming, Simulation, Statistics, Stochastic Processes, Decision Theory, Current Topics in Operations, Value Chain, Data Mining, Business Analytics, Project Management, and Readings in Operations. Students may also take additional coursework from Katz seminars in other disciplines such as Marketing or Finance. They may request courses from the Industrial Engineering Department and from other University of Pittsburgh approved graduate courses in addition to approved courses from other cross-registration eligible institutions.

The following business analytics and operations doctoral seminars may be offered by the Katz Doctoral Program (subject to student enrollment). Students may supplement their programs of study with additional courses as noted. The following list suggests seminars and courses that students may use, with the permission of their advisors and the Katz Doctoral Program Director, to satisfy the course work phase of their programs of study.

Curriculum

Business Analytics and Operations doctoral students are provided with up to five years (14 terms) of financial support. Typically students provide research assistance to their faculty mentors for approximately four years and provide teaching and teaching assistance for up to one year.

- BQOM 3016 - CURRENT TOPICS IN OPERATIONS
- BQOM 3020 - SIMULATION
- BQOM 3023 - DATA MINING SEMINAR
- BQOM 2512 - ADVANCED DECISION TECHNOLOGY
- BQOM 3099 - READINGS IN OPERATIONS RESEARCH
- BFAE 3001 - MICROECONOMICS
- IE 2081 - NONLINEAR OPTIMIZATION
- IE 2100 - SUPPLY CHAIN ANALYSIS
- IE 2007 - STATISTICS AND DATA ANALYSIS
- IE 3094 - MARKOV DECISION PROCESSES
- PSYED 3408 - HIERARCHICAL LINEAR MODELING
- PSYED 3417 - STRUCTURAL EQUATION MODELING
- BUSADM 3199 - RESEARCH AND DISSERTATION PHD
- FTDF 0000 - FULL-TIME DISSERTATION STUDY

Master's

Business Administration with Business Analytics, MBA

Program Requirements:

Students in the MBA in Business Analytics program must fulfill the following requirements in order to receive their degree:

- A minimum of 63 credits of approved graduate work
- The appropriate distribution of required core courses and elective courses
- A minimum cumulative grade point average (GPA) of 3.0

Required Courses (37.5 Credits):

The following core courses are required of all full-time MBA students (22.5 credits total):

- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BIND 2444 - MANAGEMENT SIMULATION CAPSTONE
- BQOM 2421 - DECISION TECHN IN MFG & OPER MGT
- BFIN 2409 - FINANCIAL MANAGEMENT I
- BMIS 2409 - INFORMATION SYSTEMS
- BMKT 2409 - MARKETING MANAGEMENT
- BSPP 2409 - STRATEGIC MANAGEMENT
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS

- BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM

Additionally, students in the two-year MBA with Business Analytics program must also complete the following core courses (12 credits, as required for the Certificate in Business Analytics):

- BQOM 2512 - ADVANCED DECISION TECHNOLOGY
- BQOM 2557 - MULTIVARIATE DATA ANALYSIS 1
- BQOM 2578 - DATA MINING
- BMIS 2588 - DATA BASE MANAGEMENT
- BMIS 2526 - DATA PROGRAMMING WITH R OR
- BMIS 2542 - DATA PROGRAMMING WITH PYTHON

There is an additional EBL course requirement for MBA in Business Analytics (3 credits):

- FACULTY DIRECTOR APPROVED "ANALYTICS" PROJECT (3 credits) (Consulting Field Project, Global Research Practicum, Six Sigma, Applied Behavioral Economics, Internship, or similar)

ELECTIVES (MINIMUM: 25.5 CREDITS):

These courses will cover electives permissible towards an MBA degree with at least 3 credits of electives approved under the Graduate Certificate in Business Analytics.

Management and Business Analytics, MS

Supply Chain Management and Business Analytics, MS

The importance of supply chain management continues to grow as supply chains become more global, more complex, more competitive, and, at the same time, more responsive. The Master of Science in Supply Chain Management provides students with broad supply chain knowledge and technical skills in sourcing, logistics, planning, inventory, pricing, and consulting. The program has a strong interdisciplinary flavor, letting students select from a wide range of electives. Experience-Based Learning forms an integral part of the curriculum through a Consulting Field Project course, internship or Global Research Practicum. The Pitt Business Center for Supply Chain Management supports the program through educational programs and partnerships with industry.

The 30-credit program is designed to be completed in nine months. The curriculum is comprised of core and elective courses currently offered to Katz MBA students. Other than an undergraduate degree, no prerequisites are required. For additional information, email: admissions@katz.pitt.edu, or visit www.business.pitt.edu/katz/ms-programs/supply-chain.

Program Requirements

- BQOM 2060 - INDEP STUDY QUANTITATIVE METHODS
- BQOM 2061 - INDEP STUDY OPERATIONS MGMNT
- BQOM 2421 - DECISION TECHN IN MFG & OPER MGT
- BQOM 2501 - ENTERPRISE SYSTEMS AND INTEGRATION OF BUSINESS PROCESSES
- BQOM 2511 - REVENUE MANAGEMENT AND PRICING ANALYTICS
- BQOM 2512 - ADVANCED DECISION TECHNOLOGY
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BQOM 2521 - DECISION MAKING COMPLEX ENVRNMNT
- BQOM 2523 - PROCESS ENGINEERING
- BQOM 2524 - PROD MGT & PROCESS IMPROVEMENT
- BQOM 2533 - GLOBAL SUPPLY CHAIN MANAGEMENT
- BQOM 2534 - STRATEGIC PROCUREMENT AND SOURCING MANAGEMENT
- BQOM 2537 - FORECASTING
- BQOM 2546 - PROJECT MANAGEMENT FUNDAMENTALS AND ANALYTICS
- BQOM 2549 - STRATEGIC COST ANALYSIS

- BQOM 2578 - DATA MINING
- BQOM 2700 - SUPPLY/VALUE CHAIN MANAGEMENT PROJECT
- BQOM 2904 - PROBLEM SOLVING AND CREATIVITY

Supply Chain Management and Business Analytics, MS (STEM-designated)

This STEM-designated program combines broad supply chain knowledge in sourcing, logistics, planning, process improvement, inventory, and pricing with in-depth business analytics skills in data analysis, data mining, data programming, and database management. Streamline process, manage risk, and deliver results in today's global business environment. Students enrolled in this program must complete the appropriate number of prerequisite, required, and elective courses according to program requirements, and maintain a minimum GPA of 3.0.

Required Courses (Required total: 28.5 credits):

- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
 - BQOM 2421 - DECISION TECHN IN MFG & OPER MGT
 - BQOM 2511 - REVENUE MANAGEMENT AND PRICING ANALYTICS
 - BQOM 2512 - ADVANCED DECISION TECHNOLOGY
 - BQOM 2523 - PROCESS ENGINEERING
 - BQOM 2533 - GLOBAL SUPPLY CHAIN MANAGEMENT
 - BQOM 2534 - STRATEGIC PROCUREMENT AND SOURCING MANAGEMENT
 - BQOM 2557 - MULTIVARIATE DATA ANALYSIS 1
 - BQOM 2578 - DATA MINING
 - BMIS 2074 - STRATEGIC INFORMATION TECHNOLOGY IN GLOBAL SUPPLY CHAINS
 - BMIS 2526 - DATA PROGRAMMING WITH R
 - BMIS 2588 - DATA BASE MANAGEMENT
- EBL requirement: BIND 2024 - CONSULTING FIELD PROJECT; BIND 27** Global Research Practicum; OR Internship that has been approved by the faculty director (may substitute BQOM 2139 with faculty director approval)

Supply Chain Elective Courses (Minimum 6.0 credits):

- BQOM 2139 - SIX SIGMA THEORY AND PRACTICE
- BQOM 2546 - PROJECT MANAGEMENT FUNDAMENTALS AND ANALYTICS
- BQOM 2524 - PROD MGT & PROCESS IMPROVEMENT
- BQOM 2501 - ENTERPRISE SYSTEMS AND INTEGRATION OF BUSINESS PROCESSES

Analytics Elective Courses (Minimum 3.0 credits):

- BQOM 2537 - FORECASTING
- BMKT 2544 - SHOPPER ANALYTICS
- BMIS 2542 - DATA PROGRAMMING WITH PYTHON

Business Elective Courses (Minimum 1.5 credits):

- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BMKT 2306 - MARKETING MANAGEMENT
- BOAH 2532 - NEGOTIATIONS, TEAMWORK AND CHANGE 1
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BOAH 2456 - MANAGING OFFSHORE OUTSOURCING
- BSEO 2511 - MGMNT OF STRATEGIC ALLIANCES 1

Supply Chain Management, MS

The Master of Science in Supply Chain Management is a 30 credit program designed to be completed in two terms, on a full-time basis. The program provides students with broad supply chain knowledge and technical skills in sourcing, logistics, planning, inventory, pricing, and consulting. The program has a strong interdisciplinary flavor, letting students select from a wide range of electives that relate to everything from information technology, to accounting, to strategy.

Required Courses (Required total: 16.5 credits):

- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BQOM 2421 - DECISION TECHN IN MFG & OPER MGT
- BQOM 2533 - GLOBAL SUPPLY CHAIN MANAGEMENT
- BQOM 2534 - STRATEGIC PROCUREMENT AND SOURCING MANAGEMENT
- BQOM 2523 - PROCESS ENGINEERING
- BQOM 2511 - REVENUE MANAGEMENT AND PRICING ANALYTICS
EBL requirement: BIND 2024 - CONSULTING FIELD PROJECT, BIND 27** Global Research Practicum; or Internship that has been approved by the faculty director (may substitute BQOM 2139 with faculty director approval) 3 cr.
- BMIS 2074 - STRATEGIC INFORMATION TECHNOLOGY IN GLOBAL SUPPLY CHAINS

Supply Chain Elective Courses (Minimum 9.0 credits):

- BQOM 2139 - SIX SIGMA THEORY AND PRACTICE
- BQOM 2512 - ADVANCED DECISION TECHNOLOGY
- BQOM 2524 - PROD MGT & PROCESS IMPROVEMENT
- BQOM 2537 - FORECASTING
- BQOM 2546 - PROJECT MANAGEMENT FUNDAMENTALS AND ANALYTICS
- BMIS 2551 - PROJECT MANAGEMENT CONCEPTS AND PROCESSES
- BQOM 2557 - MULTIVARIATE DATA ANALYSIS 1
- BQOM 2578 - DATA MINING
- BQOM 2501 - ENTERPRISE SYSTEMS AND INTEGRATION OF BUSINESS PROCESSES

Business Elective Courses (Up to 4.5 credits):

- BECN 2509 - GLOBAL MACROECONOMICS 1
- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BMKT 2409 - MARKETING MANAGEMENT
- BMKT 2526 - PRODUCT DEVELOPMENT & MANAGEMENT
- BMKT 2544 - SHOPPER ANALYTICS
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BOAH 2456 - MANAGING OFFSHORE OUTSOURCING
- BOAH 2532 - NEGOTIATIONS, TEAMWORK AND CHANGE 1
- BQOM 2904 - PROBLEM SOLVING AND CREATIVITY
- BSEO 2511 - MGMNT OF STRATEGIC ALLIANCES 1

Area of Finance

Doctoral

Finance

The finance discipline doctoral program seeks to prepare students to make significant contributions to the existing body of academic research in corporate finance, mergers and acquisitions, capital structure, internal firm organization, corporate diversification, corporate restructuring, financial institutions and investments and others. The program produces graduates that can independently identify important research questions and carry out theoretical and empirical investigation at levels suitable for publication in the top academic journals. The finance faculty works closely with students to develop suitable research topics and very often collaborates with students on joint research. In short, we strive for our graduates to obtain academic placements at top research institutions.

Finance students take courses from both the University of Pittsburgh Katz Graduate School of Business and the Department of Economics as part of their training. The finance faculty offers seminars that provide the core of the doctoral students' training. These seminars introduce the theoretical underpinnings of finance. Beyond these seminars, students are expected to take additional finance seminars that focus on their chosen areas of interest. Since strong methodological skills are critical to a successful scholarly career, finance doctoral students typically also take courses in econometrics, statistics, and mathematical methods. Students are free to matriculate into courses within the Katz school, other colleges at the University of Pittsburgh (such as Statistics or Mathematics), or at Carnegie Mellon University.

A minimum of eight major and seven methodology-related courses are necessary to fulfill coursework requirements. Students typically pursue four courses per semester for two years prior to taking their comprehensive exams in late summer following their second year.

Students are also required to complete an independent research proposal/paper and submit it to the finance faculty at the end of the spring in their second year of study. It is anticipated that this proposal will eventually develop into a publishable research article; however, the main goal of the assignment is for students to gain experience in identifying important research questions and carrying out theoretical and empirical investigation of these questions.

The following finance doctoral seminars are offered by the Katz Doctoral Program (subject to student enrollment):

Curriculum

The following finance doctoral seminars are offered by the Katz Doctoral Program (subject to student enrollment)

- BFIN 3000 - FINANCE FUNDAMENTALS
- BFIN 3010 - INDEPENDENT STUDY IN FINANCE
- BFIN 3016 - ADVANCED TOPICS IN FINANCE
- BFIN 3031 - CORPORATE FINANCE THEORY AND METHODS
- BFIN 3032 - CORPORATE FINANCE SEMINAR 1
- BFIN 3033 - CORPORATE FINANCE SEMINAR 2
- BFIN 3034 - CORPORATE FINANCE SEMINAR 3
- BFIN 3035 - FINANCIAL EMPIRICAL METHODS
- BFIN 3036 - EMPIRICAL ASSET PRICING
- BFIN 3037 - FINANCE SEMINAR IN MARKET MICROSTRUCTURE
- BFIN 3038 - PROPERTY RIGHTS AND THEORY OF THE FIRM
- BFIN 3099 - READINGS IN FINANCE
- BUSADM 3199 - RESEARCH AND DISSERTATION PHD
- FTDF 0000 - FULL-TIME DISSERTATION STUDY

Additional

The Economics, Math, and cross-registered courses may include:

- ECON 2001 - INTRO TO MATHEMATICAL METHODS
- ECON 2010 - MATHEMATICAL METH ECON ANALYSIS
- ECON 2020 - INTRO TO ECONOMETRIC THEORY
- ECON 2100 - ADVANCED MICROECONOMIC THEORY 1
- ECON 2120 - ADVANCED MICROECONOMIC THEORY 2

- ECON 2260 - ADVANCED ECONOMETRICS 1
- MATH 3225 - MATHEMATICS OF FINANCE 1
 - CMU 0723 Seminar in Finance 1-4

Note

Finance doctoral students are provided with up to five years (14 terms) of financial support. Typically students provide research assistance to their faculty mentors for approximately four years and provide teaching and teaching assistance for up to one year.

Master's

Finance and Business Analytics, MS

The Master of Science in Finance program provides students with broad knowledge of quantitative and qualitative aspects of financial decision making. The program begins with coverage of financial forecasting and time value of money techniques, operating and financial risk and their effects on investors' required returns and firms' costs of capital, and methods of valuation. These important tools and concepts provide the basis for understanding how corporations make financial decisions that maximize shareholder value, including which operating projects to invest in, how to finance those projects, when and how to pay operating cash flows out to shareholders, whether to engage in mergers and acquisitions, and how to deal with financial distress.

Students with an interest in portfolio management can take advantage of Katz's Financial Analysis Lab, a realistic trading room environment equipped with Bloomberg professional services software, S&P's Capital IQ software, and a stock ticker board displaying breaking financial news.

The 30-credit program is designed to be completed in nine months. The curriculum is comprised of core and elective courses currently offered to Katz MBA students. Other than an undergraduate degree, no prerequisites are required. For additional information, email: admissions@katz.pitt.edu, or visit www.business.pitt.edu/katz/ms-programs/finance.

Program Requirements

- BFIN 2015 - SHORT-TERM FINANCING
- BFIN 2030 - VALUATION 1
- BFIN 2031 - CREATING VALUE THROUGH RESTRUCTURING
- BFIN 2036 - CORPORATE FINANCE
- BFIN 2039 - INVESTMENT MANAGEMENT/CAPITAL MARKETS
- BFIN 2042 - ACQUISITION OF PRIVATELY HELD COMPANIES
- BFIN 2043 - INTERNATIONAL FINANCIAL MANAGEMENT
- BFIN 2051 - INTRODUCTION TO DERIVATIVES
- BFIN 2056 - DERIVATIVES: APPLICATIONS TO VALUATION
- BFIN 2060 - INDEPENDENT STUDY IN FINANCE
- BFIN 2068 - MARKETS AND TRADING
- BFIN 2069 - FIXED INCOME SECURITIES
- BFIN 2123 - COMMERCIAL BANKING
- BFIN 2124 - INVESTMENT BANKING AND VENTURE CAPITAL
- BFIN 2129 - ENERGY PROJECT FINANCE
- BFIN 2130 - VALUATION 2
- BFIN 2140 - REAL ESTATE FINANCE
- BFIN 2145 - FINANCIAL MODELING
- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BFIN 2410 - FINANCIAL MANAGEMENT 2
- BFIN 2555 - PRACTICUM PORTFOLIO MANAGEMENT AND SECURITY ANALYSIS

Finance and Business Analytics, MS (STEM-designated)

Differentiate yourself with this STEM-designated program which allows students to master the quantitative and qualitative aspects of Finance-- valuation techniques, forecasting methods, application of time value of money, building pro-forma financial statements, managing corporate finance functions, and investing & portfolio management. In addition, students will learn data mining, multivariate data analysis, programming, and database management to enable powerful financial decision-making. Students enrolled in this program must complete the appropriate number of prerequisite, required, and elective courses according to program requirements, and maintain a minimum GPA of 3.0.

Required Courses (Required total: 39.0 credits):

- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BFIN 2410 - FINANCIAL MANAGEMENT 2
- BFIN 2145 - FINANCIAL MODELING
- BFIN 2039 - INVESTMENT MANAGEMENT/CAPITAL MARKETS
- BFIN 2036 - CORPORATE FINANCE
- BFIN 2030 - VALUATION 1
- BMIS 2542 - DATA PROGRAMMING WITH PYTHON
- BQOM 2421 - DECISION TECHN IN MFG & OPER MGT
- BQOM 2512 - ADVANCED DECISION TECHNOLOGY
- BQOM 2557 - MULTIVARIATE DATA ANALYSIS 1
- BQOM 2578 - DATA MINING
- BMIS 2588 - DATA BASE MANAGEMENT
- BMIS 2526 - DATA PROGRAMMING WITH R

Elective Courses (Required minimum: 6.0 credits):

- BFIN 2015 - SHORT-TERM FINANCING
- BFIN 2042 - ACQUISITION OF PRIVATELY HELD COMPANIES
- BFIN 2043 - INTERNATIONAL FINANCIAL MANAGEMENT
- BFIN 2051 - INTRODUCTION TO DERIVATIVES
- BFIN 2068 - MARKETS AND TRADING
- BFIN 2069 - FIXED INCOME SECURITIES
- BFIN 2130 - VALUATION 2
- BFIN 2140 - REAL ESTATE FINANCE

Finance, MS

The Master of Science in Finance is a 30 credit program designed to be completed in two terms, on a full-time basis. The program provides students with a broad overview of the quantitative and qualitative aspects of finance, helping them understand what steps should be taken to maximize shareholder wealth. Students learn the technical skills of everything from valuation techniques, to forecasting methods, to the application of the time value of money, to building pro-forma financial statements. Students enrolled in this program must complete the appropriate number of prerequisite, required, and elective courses according to program requirements, and maintain a minimum GPA of 3.0.

Required Courses (Required total: 22.5 credits):

- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS

- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BFIN 2410 - FINANCIAL MANAGEMENT 2
- BFIN 2039 - INVESTMENT MANAGEMENT/CAPITAL MARKETS
- BFIN 2030 - VALUATION 1
- BFIN 2036 - CORPORATE FINANCE
- BFIN 2145 - FINANCIAL MODELING

Elective Courses (Required minimum: 7.5 credits):

- BFIN 2069 - FIXED INCOME SECURITIES
- BFIN 2068 - MARKETS AND TRADING
- BFIN 2042 - ACQUISITION OF PRIVATELY HELD COMPANIES
- BFIN 2043 - INTERNATIONAL FINANCIAL MANAGEMENT
- BFIN 2051 - INTRODUCTION TO DERIVATIVES
- BFIN 2015 - SHORT-TERM FINANCING
- BFIN 2130 - VALUATION 2

Area of Information Systems and Technology Management

Doctoral

Information Systems and Technology Management

The doctoral program discipline in Information Systems and Technology Management prepares students for successful scholarly careers in research universities. The program provides students with theoretical knowledge and methodological skills to enable them to become productive researchers. Students in Information Systems and Technology Management study problems that practicing IS professionals and managers face as they design, use, and apply information systems and technologies to solve business problems.

Information Systems and Technology Management students must complete a total of 15 seminars/courses (17 courses if they do not exempt the MBA course requirement). This includes eight courses in their major area of study within Information Systems and Technology Management, at least four courses in research methodology, and at least three courses in a minor area of study. Students may instead choose to complete eight courses in their major area and seven total courses in research methodology for a research methodology minor. Students should choose individually approved seminars and courses from the enclosed list of Katz seminars and courses, as well as from approved University of Pittsburgh seminars and courses. Finally, on a limited basis students may also cross-register into approved seminars and courses at other institutions to support their overall program of study. Each program of study must be approved by the student's faculty advisor and the Director of the Katz Doctoral Program. Any subsequent seminar/course changes must also be approved.

To achieve the fifteen course total, Information Systems and Technology Management doctoral students typically complete Katz ISTM doctoral seminars (BMIS 3000 and above) as noted below and combine these with choices from other disciplines, for example from Psychology or Statistics.

Students are strongly encouraged to register for all seminars offered by the ISTM faculty. See list below.

ISTM doctoral students are provided with up to five years (14 terms) of financial support in the form of Graduate Student Assistantship, Teaching Assistant or Teaching Fellow. Typically students provide research assistance to their faculty mentors for approximately four years and provide teaching and teaching assistance for up to one year.

Curriculum

The following ISTM seminars may be offered toward the major by the Katz Doctoral Program (subject to student enrollment):

- BMIS 3010 - INDEP STUDY MGT INFOR SYSTEMS
- BMIS 3012 - FDS INFORMATION SYSTEMS RESEARCH
- BMIS 3019 - HUMAN/COMPUTER INTERACTION
- BMIS 3025 - TECHNOLOGY INNOVATION ADOPTION DIFFUSION
- BMIS 3042 - DESIGN INFORMATION SYSTEMS RESEARCH
- BMIS 3044 - QUANTITATIVE METHODS IN INFORMATION SYSTEMS RESEARCH
- BUSADM 3199 - RESEARCH AND DISSERTATION PHD
- FTDO 0000 - FULL-TIME DISSERTATION STUDY

Master's

Management Information Systems, MS

Information technologies evolve rapidly and change how businesses operate, compete, and generate value. Companies are seeking professionals who possess the unique combination of information technology and business skills to help them meet the challenges of the information economy. These professionals need to understand both the big picture of business and the role of technology in enabling business innovation.

The 30-credit Master of Science in Management Information Systems can be completed in nine months, from August through April. Students will take core and elective MIS courses (combined for a minimum 19.5 credits) that provide depth and business-oriented elective courses (maximum 10.5 credits) that provide breadth. For additional information, email: admissions@katz.pitt.edu, or visit www.business.pitt.edu/katz/ms-programs/MIS.

Program Requirements

- BMIS 2056 - MGT INFORMATION SYSTEMS PRACM
- BMIS 2060 - INDEP STUDY MGT INFOR SYSTEMS
- BMIS 2074 - STRATEGIC INFORMATION TECHNOLOGY IN GLOBAL SUPPLY CHAINS
- BMIS 2409 - INFORMATION SYSTEMS
- BMIS 2501 - ENTERPRISE SYSTEMS AND INTEGRATION OF BUSINESS PROCESSES
- BMIS 2537 - BUSINESS SYSTEMS PLATFORMS
- BMIS 2538 - BMIS STRATEGIC CYBERSECURITY IN BUSINESS
- BMIS 2551 - PROJECT MANAGEMENT CONCEPTS AND PROCESSES
- BMIS 2588 - DATA BASE MANAGEMENT
- BMIS 2678 - ELECTRONIC COMMERCE
- BMIS 2679 - TECHNOLOGY INNOVATION, ADOPTION, AND DIFFUSION
- BMIS 2689 - TECHNOLOGY-ENABLED BUSINESS TRANSFORMATION
- BMIS 2526 - DATA PROGRAMMING WITH R
- BMIS 2527 - PRIVACY, SECURITY AND ETHICAL COMPUTING
- BMIS 2542 - DATA PROGRAMMING WITH PYTHON

Management Information Systems, MS (STEM-designated)

This program equips students with both the technical and business skills needed to manage an organization's IT resources. The MS in Management Information Systems is a STEM-designated program and can also be pursued with a Graduate Certificate in Business Analytics, as a dual degree with the MBA or in a part-time format. Students enrolled in this program must complete the appropriate number of prerequisite, required, and elective courses according to program requirements, and maintain a minimum GPA of 3.0.

Required Courses (Required total: 13.5 credits):

- BMIS 2409 - INFORMATION SYSTEMS

- BMIS 2537 - BUSINESS SYSTEMS PLATFORMS
- BMIS 2056 - MGT INFORMATION SYSTEMS PRACM
- BMIS 2551 - PROJECT MANAGEMENT CONCEPTS AND PROCESSES
- BMIS 2588 - DATA BASE MANAGEMENT

Elective Courses (Required minimum: 6 credits):

- BMIS 2034 - INFORMATION TECHNOLOGY GOVERNANCE
- BMIS 2053 - HUMAN FACTORS IN INFORMATION SYSTEMS DESIGN
- BMIS 2074 - STRATEGIC INFORMATION TECHNOLOGY IN GLOBAL SUPPLY CHAINS
- BMIS 2501 - ENTERPRISE SYSTEMS AND INTEGRATION OF BUSINESS PROCESSES
- BMIS 2542 - DATA PROGRAMMING WITH PYTHON
- BMIS 2526 - DATA PROGRAMMING WITH R
- BMIS 2679 - TECHNOLOGY INNOVATION, ADOPTION, AND DIFFUSION

Area of Marketing and Business Economics

Doctoral

Marketing

The marketing doctoral program discipline seeks to prepare students to contribute to the marketing discipline via the discovery, development, and dissemination of knowledge. The program is designed to equip students with the requisite theoretical background and methodological skills for successful scholarly careers at institutions of higher learning. The marketing group feels strongly that the apprenticeship model is the most efficacious approach to doctoral training and, to that end, students typically engage immediately in research projects with faculty. Recent students have been successful in publishing these projects in leading journals such as the Journal of Consumer Research, the Journal of Marketing Research, and the Journal of Marketing.

The marketing interest group offers seminars that provide the theoretical core of marketing doctoral students' training. These seminars introduce the central conceptual and phenomenological aspects of the marketing field, as well as the methodological approaches employed in their examination. Since the field of marketing scholarship segments into consumer behavior, modeling, and marketing management, seminars are offered in each of these areas, plus a methodological and marketing theory seminar.

- BMKT 3001 - CONSUMER BEHAVIOR 1
- BMKT 3002 - CONSUMER BEHAVIOR 2
- BMKT 3010 - INDEPENDENT STUDY IN MARKETING
- BMKT 3014 - MARKETING STRATEGY
- BMKT 3017 - MARKETING MODELS
- BMKT 3018 - SPECIAL TOPICS IN MARKETING
- BMKT 3025 - MARKET BEHAVIOR RESEARCH
- BMKT 3099 - READINGS IN MARKETING
- BUSADM 3199 - RESEARCH AND DISSERTATION PHD
- FTDF 0000 - FULL-TIME DISSERTATION STUDY

Beyond these seminars, students are expected to take additional seminars (the minimum major course requirement is eight courses) that focus on their chosen area of interest. Students are free to matriculate into courses within the Katz School, other departments at the University of Pittsburgh (such as Psychology, Economics, or Statistics), or at Carnegie Mellon University.

Since strong methodological skills are critical to a successful scholarly career, marketing doctoral students typically take seven or more courses in analytical methods, statistics, and/or econometrics (the minimum course requirement for a combined research methods/minor is seven). A focus in analytical methods or advanced statistics is the norm. Below is a list of some of the topics offered to satisfy this requirement. These topics are offered University-wide, within Katz, or at Carnegie Mellon University. Other choices may be proposed by the student and approved by the faculty advisor.

Analysis of Variance
Probability Theory
Experimental Design
Multivariate Statistics
Mathematical Statistics
Introduction to Econometric Theory
Human Judgment and Decision Making
Behavioral Economics
Katz Microeconomics
Learning and Memory
Advanced Data Analysis
Advanced Topics in Emotion and Decision Making

Students are required to complete an independent research paper and submit it to the marketing faculty in the summer of their first year of study (third term). It is anticipated that this paper will develop into a publishable research article.

Marketing doctoral students are provided with up to five years (14 terms) of financial support in the form of Graduate Student Assistantship, Teaching Assistant or Teaching Fellow. Typically students provide research assistance to their faculty mentors for approximately four years and provide teaching and teaching assistance for up to one year.

Master's

Marketing Science and Business Analytics, MS

The Master of Science in Marketing Science prepares students for an increasingly data-driven, analytics-focused marketing career, offering a broad introduction to marketing alongside in-depth study of research techniques, data analytics, digital marketing, and social media marketing. Students learn how to use data-driven marketing science to build effective marketing strategies. The program leverages the expertise of Katz's award-winning marketing faculty, which continually ranks among the best in the world for research productivity (American Marketing Association).

The 30-credit program is designed to be completed in nine months. The curriculum is comprised of core and elective courses currently offered to Katz MBA students. Other than an undergraduate degree, no prerequisites are required. For additional information, email: admissions@katz.pitt.edu, or visit www.business.pitt.edu/katz/ms-programs/customer-insight.

Program Requirements

- BMKT 2035 - CONSUMER BEHAVIOR THEORY & PRACTICE
- BMKT 2060 - INDEPENDENT STUDY IN MARKETING
- BMKT 2409 - MARKETING MANAGEMENT
- BMKT 2509 - MARKETING PLANNING & STRATEGY
- BMKT 2522 - SALES MANAGEMENT
- BMKT 2526 - PRODUCT DEVELOPMENT & MANAGEMENT
- BMKT 2528 - ADVERTISING
- BMKT 2530 - SERVICES MKTG: STRATEGIES/TACTICS
- BMKT 2532 - PRICING STRATEGIES AND TACTICS
- BMKT 2533 - BUSINESS TO BUSINESS
- BMKT 2544 - SHOPPER ANALYTICS
- BMKT 2551 - DIGITAL AND SOCIAL MEDIA ANALYTICS
- BMKT 2553 - SOCIAL MEDIA STRATEGY
- BMKT 2569 - BRAND MANAGEMENT

Marketing Science and Business Analytics, MS (STEM-designated)

Differentiate yourself with this STEM-designated program which allows students to gain technical skills in multivariate data analysis, data programming, data mining, and database management. In addition, the program helps students develop an in-depth understanding of consumer behavior through the study of customer insights, research techniques, digital marketing, and social media marketing with advanced data analysis and decision making techniques and skill. Students enrolled in this program must complete the appropriate number of required and elective courses according to program requirements, and maintain a minimum GPA of 3.0.

Required Courses (Required total: 36.0 credits):

- BMKT 2409 - MARKETING MANAGEMENT
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BMKT 2031 - MARKETING RESEARCH
- BMKT 2544 - SHOPPER ANALYTICS
- BMKT 2035 - CONSMR BEHAV THEORY & PRACTICE
- BMKT 2551 - DIGITAL AND SOCIAL MEDIA ANALYTICS
- BMKT 2553 - SOCIAL MEDIA STRATEGY
Marketing Science Project Course (ex: Consulting Field Project, Applied Behavioral Economics or other approved by Faculty Director)
- BQOM 2421 - DECISION TECHN IN MFG & OPER MGT
- BQOM 2512 - ADVANCED DECISION TECHNOLOGY
- BQOM 2557 - MULTIVARIATE DATA ANALYSIS I
- BQOM 2578 - DATA MINING
- BMIS 2588 - DATA BASE MANAGEMENT
- Programming course (choose one): BMIS 2542 - DATA PROGRAMMING WITH PYTHON/BMIS 2526 - DATA PROGRAMMING WITH R

Elective Courses (Required minimum: 4.5 credits):

- BMKT 2032 - APPLIED BEHAVIORAL ECONOMICS
- BMKT 2569 - BRAND MANAGEMENT
- BMKT 2532 - PRICING STRATEGIES AND TACTICS
- BMKT 2526 - PRODUCT DEVELOPMENT & MANAGEMENT
- BQOM 2546 - PROJECT MANAGEMENT FUNDAMENTALS AND ANALYTICS
- BMIS 2551 - PROJECT MANAGEMENT CONCEPTS AND PROCESSES
- BIND 2024 - CONSULTING FIELD PROJECT
- BMIS 2542 - DATA PROGRAMMING WITH PYTHON
- BMIS 2526 - DATA PROGRAMMING WITH R

Marketing Science, MS

The Master of Science in Marketing Science is a 30 credit program designed to be completed in two terms, on a full-time basis. The program prepares students for the future of marketing, offering a broad introduction to marketing alongside in-depth study of customer insights, research techniques, data analytics, digital marketing, and social media marketing. Students learn how to build effective marketing strategies based on data and the latest technological tools. Students enrolled in this program must complete the appropriate number of required and elective courses according to program requirements, and maintain a minimum GPA of 3.0.

Required Courses (Required total: 22.5 credits):

- BMKT 2409 - MARKETING MANAGEMENT
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BMKT 2031 - MARKETING RESEARCH

- BMKT 2035 - CONSUMER BEHAVIOR THEORY & PRACTICE
 - BMKT 2544 - SHOPPER ANALYTICS
 - BMKT 2551 - DIGITAL AND SOCIAL MEDIA ANALYTICS
 - BMKT 2553 - SOCIAL MEDIA STRATEGY
- Marketing Science Project Course (ex: Consulting Field Project, Applied Behavioral Economics or other approved by Faculty Director)

Elective Courses (Required minimum: 7.5 credits):

- BMKT 2032 - APPLIED BEHAVIORAL ECONOMICS
- BMKT 2526 - PRODUCT DEVELOPMENT & MANAGEMENT
- BMKT 2532 - PRICING STRATEGIES AND TACTICS
- BMKT 2569 - BRAND MANAGEMENT
- BQOM 2546 - PROJECT MANAGEMENT FUNDAMENTALS AND ANALYTICS
- BQOM 2578 - DATA MINING
- BIND 2024 - CONSULTING FIELD PROJECT
- BMIS 2526 - DATA PROGRAMMING WITH R
- BMIS 2542 - DATA PROGRAMMING WITH PYTHON
- BMIS 2551 - PROJECT MANAGEMENT CONCEPTS AND PROCESSES

Area of Organizations and Entrepreneurship

Doctoral

Organizational Behavior and Human Resources Management

The OBHR doctoral program discipline focuses on preparing students to impact the study of people, process and outcomes within the fields of organizational behavior and human resources management. Through research, collaboration and dissemination of knowledge, students understand how to impact organizational effectiveness in a variety of different environments, industries and across multiple levels of analyses. Our expectation is that students will craft a program of research that is built upon rigorous theory as well as strong methodological skills that are both necessary for effective scholarship. We encourage collaboration with OBHR faculty that has a proven track record of publishing within a variety of top outlets.

Organizational Behavior and Human Resources Management students must complete a total of 15 seminars/courses (17 courses if they do not exempt the MBA course requirement). This includes eight courses in their major area of study within Organizational Behavior and Human Resources Management, at least four courses in research methodology, and at least three courses in a minor area of study. Students may instead choose to complete eight courses in their major area and seven total courses in research methodology for a research methodology minor. Students should choose individually approved seminars and courses from the enclosed list of Katz seminars and courses, as well as from approved University of Pittsburgh seminars and courses. For example students often choose psychology, decision sciences, statistics and research methodology to name a few. Finally, on a limited basis students may also cross-register into approved seminars and courses at other institutions to support their overall program of study. Each program of study must be approved by the student's faculty advisor and the Director of the Katz Doctoral Program. Any subsequent seminar/course changes must also be approved.

Organizational Behavior and Human Resources Management doctoral students are provided with up to five years (14 terms) of financial support in the form of Graduate Student Assistantship, Teaching Assistant or Teaching Fellow. Typically students provide research assistance to their faculty mentors for approximately four years and provide teaching and teaching assistance for up to one year.

Curriculum

The following OBHR seminars are offered by the Katz Doctoral Program (subject to student enrollment):

- BOAH 3002 - FOUNDATIONS OF ORGANIZATIONAL BEHAVIOR
- BOAH 3027 - OBHR RESEARCH WORKSHOP I
- BOAH 3028 - OBHR RESEARCH WORKSHOP II

- BOAH 3099 - RDGS ORGNZTNL BEHAVIOR/HR MGT
- BORG 3010 - INDEP STUDY ORGNZTNL STUDIES
- BORG 3020 - TOPICS ORGANIZATIONAL BEHAVIOR
- BORG 3099 - READINGS ORGANIZATIONAL STUDIES
- BUSADM 3011 - INTERNATIONAL MANAGEMENT
- BUSADM 3013 - WORK AND ORGANIZATIONS
- BUSADM 3199 - RESEARCH AND DISSERTATION PHD
- FTDF 0000 - FULL-TIME DISSERTATION STUDY

Master's

Management, MS

The Master of Science in Management is a 30 credit program designed to be completed in two terms, on a full-time basis. The curriculum includes 19.5 credits of core business management courses that overlap with the Katz MBA curriculum. Students also choose 10.5 credits of electives from areas of study in finance, management of information systems, marketing, organizational behavior, human resource management, and entrepreneurship.

Students enrolled in this program must complete the appropriate number of prerequisite, required, and elective courses according to program requirements, and maintain a minimum GPA of 3.0.

Core Courses

Students are required to complete 19.5 credits of core courses.

- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BFIN 2409 - FINANCIAL MANAGEMENT I
- BMKT 2409 - MARKETING MANAGEMENT
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM
- BSPP 2409 - STRATEGIC MANAGEMENT

Electives

Students will choose 9.0 credits that reflect their business discipline interest, as well as a 3.0 credit EBL course that complements their elective choices as a "business block". Although MiM students may select electives from the full Katz Masters course catalog to build their own business focus, academic advisors will provide students with "blocks" (or tracks) of suggested electives that are in demand by employers and of interest to today's students. Students will be encouraged to consider selecting electives as a "business block" in order to develop specific skills, however, this will not be a requirement.

Organization and Entrepreneurship, MS

The following courses are offered through the Organizations and Entrepreneurship Department:

BHRM 2023 - HUMAN RESOURCES PLANNING/STRATEGY 1
 BHRM 2024 - HUMAN RESOURCES PLANNING/STRATEGY 2
 BHRM 2060 - INDEPENT STUDY HUMAN RESOURCES MANAGEMENT
 BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
 BOAH 2423 - MANAGING HUMAN CAPITAL
 BOAH 2456 - MANAGING OFFSHORE OUTSOURCING

BOAH 2517 - INTERPERSONAL SKILLS MANAGERS 1
 BOAH 2521 - STAFFING ORGANIZATIONS
 BOAH 2522 - COMPENSATION
 BOAH 2527 - CROSS CULTURAL DIMN INT'L MGT
 BOAH 2532 - NEGOTIATIONS, TEAMWORK AND CHANGE 1
 BOAH 2537 - CONFLICT RESOLUTION IN THE WORKPLACE 1
 BSEO 2012 - SOCIAL ENTREPRENEURSHIP
 BSEO 2033 - MANAGING THE NATURAL ENVIRONMENT
 BSEO 2034 - SUSTAINABILITY AND CORPORATE RESPONSIBILITY
 BSEO 2316 - BUSINESS LAW
 BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM
 BSEO 2509 - BUSINESS AND POLITICS
 BSEO 2500 - BENCHTOP TO BEDSIDE
 BSEO 2506 - COMPETING EMERGING ECONOMIES
 BSEO 2509 - BUSINESS AND POLITICS
 BSEO 2511 - MGMNT OF STRATEGIC ALLIANCES 1
 BSEO 2316 - BUSINESS LAW
 BSEO 2525 - COMPETITIVE INTELLIGENCE
 BSEO 2528 - LEGAL ENVIRONMENT OF BUSINESS 1
 BSEO 2531 - ENTREP & NEW VENTURE INITIATION
 BSEO 2538 - STRATEGIC LEADERSHIP
 BSEO 2543 - ACQUISITION & DIVESTMENT ANALYS
 BSPP 2111 - COMMERCIALIZING NEW TECHNOLOGIES
 BSPP 2112 - LEADING ORGANIZATIONS TO INNOVATE SMARTER
 BSPP 2328 - THE BUSINESS OF HUMANITY - STRATEGIC MANAGEMENT
 BSPP 2409 - STRATEGIC MANAGEMENT

Area of Strategic Management

Doctoral

Strategic Management

Students in the Strategy discipline study the problems and issues facing general managers who must formulate and implement strategies for organizations in uncertain and ambiguous environments. Seminars cover theory and empirical findings related to strategy formulation and implementation, and are intended to familiarize students with the variety of research perspectives relevant to the strategy field. In addition, each faculty member leading a course will ask participants to build upon extant research to develop their own research topics as a first step toward publishing articles.

Strategy students must complete a total of 15 seminars/courses (17 courses if they do not exempt the MBA course requirement). This includes eight courses in their major area of study within Strategy, at least four courses in research methodology, and at least three courses in a minor area of study. Students may instead choose to complete eight courses in their major area and seven total courses in research methodology for a research methodology minor. Students should choose individually approved seminars and courses from the enclosed list of Katz seminars and courses, as well as from approved University of Pittsburgh seminars and courses.

Finally, on a limited basis students may also cross-register into approved seminars and courses at other institutions to support their overall program of study. Each program of study must be approved by the student's faculty advisor and the Director of the Katz Doctoral Program. Any subsequent seminar/course changes must also be approved.

Strategy doctoral students are provided with up to five years (14 terms) of financial support in the form of Graduate Student Assistantship, Teaching Assistant or Teaching Fellow. Typically students provide research assistance to their faculty mentors for approximately four years and provide teaching and teaching assistance for up to one year.

Curriculum

The following Strategy seminars are offered by the Katz Doctoral Program (subject to student enrollment):

- BSPP 3010 - INDEP STUDY STRATEGIC PLANNING POLICY
- BSPP 3011 - STRATEGIC PLANNING SYSTEMS
- BSPP 3012 - RESEARCH IN COMPETITIVE STRATEGY
- BSPP 3013 - FOUNDATIONS OF STRATEGY RESEARCH
- BSPP 3014 - RESEARCH IN CORPORATE STRATEGY
- BSPP 3015 - WORKSHOP IN STRATEGIC PLAN & POLICY
- BSPP 3018 - THEORY BUILDING IN MANAGEMENT
- BSPP 3019 - SEMINAR IN ENTREPRENEURSHIP
- BSPP 3099 - READINGS STRATEGIC PLANNING & POLICY
- BUSADM 3199 - RESEARCH AND DISSERTATION PHD
- FTDF 0000 - FULL-TIME DISSERTATION STUDY

Katz Graduate School of Business Faculty

Last Name	First Name	Degree	Conferring Institution	Status
Aflaki	Arian	PhD	Duke University	Full-Time
Aljafari	Ruba	PhD	University of Arkansas	Full-Time
Alvarez	Sharon	PhD	University of Colorado	Full-Time
Ameri	Mina	PhD	University of Texas at Dallas	Full-Time
Assad	Arjang	PhD	Massachusetts Institute of Technology	Full-Time
Atkin	Robert	PhD	University of Pittsburgh	Full-Time
Bannerjee	Haimanti	PhD	University of Iowa	Full-Time
Bartholomew	Heidi	MTax	University of Akron	Full-Time
Bhattacharya	CB	PhD	University of Pennsylvania	Full-time
Boyas	Elise	PhD	Rutgers University	Full-Time
Cade	Nicole	PhD	University of Washington	Full-Time
Camillus	John C.	DBA	Harvard University	Full-Time
Carlin	Jocelyn	MS	Duquesne University	Full-Time
Chatterjee	Rabikar	PhD	University of Pennsylvania	Full-Time
Cohen	Susan	PhD	University of Minnesota	Full-Time
Coleman	Nicole	PhD	University of Pennsylvania	Full-Time
Craft	James	PhD	University of California, Berkeley	Full-Time
Davis	Tom	MBA	University of Pittsburgh	Full-Time
Denis	David	PhD	University of Michigan	Full-Time
Denis	Diane	PhD	University of Michigan	Full-Time

Elshahat	Ahmed	PhD	Florida International University	Full-Time
Evans	J. Harry	PhD	Carnegie Mellon University	Full-Time
Feick	Lawrence	PhD	Pennsylvania State University	Full-Time
Feng	Mei	PhD	University of Michigan	Full-Time
Florkowski	Gary	PhD	Syracuse University	Full-Time
Franklin	Richard	MS	University of Pittsburgh	Full-Time
Galletta	Dennis	PhD	University of Minnesota	Full-Time
Gal-Or	Esther	PhD	Northwestern University	Full-Time
Geylani	Tansev	PhD	Carnegie Mellon University	Full-Time
Gilbert	Robert	PhD	University of Pittsburgh	Full-Time
Good	Deborah	PhD	University of Pittsburgh	Full-Time
Gunarathne	Priyanga	PhD	University of Rochester	Full-Time
Gunn	Joshua	PhD	University of Missouri	Full-Time
Hamilton	Michael	PhD	Columbia University	Full-Time
Harper	Paul	PhD	University of Virginia	Full-Time
Hegde	Gajanan	PhD	University of Rochester	Full-Time
Hoffman	Vicky	PhD	University of Michigan	Full-Time
Hogan	Brian	PhD	Case Western University	Full-Time
Hydari	Zia	PhD	Carnegie Mellon University	Full-Time
Inman	J. Jeffrey	PhD	University of Texas, Austin	Full-Time
Jones	Ray	PhD	University of Pittsburgh	Full-Time
Kafka	Folke	PhD	University of Pittsburgh	Full-Time
Kemerer	Chris	PhD	Carnegie Mellon University	Full-Time
Kimpel	James	DSc	Robert Morris University	Full-Time
Kirsch	Laurie	PhD	University of Minnesota	Full-Time
Klein	Paul	JD	Duquesne University	Full-Time
Koch	Andrew	PhD	University of Texas at Austin	Full-Time
Lagaras	Spyridon	PhD	University of Illinois at Urbana-Champaign	Full-Time
Lamberton	Cait	PhD	University of South Carolina	Full-Time

Leana	Carrie	PhD	University of Houston	Full-Time
Lebel	R. David	PhD	University of Pennsylvania	Full-Time
Lehn	Kenneth	PhD	Washington University	Full-Time
Lin	Leming	PhD	University of Florida	Full-Time
Lind	Gary	PhD	Rice University	Full-Time
Liu	Peggy	PhD	Duke University	Full-Time
Ma	Mark	PhD	University of Oklahoma	Full-Time
Madhavan	Ravi	PhD	University of Pittsburgh	Full-Time
Magnuson	Ronald	MBA	Mount St. Mary's College	Full-Time
Martin	Patrick	PhD	University of Pittsburgh	Full-Time
Maryott	Kiersten	PhD	Duke University	Full-Time
May	Jerrold	PhD	Yale University	Full-Time
Mirchandani	Prakash	PhD	Massachusetts Institute of Technology	Full-Time
Mitnick	Barry	PhD	University of Pennsylvania	Full-Time
Moeller	Sara	PhD	Ohio State University	Full-Time
Moser	Donald	PhD	University of Wisconsin- Madison	Full-Time
Murrell	Audrey	PhD	University of Delaware	Full-Time
Nair	Nisha	PhD	IIM Ahmadabad	Full-Time
Olson	Josephine	PhD	Brown University	Full-Time
Paljug	Eric	PhD	University of Pennsylvania	Full-Time
Pan	Lingling	PhD	Michigan State University	Full-Time
Patton	G. Richard	PhD	Purdue University	Full-Time
Pavone	Anna	MBA	University of Pittsburgh	Full-Time
Pil	Frits	PhD	University of Pennsylvania	Full-Time
Pomeroy	H. Blair	MBA	Harvard Business School	Full-Time
Prescott	John	PhD	Pennsylvania State University	Full-Time
Ramasubbu	Narayn	PhD	University of Michigan	Full-Time
Reid	Lauren	PhD	University of Tennessee	Full-Time
Rodi	Anthony	PhD	Robert Morris University	Full-Time

Sayrak	Akin	PhD	University of Texas at Austin	Full-Time
Schlingemann	Frederik	PhD	Ohio State University	Full-Time
Shang	Jennifer	PhD	University of Texas at Austin	Full-Time
Shastri	Karen	PhD	University of Pittsburgh	Full-Time
Srinivasan	Dhinu	PhD	University of Minnesota	Full-Time
Sukits	Jay	MBA	Harvard University	Full-Time
Swaminathan	Vanitha	PhD	University of Georgia	Full-Time
Tadikamalla	Pandu	PhD	University of Iowa	Full-Time
Teeter	Ryan	PhD	Rutgers University	Full-Time
Thomas	Shawn	PhD	University of Florida	Full-Time
Tsarsis	Gary	MBA	University of Miami	Full-Time
Valdes	Leon	PhD	Massachusetts Institute of Technology	Full-Time
Vargas	Luis	PhD	University of Pennsylvania	Full-Time
Venkatesh	R.	PhD	University of Texas at Austin	Full-Time
Washburn	Andrew	MBA	Harvard University	Full-Time
Wendell	Richard	PhD	Northwestern University	Full-Time
Whang	Yun-Oh	PhD	University of Southern California	Full-Time
Wu	Eugenia	PhD	Duke University	Full-Time
Wu	Yue	PhD	INSEAD	Full-Time
Yalin	Mehmet	PhD	University of Pittsburgh	Full-Time
Young-Hyman	Trevor	PhD	University of Wisconsin-Madison	Full-Time
Zoffer	H.J.	PhD	University of Pittsburgh	Full-Time
Zutter	Chad	PhD	Indiana University	Full-Time

School of Computing and Information

The University of Pittsburgh's School of Computing and Information (SCI) opened on July 1, 2017, building upon the traditions of excellence embodied by the Department of Computer Science and School of Information Sciences. SCI aims to position the University as a leader in preparing students for this increasingly-interconnected world by providing students with excellent disciplinary foundations and training to support our mission to make the world a better place through polymathic education and the science of interacting systems. Our degree programs address the holistic spectrum of computing and information, from producers to users and from science-oriented exploration to human-centric applications. We foresee a future with increased opportunities to expose our students to a multidisciplinary approach to knowledge creation, information management, and computing; expanded experiential learning opportunities; and extended career networks.

SCI represents the confluence of computing and information along with diverse academic disciplines, serving as a valuable resource to researchers, students, and organizations across the University and around the world. SCI is a new school for a new era of research and learning, one in which the power of information and computing will accelerate knowledge discovery and creativity.

The regulations set forth in the following document apply to students who were admitted to the School of Computing and Information during the 2019-2020 Academic Year. Students admitted prior to this academic year should refer to the Archived Catalogs for the regulations governing their graduate studies.

Students admitted PRIOR to the 2017-2018 Academic Year will find the School-level rules to which they are bound by going to the Archived Catalogs for either Arts & Sciences (Computer Science or Intelligent Systems degrees) or School of Information Sciences (Information Science, Library & Information Science, and Telecommunications degrees).

Contact Information

*University of Pittsburgh
School of Computing and Information
Office of the Dean
Information Sciences Building, Fifth floor
135 North Bellefield Avenue
Pittsburgh, PA 15260*

Detailed contact information for all departments, offices, and staff can be found the SCI "Contact Us" web page.

Admission Requirements and Procedures

General guidelines for applying to a graduate program at the University of Pittsburgh should be reviewed prior to submitting an application for admission. These guidelines are available on the University's Application for Admission Catalog page.

The School of Computing and Information seeks students with diverse interests and abilities for its graduate degree and certification programs. All applicants will be judged on their own merits. Applicants for Master's study must have earned a Bachelor's degree from an accredited college or university with a scholastic average of B (3.0 on a 4.0 scale) or better; the doctoral programs have more stringent requirements. For those who have been in the workforce, admission will be based upon academic achievement, area of study, career orientation, and work experience.

Apply Online: Applications for graduate study must be completed and submitted entirely online. Applicants must set up a free account which enables you to work on your application over several sessions. Your information is transmitted through a secured server and is kept private until you submit your application. After submission, your application materials will be managed confidentially within the review process.

Individual programs require supplemental application materials, and some programs require prerequisite coursework and skills knowledge. More details regarding expectations for the statement of intent or writing portfolio, pre-requisite courses, and other supplemental application materials can be found on the individual program pages (through the appropriate program).

Admissions Status

Students are admitted to a graduate program and granted one of the following three types of graduate status: Full, Provisional, or Special.

1. Full graduate status: when all admission requirements are met; For full details, see "Admission Status" in the Regulations Governing Graduate Study at the University of Pittsburgh.
2. Provisional graduate status: when some admission requirements are not (or inadequately) met;
 - Applicants who are graduates of a recognized college or university but who do not qualify for admission to full graduate status because of deficiencies in either appropriate background courses or their scholastic achievement may be considered for provisional graduate status if strong supporting evidence of their ability to complete a graduate program is provided. Courses taken to remove deficiencies do not contribute toward the completion of graduate degree requirements. Transfer from provisional to full graduate status is initiated by the student and recommended by the department or program, and is possible only after removal of deficiencies and other conditions noted at the time of admission and satisfactory progress in graduate work.
 - Students at the School of Computing and Information are expected to complete a Provisional Condition Review form in order to have their status reviewed upon completion of provisions/removal of deficiencies. Students are notified by e-mail when they have reached full graduate status and may request a new admissions letter at that time.
3. Special graduate status: to take specific graduate-level courses for one or more terms without the intent of earning a degree or certificate.

Note, special students must apply and be admitted to a degree program in order to change to full graduate status. Upon admission to the degree program, students must seek department recommendation for the transfer of credits from special to full graduate status. Classes completed while on special status will be treated the same as external transfer credits, guided by the same policies and processes.

Application Processing

Begin the online application process at www.sci.pitt.edu.

Your application will be available for review by the department or program once all the recommendation letters are submitted and all test results and transcripts are uploaded.

Applications are reviewed after receipt of all required documents. Please note that, during the December-January timeframe, numerous applications are received. Due to the volume of submissions, there may be a delay in confirmation of receipt of materials.

Applicants are encouraged to check their online application account to ascertain if documentation has been received or if an admissions decision has been made PRIOR to contacting the School for such details. Note, the status of your application, related documents and admission decision cannot be verified until you have submitted the application fee (which is the final step in submitting your application).

Applicants are notified via e-mail when an admissions decision has been posted to the online application system.

The University of Pittsburgh participates in the Council of Graduate Schools' (CGS) "Resolution Regarding Graduate Scholars, Fellows, Trainees and Assistantships" also known as the "April 15 Resolution." Participation in the resolution allows admitted graduate students to consider all offers of financial support through April 15. In turn, the resolution binds students to their decisions made or held in place after April 15. SCI's cooperation ensures that both students and programs conduct their admissions in an ethical manner, and that they receive equal treatment and consideration in the financial support decision-making process. Further details regarding the "April 15 Resolution," including a list of participating institutions, can be found on the Council of Graduate Schools Web site.

Deadlines

Deadlines for US Citizens and Permanent Residents

See the individual degree program pages for application deadlines. Priority consideration will be given to applications received by these deadlines; late applications may be deferred to the next application cycle.

Deadlines for International Students

Due to delays in the issuance of visas it is recommended that international students apply as early as possible, preferably at least six months prior to the start of the term of admittance, so that paperwork can be processed in a timely manner.

Deadlines for international students' applications to the School of Computing and Information are:

Term of Admission	Application Deadline	Deadline by which you must accept your offer of admission in order for your visa to be processed
Fall	January 15	Between April 15 and June 15
Spring	June 15	November 1
Summer	December 15	March 1

Admission of International Students

Non-US Citizens must read through the International Graduate Student Admission section of the University's Application for Admission page for a complete overview of University admissions requirements, including TOEFL or IELTS scores, for students from other countries.

English Language Proficiency Requirements

Graduate students must possess sufficient knowledge of English to study without being hindered by language problems, to understand lectures, and to participate successfully in class discussion. International applicants must submit either the TOEFL or the IELTS (taken within two years of the date of application).

Applicants must contact Educational Testing Services directly to request that an official score report be sent to the School of Computing and Information. The institution code for the University of Pittsburgh is 2927. Submission of TOEFL test results is required for admission to graduate study in this School. Individual degree programs may have varying minimum requirements, which are outlined on each program's Catalog page. Applicants who are citizens of a country where English is the official language are exempt from submitting the results of the TOEFL or IELTS. In addition, applicants who have earned a Bachelor's degree or higher degree from a regionally accredited institution in the U.S. are also exempt from submitting the results of the TOEFL or IELTS. However, the School reserves the right to ask for TOEFL scores if deemed necessary for the evaluation of the application. Please note: degrees where anything less than the entire degree was completed in-residence within the English-speaking country will be reviewed on a case-by-case basis. Students in these circumstances may be required to complete the TOEFL or IELTS with the required minimum score upon review.

Prior to registration, students with TOEFL scores less than 100 (Internet-based) or IELTS scores less than Band 7.5 will be given the on-campus administered English Language Proficiency Test.

If remedial courses in English as a second language are recommended as an outcome of the test, the student must complete the remedial course during the first academic year of study; some programs may require students to follow a shorter completion timeline for remedial courses. Progress in the remedial English language courses is monitored by SCI Academic Records. Failing to enroll in and successfully complete the required language course will result in restrictions on future enrollment activity and will count against a student's progress toward degree in SCI's review of Academic Standing (see Academic Standing and Dismissal section for details).

Special Admissions

Deferred Admissions

Admission to graduate study is valid for the academic year. A student may defer admission for up to one year without reapplication. The student must submit a deferral request through the online application system. Additional course work taken during the deferred year and a new affidavit of financial support should also accompany any financial aid request. Approval of a student's request to defer admission does not necessarily mean that any financial aid awarded is also deferred - the offer of financial aid will be reassessed for the student's deferred admit term.

Reinstatement

Students who have left the University for one calendar year or more (whether of their own volition or as a result of a suspension), who did not complete work at another institution, and who wish to continue their studies must apply for reinstatement through the School's online application system; exceptions noted in the Leave of Absence (LOA), Readmission, and Reinstatement section.

Readmission

Students who previously attended the University of Pittsburgh before attending another institution and who wish to return to the University will be considered after submitting a new application to their graduate degree program via the School's online application system. All supporting materials must be submitted; revision of essays is suggested. Inclusion of all transcripts - including new coursework completed during the period of leave - are required.

Credits completed at another institution during a break from the University of Pittsburgh may request that these credits be reviewed for transfer. All such requests are bound to the University, School, and Department policies for transfer credits and will be reviewed after a student has matriculated to the University.

For more details regarding the different definitions and regulations for readmitted and reinstated students, see the Leave of Absence (LOA), Readmission, and Reinstatement section of the SCI Catalog page.

Transferring Between SCI Departments or Programs

Students may transfer to a different department or program within SCI. Transfers between SCI departments or programs will be reviewed by the receiving department's admissions committee - including a thorough assessment of the student's academic performance in previous institutions as well as within SCI. Faculty will review the student's original application materials and may require that the student submit supplemental application materials.

To initiate a transfer between SCI Departments or Programs, a student must submit the Graduate Academic Plan Change Form at least one month prior to the start of the new admission term. If a University break occurs during that time, students should allow for additional time for their transfer to be evaluated by the department's admissions committee and their official student record to be processed.

Students should note that transfer to a different department or degree is not guaranteed. Additionally, students will not be reconsidered for a program for which they have already been previously reviewed but not admitted.

Appointments and Financial Information

Teaching and Research Appointments

Financial assistance for graduate students is provided in the form of teaching and research appointments, fellowships, traineeships, tuition scholarships, and loans. Application for financial aid should be made on the application for admission to graduate study. All applications for financial assistance are reviewed at the departmental or program level and awards are made to the extent of available funds. Admission to graduate study does not carry any implications concerning the award of financial aid. Only students with full graduate status are eligible for teaching assistantships and fellowships.

In recognition of academic merit, the University offers teaching assistants (TA), teaching fellows (TF), graduate student assistants (GSA), and graduate student researchers (GSR) full or proportional tuition scholarships, and students are required to register for the number of credits proportional to appointment. If appointed in the summer term, students should register for a minimum of three credits (or full-time dissertation study, if eligible), unless additional registration is needed for academic purposes.

Policies governing TA/TF/GSA/GSR positions can be found on the Provost's Guidelines and Resources web page.

Tuition Fees and Billing

The University updates the Financial Information web page in July for the upcoming academic year.

Academic Regulations and Standards

University Registration Policies

Policies on full-time/part-time status, adding and dropping courses, cross-registration, grading systems, etc. are governed by the University at large. Students should refer to the University's Academic Regulations for general information and contact SCI Academic Records for more details on applying these policies in practice.

Highlighted are frequent topics of inquiry: Satisfactory/No Credit, Registration (Enrollment), Cross-Registration, Withdrawing or Resigning, Grading and Records, Academic Record and Grade Reports

In addition to those University-wide regulations and standards detailed in the section on Academic Regulations, each student in the School of Computing and Information is expected to be familiar with the following School-specific regulations and academic standards and their department's or program's regulations.

Grading Policies

Courses for which a G, I, N, R, or W grade is recorded and courses numbered below 1000 (0-0999) do not contribute either credits or grade points toward graduation. Courses numbered below 2000 only contribute credits or grade points toward graduation when approved by the department or program PRIOR to enrollment.

Students must achieve the minimum GPA, in no case less than 3.00, and individual course grade minimums established by their department or program in order to be eligible to retain teaching assistantships or fellowships, to undergo the preliminary evaluations, to take comprehensive examinations, to be admitted to candidacy for the PhD degree, and to graduate. No grade lower than a C will be counted toward graduation requirements; yet all letter grades will be calculated into the student's cumulative GPA unless if a class is repeated and a course repeat form processed. See "Repetition of Courses" section below for more information.

Auditing Courses and Selecting a Grading Option

With the consent of the School and instructor, students may choose to audit a course or complete it with a Satisfactory/No Credit (S/NC) option. Regulations for S/NC credit allowances are governed by the Departments and are subject to the grade options allowed for each particular course (i.e., not all courses may be taken as S/NC). To audit a course, a student must register and pay tuition for the course. The audit grade (N) is not counted toward graduation or the GPA. Note, the University's Office of the Registrar does not require submission of a Grade Option/Audit Form for auditing graduate courses. **However, SCI Academic Records does require this documentation for ALL course auditing.**

Graduate students choose a grading option (letter grade or S/NC) during enrollment from those listed within the University's Student enrollment system. Any decision to change the grading option after a class has been added to the student's enrollment must be processed (via the Grade Option/Audit Form) no later than four weeks after the start of term. This decision may not be changed, nor may a grade of one kind received for a course be changed to a grade of the other kind (e.g., from an S/NC grade to a letter grade).

The default is for all classes to be graded with a letter grade (unless otherwise stipulated by the Course Catalog) and decisions to select an alternative grading option (S/NC or Audit) should be discussed with the student's advisor. After a grading option has been selected and documented, this decision may not be changed.

Grade Changes

Grade changes are submitted by the course instructor. Grades will not be changed more than one year after the term's end, nor if a student's record has become inactive or if a student has graduated.

Incomplete (G or I) Grades

The G grade signifies unfinished course work due to extenuating personal circumstances. A student assigned a G grade is required to complete course requirements no later than one year after the term in which the course was taken. After the deadline has passed, the G grade will automatically be replaced by "NG" or "no grade" and will remain on the record. The student will be required to reregister for the course if it is needed to fulfill the requirements for graduation.

The I grade signifies incomplete course work due to the nature of the course, clinical work, or incomplete research work in individual guidance courses or seminars.

If an instructor is to assign an incomplete grade, the student and instructor must come to an agreement regarding the expected timeline of completion, grading, etc. SCI Academic Records can provide assistance in documenting and enforcing this agreement through an "Incomplete Grade Contract."

Repetition of Courses

Required courses for a major must be repeated or replaced by a comparable course if a grade does not meet the degree's minimum requirements (see Department or program page for specifics). Course repetitions are subject to further regulations:

- Students typically only repeat a course in which the grade of C- or lower has been earned, however, upon department or program approval the student may repeat a course in which they have earned a B- or lower.
- A student may not enroll in the same course at another institution and have that grade replace the original grade earned at the University.
- The original course and grade remain on the transcript; however, the grade and credits originally earned are not counted in the calculation of the GPA.
- The grade earned by repeating a course is used instead of the grade originally earned. W, R, or N grades reported for the repeated course will not be identified as a course repeat, and therefore the original grade earned will continue to be counted in the GPA. Incomplete grades (G and I) are not identified as repeated courses until the course work is completed.
- Students are only permitted to repeat a course up to two times. Departments or programs may have stricter course repeat policies.
- Any grade earned in the repeated course will be recorded on the academic transcript and calculated in the GPA, even if it is lower than the original grade.

The School automatically submits a course repeat form for students, however, it is the responsibility of the student to ensure their repeat course grades have been updated with the "Repeated - Excluded from GPA" flag on their academic record and that all credits have been calculated correctly. Students should discuss repeat courses with their advisor at the beginning and end of the term of enrollment.

Credit and Enrollment Policies

Pre-requisite courses, and any coursework required to prepare for pre-requisite courses, are not calculated in the total credits required to earn a degree. For a list of pre-requisite courses for a degree and/or a degree specialization, refer to the individual degree Catalog pages.

The School of Computing and Information allows its graduate students to register for 16 credits in a term before additional per-credit tuition charges apply.

Transfer Credits

University Academic Regulations allow credit transfer to an advanced degree. Students who have completed graduate courses in degree-granting graduate programs at other appropriately accredited institutions, or those who have completed graduate-level coursework enrolled under "special status" at the University of Pittsburgh, and who would like to request a transfer of credits should submit official transcripts for their coursework in addition to the School's Transfer Credit Request form so that the courses can be evaluated for transfer credit.

Transfer credit requests are reviewed and approved by the department or program faculty before the form is submitted to SCI Academic Records. As with all School forms, this can be found on the School forms page of the SCI Current Students site.

Requests must adhere to the University's limitations for transfer credits. See the University's Academic Regulations for details.

Advising

The quality of education that graduate students receive is greatly enhanced with good academic advising at all stages of their program. Given the diversity of these needs, each program must determine the best way to provide these services. Academic advising provides the foundation upon which students plan their studies. It is the policy of the School for each student to have an academic advisor whose responsibilities include providing guidance in developing the student's career goals and academic programs, approving course selections, and advising as needed on issues affecting the student's academic and professional careers. Students are matched with an advisor upon admission; they may, however, change advisors at any time. A student's assigned advisor can be viewed in the Student Center via my.pitt.edu. The goal of academic advising is to develop a consistent academic program coordinated to meet general program requirements and specific needs of individual students. Ideally, the student and faculty advisor function as a team working toward the objective of career preparation by means of the strongest possible academic experiences for the student. Students should meet each term with their advisors to ensure timely progress through their program.

All departments and programs are responsible, with Dean's Office oversight, for implementing policies and practices consistent with the University's in *Elements of Good Academic Advising*. Unresolved problems relating to the advising of graduate students at the department or program level should first be addressed with the Chair of the department or program.

Note regarding Graduate Faculty advisors and enrollment: Advising holds/service indicators, permission numbers, withdrawals, and questions regarding the mechanics of enrollment should be referred to the SCI Academic Records. Course selection, research development and interests, and curriculum-based inquiries should be vetted through the student's advisor.

Exemptions to enrollment policies and degree requirements are approved by the department or program and are mediated through the student's advisor. Exemptions are then relayed to SCI Academic Records for inclusion in the student's academic record. See the SCI Current Students web site for related forms.

Tracking your degree progress

In order for students to verify that they are making progress toward graduation, they should meet regularly with their academic advisor and review their progress and plans for future study.

In addition, Master's students should make use of the academic advisement report (AAR) as a self-advising tool. This report is submitted with the graduation application as a contract between the School and the student. The AAR provides detailed course options for fulfilling all requirements for the degree. When using the AAR online, students have quick access to schedule details for approved courses and links to enrollment. It is recommended that students continually monitor their AAR and utilize this tool frequently for enrollment and advisement purposes.

If a student finds errors in their AAR, they should speak to their advisor and request updates to their AAR. Requests for updates include "Best Fit" changes (re-directing courses to the appropriate requirement area), authorized student exemptions (exemptions pre-approved by the Program Director and/or the Dean's Office), and corrections to transfer credits. See the SCI Current Students web site for related forms.

Informational videos and documents related to the AAR can be found on the Registrar's Student Training Web site. Detailed advising information is available on the program offering pages.

Statute of Limitation

The purpose of the statute of limitations is to ensure that a graduate degree from the University of Pittsburgh represents mastery of current knowledge in the field of study. Individual schools within the University may adopt policies that are more stringent than the University policies. Variations and additions to those rules within the School of Computing and Information are as follows:

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

From the student's initial registration for graduate study, all requirements for the PhD degree must be completed within a period of 10 years, or within eight years if the student has received credit for a Master's degree appropriate to the field of study. Some departments may have a more stringent statute of limitations for completion of Master's or Doctoral degrees. See the program offerings for specific details.

Under exceptional circumstances, a candidate for an advanced degree may apply for an extension of the statute of limitations. Requests for an extension must state the reason for the delay, provide evidence of continuing progress toward the completion of the degree, and include a detailed plan of study and proposed date for completion. The request must be approved by the chair of the student's Doctoral or Master's committee (if applicable) and the department or program chair or director of graduate studies, and be submitted to the Dean's Office for final action.

Leave of absence (LOA), Readmission, and Reinstatement

Graduate students may be granted a leave of absence under special conditions. Students who have resigned without requesting a leave of absence or have been away from the University for one or more years must apply for readmission or reinstatement. By University definitions, *readmitted students* previously attended the University of Pittsburgh and then enrolled at another external institution. *Reinstated students* previously attended the University of Pittsburgh and left for one or more calendar years, not attending external institutions in the meantime. These terms are attached to specific graduation requirements. All students interested in readmission or reinstatement must submit an application except for those on an approved leave of absence (see Special Admissions section for details).

Readmitted students follow the School and degree graduation requirements and rules based upon their term of readmission. Their statute of limitations is reset to their term of readmission and their transfer credits, advanced standing, and previously authorized exemptions will be reevaluated at the point of readmission.

Reinstated students follow the School and degree requirements and rules based upon their original term of entry to the School. Their statute of limitations is calculated against their original term of entry to the University and their transfer credits, advanced standing, and previously authorized exemptions will be accepted as previously approved at the point of reinstatement.

Exceptions to the reinstatement rules include:

- Students whose leave exceeds two years. All students who have been away from the University more than two years will be subject to the requirements of the School and of their major and/or certificate programs at the time of their reinstatement, rather than those in place at the time of their last attendance.
- Students on an approved leave of absence.

Under special conditions, graduate students may be granted one leave of absence. A maximum leave of two years may be granted to Doctoral students or one year to Master's students. The length and rationale for the leave of absence must be stated in advance, submitted via the School's Leave of Absence Request form (found on the School forms page of the SCI Current Student site), recommended by the Department or Program, and approved by the Dean's Office.

If granted approval by the Dean's Office, a student is ensured that the time of the leave shall not count against the degree's statute of limitations, the student's transfer credits and previously authorized exemptions will be accepted as previously approved. If a student petitioned the faculty and received permission to enroll in an external institution during their LOA for transfer credit in advance of their LOA, the credits may still transfer upon the student's return.

Students who have an approved LOA do not have to apply for readmission nor reinstatement. Instead, instructions for returning to the School will be shared with the student in the letter sent approving their leave.

A note on advising appointments and a returning from a break in continuous enrollment: Since registration open enrollment begins in the twelfth week of the preceding term, applications for reinstatement should be received prior to that period so that the student's application can be reviewed and their record updated. Similarly, students who are returning from a LOA should keep this timeline in mind for setting up an appointment with their advisor and/or notifying SCI Academic Records of their return to studies. Only after a student on an approved LOA has notified SCI Academic Records will their enrollment service indicator (registration hold) be released from their record.

Regardless of the conditions surrounding a student's leave - e.g., an intentional leave of absence, suspension, or an extended lapse in enrollment requiring reinstatement - when a student returns, they return in the standing attached to their record (good, warning, or probation) at the term of their departure.

Academic Integrity

Students have the responsibility to be honest and to conduct themselves in an ethical manner while pursuing academic studies. Students have the right to be treated by faculty in a fair and conscientious manner in accordance with the ethical standards generally recognized within the academic community (as well as those recognized within the profession). Should a student be accused of a breach of academic integrity or have questions regarding faculty responsibilities, procedural safeguards including provisions of due process have been designed to protect student rights. These may be found in Guidelines on Academic Integrity: Student and Faculty Obligations and Hearing Procedures.

Academic Standing and Dismissal

Academic standing is maintained and monitored each term by the Dean's office in conjunction with the School's various departments and programs. A student's academic standing is comprised of two factors: cumulative GPA and progress toward a degree. In order to be in good academic standing, students are expected to maintain a cumulative GPA of 3.00 or above and make continued progress towards their degree.

Students are placed in the **Academic Probation** status after earning a cumulative GPA below 3.00. Students may also be placed on Academic Probation if they fail to make progress toward their degree, as determined by their Department or Program, or fail to meet provisional conditions as outlined in their admissions letter (if applicable). Students placed on Academic Probation will be notified in writing by the Dean's Office. It is important to note that students on Academic Probation are not eligible for a teaching assistantships or fellowships, nor are they eligible to complete degree milestones (i.e., comprehensive examinations, thesis proposal, oral defense, or graduation).

Students who are on Academic Probation for failing to meet GPA requirements must earn a GPA of at least 3.00 for each term that they enroll until they have achieved a cumulative GPA of 3.00 or above. If such a student fails to earn 3.00 term GPA, they are subject to **Academic Dismissal**. Students who are on Academic Probation for failure to make degree progress must satisfy the conditions set forth by the department or program and

communicated by the probation letter by the specified deadline. If such a student fails to satisfy these conditions by the specified deadline, they are subject to **Academic Dismissal**. *Dismissal is a final action. Dismissed students are not eligible for reinstatement at the School of Computing and Information.*

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

Master's Degree Requirements

University policies governing Master's programs can be found in the *Regulations Pertaining to Master's Degrees* policy. The information below summarizes further SCI-specific regulations.

Credit Requirements

The minimum requirement for any Master's degree is 30 credits. Not more than six credits may be granted toward the completion of the requirements for a Master's degree for work completed at another graduate institution. SCI also offers professional Master's degree programs; per University regulations, not more than one-third of the total credits required to obtain the professional Master's degree may be granted for work completed at another graduate institution. Students must achieve the minimum GPA established by their department or program, in no case less than 3.00, to take the comprehensive examination and to graduate.

Comprehensive Examination

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

Thesis Option and Procedures

The requirement of a thesis or its equivalent is at the discretion of individual departments or programs. If a thesis is submitted, its form must be in accord with specifications available from The ETD Format Guidelines Manual and approved by the Associate Dean for Academic Programs. A report of the final oral examination in defense of the Master's thesis must be filed with SCI Academic Records. For further information on thesis requirements, including the makeup of the thesis committee, see "Thesis Option" under the Regulations Pertaining to Master's Degrees.

PhD Degree Requirements

University policies governing PhD programs can be found in the Regulations Pertaining to Doctoral Degrees policy. The information below summarizes further SCI-specific regulations.

Credit Requirements

The minimum requirement for the PhD degree of 72 credits may be earned in formal course work, directed study, independent study, and/or thesis and dissertation research. No more than 30 credits may be accepted for a Master's degree awarded by another institution to meet the minimum credit requirement; in recognition of graduate study beyond the Master's degree successfully completed elsewhere, no more than 12 additional credits may be accepted to meet the minimum credit requirement. Students must achieve the minimum GPA established by their department or program, in no case less than 3.00, to be eligible to undergo the preliminary examination, to take the comprehensive examination, to be admitted to candidacy for the PhD degree, and to be graduated.

Preliminary Examination

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

Comprehensive Examination

Comprehensive examination results must be reported promptly to the SCI Dean's Office, and no later than the last day of the term in which the examination is administered. Students must be enrolled in the term in which they are completing the Comprehensive Examination. See "Comprehensive Examination" under the Regulations Pertaining to Doctoral Study for further detail on regulations regarding the exam.

Doctoral Committee

Departmental Membership Status

University of Pittsburgh faculty members with a primary or joint appointment in a SCI department are considered internal members of that department. Individuals holding primary appointments outside of the department are considered as external to the department. However, a University of Pittsburgh faculty member who holds a secondary appointment in a SCI department and is an active participant within the department may petition the department to be considered as an internal member, as determined by departmental criteria. Upon receiving internal status within a department, a faculty member may no longer act in an external capacity.

Committee Composition

Doctoral dissertation committees are comprised of at least four members, including at least three internal members, and at least one external member from another department at the University of Pittsburgh or from an appropriate graduate program at another academic institution. Under certain circumstances, active researchers with appointments outside of academia may be approved as external committee members. The primary advisor and chair of the doctoral dissertation committee must be an internal member of the doctoral candidate's home department or program. The majority of committee members must be from the University of Pittsburgh, and all committee members from the University of Pittsburgh must be members of the graduate faculty. The composition of the committee must be approved by the Department Chair and the Associate Dean for Academic Programs prior to scheduling the dissertation proposal.

Internal committee members who leave the University after a graduate student has been admitted to candidacy may remain on the committee in their original capacity for a period of up to 12 months. If the chair of the dissertation committee leaves the University, they may continue to serve as the sole chair of the committee for a period of up to six months; after this time, a co-chair must be appointed from within the department or program. After this 12-month period, a departed committee member is no longer eligible to be an internal member or committee chair, but may be added to the committee as an external member; this may necessitate the addition of further internal committee members. If a committee member retires, they may remain on the committee as long as they are still willing to serve, and are still active professionally in the academic community.

Any changes in the membership or roles of the committee must be approved by the Department Chair or Program Director and the Associate Dean for Academic Programs.

Admission to Candidacy for the PhD Degree

After completion of the overview/proposal, the student should, in consultation with the student's major advisor, file the application for admission to candidacy for the Doctor of Philosophy degree. Students are informed of admission to candidacy by written notification from the Associate Dean for Academic Programs. Students must be enrolled in the term in which they are completing the overview for candidacy. For a listing of requirements for admission to candidacy, see "Admission to Candidacy for the Doctor of Philosophy Degree" under the Regulations Pertaining to Doctoral Degrees.

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

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

Dissertation

See "Dissertation and Abstract" under the Regulations Pertaining to Doctoral Degrees for an overview of requirements and form for the dissertation and abstract.

Language of the Doctoral Dissertation

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

Final Oral Examination

Students preparing to take their final oral examination in defense of their dissertation should refer to "Final Oral Examination" under the Regulations Pertaining to Doctoral Degrees for details on the examination. School-specific timelines and processes are outlined, below.

The final examination must be scheduled at least four weeks in advance. When determining a date for the examination, students should consider the ETD processing deadlines, allowing themselves sufficient time between final oral examination and ETD deadline to revise their dissertation and gather the related paperwork.

When an examination date is established, the chair of the doctoral committee must submit a defense announcement form to the Dean's office, listing the title of the dissertation and the time and place for its defense. This allows adequate time for announcement in the University Times as required by University regulations.

At least two weeks prior to the dates set for the final oral examination, all members of the doctoral committee should be provided with a copy of the dissertation.

All members of the doctoral committee must physically attend the examination; exceptions can be made with the permission of the Associate Dean for Academic Programs. A report of this examination and a report on approval of the dissertation, signed by all members of the doctoral committee, must be sent to the Associate Dean for Academic Programs for approval. The report on the approval of the dissertation may be signed concurrently with or subsequently to the report of the final oral examination. If the decision of the committee is not unanimous, the case is referred to the Associate Dean for Academic Programs for resolution.

It is the responsibility of the student's advisor to ensure that the dissertation is in final form before requesting signatures of all committee members. After the final oral examination is successfully completed, the student must submit their dissertation electronically. As well, the University requires students submit various forms, publication agreements, and fees in addition to the Electronic Thesis and Dissertation (ETD). Students submit all materials outlined in the SCI PhD Graduation Checklist by the ETD & Paperwork deadline. Any paperwork that is signed must be the original and therefore should be mailed if you are unable to submit it in person. See the checklist for details. ETD deadlines and the SCI PhD Graduation Checklist can be found on the Graduation Procedures page of the SCI Current Students site.

After submission of the ETD and paperwork, SCI Academic Records will review all items for completion and adherence to University formatting guidelines. Students must be available to make additional edits to formatting of their ETD; this process typically takes one month to complete before the document is approved for publication.

Students will be required to register for at least one credit in the term during which they expect either to complete degree requirements or have the oral defense. Students who have completed all credit requirements for the PhD degree may register for "Full-Time Dissertation Study." If the student is a doctoral candidate and off-campus, not using University facilities and/or faculty time, the candidate need only register for one credit per academic year to maintain active enrollment status.

If a student does complete all the work in a given term, including the dissertation defense, and has been cleared for graduation too late to be included on the graduation list for that term, the student may apply to graduate the following term and need not enroll for any courses or any credits, subject to approval. See "Student status during term of graduation" section for details.

Graduation

Student Status During Term of Graduation

Graduate students are required to be in "active status" (registered for one credit per academic year) during their term of graduation. If the student is utilizing University resources (e.g., completing a milestone requirement for graduation) during their term of graduation, they must be enrolled. All

students who do not plan to enroll in credits during their graduation term must provide a valid and extenuating reason via the Graduation Enrollment Waiver form. All requests will be reviewed by SCI Academic Records and the SCI Dean's Office.

Application

Graduation is not an automatic process. Students must file an application for graduation, including additional materials as outlined on the Graduation Procedures page of the SCI Current Students site. The School's deadlines, related late fees, worksheets for tracking progress toward degree completion, and contact information for graduation applications are linked from that source.

If your graduation is postponed, *you must reapply* by completing another Graduation Application.

Graduation Ceremonies

University Commencement

Candidates for graduation are encouraged to appear in person at the University Commencement Ceremony. Although degrees are conferred at commencement for all graduation periods, the official certification for April and May graduates occurs several weeks after the ceremony.

School Ceremony

The School of Computing and Information hosts an event to recognize its graduating students and awardees at the end of each term.

Certification of degree graduation requirements is processed after the recognition ceremony; Reading of a student's name at the Recognition Ceremony is not an indication of the student having met graduation requirements.

Event details, travel tips, and information regarding tickets are hosted in the Graduation section of the SCI Current Students site.

Post-Graduation Processing

Certification

Graduation certification is the process run by advisors and staff to ensure students have met all graduation requirements. This process is run after grades are posted for the term in question. Students who are concerned about their graduation eligibility should first review their academic advisement report (AAR) and then meet with their academic advisor.

Documentation (transcripts, diplomas, etc.)

Official documentation of graduation is managed by the University Registrar's Office. Inquiries regarding transcripts and diplomas should be directed to that office's Graduation/Diplomas service area.

All diplomas are mailed to students approximately six to eight weeks after the official certification date for each graduation period.

Special Academic Opportunities/Programs

Multiple Independent Degree Programs within SCI

Students may pursue two independent graduate degrees simultaneously in two different schools within the University (joint degree) or two different departments within the same school (dual degree). Students desiring to enroll in two degree programs must have approval from both program faculties and their respective deans, must be admitted into both programs, and must satisfy the degree requirements of both programs. Students are billed at the tuition rate of the primary academic program. Normally, such students should be enrolled for no more than a total of 15 credits per term.

The same examination, thesis, or dissertation cannot be used to fulfill requirements for two independent degrees, although a maximum of six credits of course work may be used in partial fulfillment of the requirements of both degrees. It is the responsibility of the dean or deans, if two schools are involved, to ensure that this regulation is enforced.

For further detail, please refer to the University policy regulating pursuit of Regulations Pertaining to Doctoral Degrees.

Joint SCI/GSPIA MSIS Degree Program

The School of Computing and Information will continue to honor the joint degree agreement made between the School of Information Sciences and the Graduate School of Public and International Affairs (GSPIA). The program allows students to complete the Master of Science in Information Science (MSIS) degree and one of three degrees in GSPIA simultaneously. To be admitted fully into the joint program, students must be accepted by both GSPIA and SCI. Admissions and course of study details are available on the MSIS degree requirements page of this catalog.

School of Computing and Information Faculty

A list of faculty at the School of Computing and Information can be found [here](#).

School of Computing and Information Programs and Course Offerings

Certificate

Cybersecurity, Policy and Law

Cybersecurity is a multidisciplinary domain that involves technical issues, security policies, regulation, and law. Our integrated curriculum - incorporating coursework from Pitt's School of Computing and Information, Graduate School of Public and International Affairs, and School of Law -- provides students with the skills to develop comprehensive cybersecurity policies and strengthen cybersecurity ecosystems to minimize risk.

As part of the certificate's multidisciplinary approach, the certificate requires courses to be taken from all three Pitt schools. Students must complete a minimum of three courses from SCI, one course from GSPIA, and one course from the School of Law to earn the certificate.

Courses

School of Computing and Information courses

- CS 2053 - APPLIED CRYPTOGRAPHY AND NETWORK SECURITY
- CS 2530 - COMPUTER AND NETWORK SECURITY
- CS 3525 - ADVANCED TOPICS IN SECURITY AND PRIVACY
- INFSCI 2150 - INFORMATION SECURITY AND PRIVACY
- INFSCI 2620 - DEVELOPING SECURE SYSTEMS
- INFSCI 2621 - SECURITY MANAGEMENT AND COMPUTER FORENSICS
- INFSCI 2625 - CYBERSECURITY AND PRIVACY REGULATION
- INFSCI 2731 - SECURITY IN E-COMMERCE
- TELCOM 2811 - HACKING FOR DEFENSE
- TELCOM 2821 - NETWORK SECURITY

Graduate School of Public and International Affairs courses

- PIA 2156 - ETHICS AND POLICY IN CYBER SPACE
- PIA 2327 - TERRORISM AND COUNTER TERRORISM
- PIA 2346 - INTRODUCTION TO AMERICAN INTELLIGENCE
- PIA 2360 - CYBER SECURITY POLICY
- PIA 2365 - TRANSNATIONAL CRIME
- PIA 2379 - INTRODUCTION TO CYBER CRIMES
- PIA 2389 - CRIMINAL OPERATIONS IN THE CYBERWORLD
- POLICY ANALYSIS FOR CYBERSECURITY AND INTELLIGENT STUDIES (NEW COURSE)

School of Law courses

- LAW 5260 - INTELLECTUAL PROPERTY
- LAW 5380 - CYBERCRIME
- LAW 5404 - CYBERSPACE AND THE LAW
- LAW 5430 - INFO PRIVACY LAW AND PRACTICE
- LAW 5623 - CYBER LAW AND POLICY
- LAW 5877 - LAW MAKING SEMINAR

Prerequisite Requirements

Students must have at least a BA or BS in computer science, information science, engineering, or similar type of degree.

Admissions Requirements

The following are requirements and prerequisites for admission to the Cybersecurity, Policy, and Law program.

All applicants must submit:

- Official transcript
- Two letters of recommendation that attest to the applicant's aptitude and motivation to pursue studies at a level beyond the bachelor's or master's degree
- Personal statement
- Resume

Applicants must have successfully completed at least one three-credit college course with a grade of B or better in each of the following:

- **Structured programming language.** A course on structured programming using Java, C# or C++ is required. Either INFSCI 0017 - FUNDAMENTALS OF OBJECT-ORIENTED PROGRAMMING or CS 0401 - INTERMEDIATE PROGRAMMING USING JAVA is recommended to meet this requirement.
- **Statistics.** A course covering data collection, descriptive and inferential statistics is optimal. It should cover measures of central tendency and variability, regression, correlation, non-parametric analysis, probability and sampling, Bayesian analysis, significance tests, and hypothesis testing. Either STAT 0200 - BASIC APPLIED STATISTICS or STAT 1000 - APPLIED STATISTICAL METHODS is recommended to meet this requirement.
- **Mathematics.** A college-level mathematics course, in discrete mathematics or calculus, is required. Any of the following Pitt courses are recommended to meet the requirement: MATH 0120 - BUSINESS CALCULUS, MATH 0220 - ANALYTIC GEOMETRY AND CALCULUS 1, or MATH 0400 - FINITE MATHEMATICS .

Doctoral

Computational Modeling and Simulation, PhD

For more information regarding the PhD in Computational Modeling and Simulation degree program, visit the Dietrich School of Arts & Sciences Catalog.

Master's

Computational Modeling and Simulation, MS

For more information regarding the Master of Science in Computational Modeling and Simulation degree program, visit the Dietrich School of Arts & Sciences Catalog.

Department of Computer Science

The faculty of the Department of Computer Science are committed to high quality graduate education. The broad scope of their research enables them to convey to graduate students a comprehensive, state-of-the-art understanding of computer science and its application to a wide range of other disciplines. A substantial level of sponsored research has been achieved thereby providing financial support for many graduate students in the form of research assistantships.

The graduate program in Computer Science is designed to prepare students for leadership careers in research and education in computer science. Our graduate students come from all corners of the globe to pursue education and research in most areas within computer science and in many application areas within other disciplines. They engage deeply with current research in computer science, and learn to carry out original research and contribute to the expanding body of knowledge within their research area. They are able to take advantage of the diverse faculty research collaborations and pursue multidisciplinary research with other departments and programs within the School of Computing and Information and across University schools, including the Intelligent Systems Program, the Learning Research and Development Center, the Dietrich School of Arts and Sciences, the School of Engineering, and the School of Medicine.

Policies for the Department of Computer Science

Advisors and Student Evaluations

New students are assigned a temporary advisor when they enter the program. The temporary advisor is a faculty member of the Department of Computer Science whose main role is to guide the new student, until a permanent research advisor is selected. Responsibilities of a temporary advisor include helping incoming students select coursework, approving their registration each term, providing advice and information about their academic program, and helping them acquaint themselves with faculty research interests to enable them to make an informed decision about selecting a permanent advisor. The temporary advisor must run the annual review and evaluation of the student's performance, unless a permanent advisor has been selected.

Doctoral students must select a research advisor, whose research interests closely align with their own, by the end of the second year. Master's students who seek to engage in independent work on either a thesis or a project must negotiate with a faculty member to supervise their work and become their research advisor. Doctoral and MS Students may change advisors at any time, after securing the consent of a new research advisor. It is the responsibility of the student to drive the process of switching advisors.

The research advisor assumes the responsibility for guiding the student in their academic program, for approving registration each term, and for presenting information about him or her at the annual student performance evaluation meeting. The research advisor also guides the student in selecting an appropriate research problem for a MS project, MS thesis, or PhD dissertation, and oversees the work. All students should meet with their advisor at least once per term. Students engaged in research are expected to hold a weekly meeting with their advisor.

A student who loses their advisor, for whatever reason, must inform the Graduate Programs and Examinations Committee (GPEC) Chair about the situation. The student must find a new research advisor within a reasonable period of time, not to exceed one term from when separation has occurred. A temporary advisor may be appointed until a new permanent advisor is selected.

Doctoral students, particularly those who seek to conduct inter- or multi-disciplinary dissertation research, may opt to select two co-advisors from fields of their interest to supervise their doctoral program. At least one of the co-advisors must be a full-time tenured or tenure-track faculty member of the Department. The co-advisors have the responsibility to provide their doctoral student knowledgeable support concerning their academic

programs, to establish and maintain a research program consistent with departmental standards, and to serve as intellectual mentors to ensure timely progress toward completing their research program.

The Department co-advisor is responsible for approving the student's registration every term and for attending the student annual performance review meeting to discuss the student's results, progress through the program, and other matters as they arise.

Annual Student Performance Evaluation Meeting

Once a year, the Department faculty will hold a meeting to evaluate student progress. In that meeting, information about each student's academic progress during the previous 12-month period is presented by their advisor. It is the student's responsibility to fill out a self-evaluation form when requested by the Graduate Program Administrator. After the meeting, students will receive a letter from the GPEC chair describing the faculty's assessment. Students who are not making satisfactory progress in the program will be sent a warning letter stating specific future performance goals. Failure to meet those goals may result in termination from the program.

Responsibilities

Students and advisors share the responsibilities for timely academic progress:

A student is expected to:

- be knowledgeable of SCI and departmental regulations and policies;
- register for courses on time (preferably as early as possible);
- fill in the online yearly evaluation form when requested to do so;
- assist the Graduate Program Administrator in keeping current their file, including an up-to-date mailing address;
- notify the Graduate Program Administrator if he or she changes advisor;
- (for doctoral students) file an application for candidacy for the PhD degree, after passing the dissertation proposal examination and at least eight months before the defense of the dissertation;
- follow the published instructions on SCI procedures for graduation, including filing an official application for graduation early in the term in which graduation is expected;

An advisor is responsible for the following:

- assist the student in selecting courses
- counsel the student and verify that their planned program is appropriate, given the student's academic goals and the CSD regulations;
- assess the student's progress towards a degree and provide him or her with advice;
- present information about the student's progress at the annual student performance evaluation meeting;
- assist the student in selecting a research area;
- validate the appropriateness of the student's research problem for a MS project or thesis or PhD Dissertation;
- assist the student in forming thesis, comprehensive examination, proposal and/or dissertation committees, as appropriate;
- oversee the student's oral examination for an MS thesis, doctoral comprehensive examination, doctoral dissertation proposal meeting, and doctoral dissertation defense examination. In all cases, after the examination has been completed the advisor will secure the signatures of all committee members, complete the required forms, give them to the administrator in the CSD Graduate Programs office, and communicate the results to the student.

The Chairperson of GPEC is expected to:

- act on petitions for transfer of credit, substitution of course requirements, and similar matters;
- report the results of the prelim examinations to the student and the student's advisor

Registration Requirements and Statute of Limitations

The Department abides by the SCI registration requirements and regulations pertaining to statute of limitations. See the SCI Credit and Enrollment Policies for details regarding these items.

Under exceptional circumstances a candidate for an advanced degree may apply for an extension of the statute of limitations. Students seeking support in extending their statute of limitations, should provide the Department with the reason for the delay, evidence of continuing progress toward the completion of the degree and a plan and proposed date for the completion of the degree. The request must be made in writing, approved by the student's advisor, GPEC, and the Department Chairperson. The Department will submit recommended extensions to the Dean for final action. Each student who requests an extension of the statute of limitations must be prepared to demonstrate proper preparation for the completion of all current degree requirements.

Under special circumstances, a graduate student may be granted one leave of absence. Consistent with regulations, a maximum leave of two years may be granted to doctoral students or one year to master's students. An application for a leave of absence must state the reason for the request, and must be approved by the student's advisor, GPEC, and the Department Chairperson, and then submitted to the Dean for final action. If approved, the time of the leave shall not count against the total time allowed for the degree(s) being sought by the student.

Grading Options

All formal course requirements in the Department must be completed with letter grades. Directed and independent study, and thesis and dissertation research must be taken with the S/N grading option. This includes CS2000, CS2003, CS2910, CS2990, CS3000, and CS3900.

Transferring Credit

Normally, students will fulfill Department course requirements by taking graduate-level courses within the Department, while they are enrolled in the department. However, in some cases, it may be desirable for a student to count coursework done outside the Department and/or prior to the time the student enrolls in the department. In such cases, written approval of GPEC is required.

Students can petition GPEC to use courses taken outside the Department in two different ways. First, students may apply to transfer the credits for these courses, using the credits towards the total number needed for a degree. Second, students may apply to use these courses to place out of requirements, i.e., to substitute a course taken elsewhere for a course required by the Department.

Note that these actions neither entail one another nor are mutually exclusive. For example, a student might enter the Department having previously taken a graduate-level course in Operating Systems. In that case, he or she might petition both to receive 3 transfer credits and to place out of the requirement to take CS2510. In another case, a student might have taken a course that is relevant to graduate studies in computer science, but does not directly correspond to any course required by the Department, for example, a course in Signal Processing. In that case, the student might petition only for a transfer of 3 credits.

Petitions to count courses taken outside of the Department must be submitted according to the following schedule:

1. A petition to count a course to be taken outside the Department during a given term must be submitted no later than 2 weeks after the start of the registration period for that term.
2. A petition to count course(s) taken prior to enrolling in the Department must be submitted within the first two terms after entering the program. A student must submit all petitions to transfer or substitute courses taken prior to enrollment at the same time. Petitions should be submitted during the first three weeks of any given term and GPEC will meet shortly thereafter to evaluate the merit of these petitions.
3. Normally, an incoming student will not enroll for credit in courses outside the Department during their first term in the program. In unusual cases, an incoming student may petition GPEC during the first week of classes to count such a course.

The University's Academic Regulations for transfer credits apply to courses taken outside the Department. The following restrictions also apply to students:

- For the MS degree, no more than one course (3 credits) that is either taken out-of-department or is 1600-level/CS20xx can be counted. This does not include the required course in theory or algorithms (CS1510 or CS1511). In no case will a 1000-level course taken prior to enrollment in the Department count towards the MS degree (including CS1510/CS1511).
- For the PhD degree, no more than 24 credits taken at the MS level may be transferred from out of the department. In addition, for courses taken beyond the MS level, 12 more credits may be transferred. Note however, that at most 4 of the 12 required courses for the PhD may be transferred. Thus, additional transfer credits (beyond 12 used to satisfy required courses) may be used towards the 72-credit requirement, but students must still complete 8 of the required courses after enrolling into the PhD program.
- After enrolling in the program, students will not normally be given approval to take a course outside the Department in place of a required Department course, if the student could take the required CSD course within the next academic year. At most two courses taken outside the Department can be counted towards the required courses after joining the PhD program.

Petitions to transfer credit and/or place out of requirements must be submitted to GPEC. For each course the student must submit the following:

- A transfer/course petition form, available from the administrator in the Department of Computer Science Graduate Programs Office. The form provides information about the material to be submitted along with the petition.

If GPEC recommends approval, it will send the recommendation to the Dean, who will make a final decision and notify the student.

The Deans Office then shares the approval with the Records Office for processing. Forms and School-level regulations regarding transfer credit are linked and explained on the SCI Catalog page. All materials noted on the SCI Transfer Credit Request Form must be submitted with a student's petition to transfer credit.

Awarding of Assistantships

The Department supports a number of students with Teaching Assistantships (TA) and Teaching Fellowships (TF). The following policies apply to the awarding of TAs and TFs; note that these policies are subject to the Department having adequate funds, as discussed below.

- Students may be admitted with or without support. Those offered support will be offered full support, except under extenuating circumstances. Students may be offered partial support during the summer.
- All PhD students admitted with support typically continue with the same level of support for the first two years, provided that he/she meets the eligibility requirements for the Assistantship.
- The eligibility requirements for a Teaching Assistantship or Fellowship are:
 - They are not placed on probation
 - They score at least a four in the English Language Fluency Test
 - They perform their Teaching Assistantship duties satisfactorily
 - They complete their preliminary examinations by the end of the second regular term of enrollment.
 - They have been in the program no more than 5 years.
 - They have maintained an S in the CS2003 course.
- PhD students in their 3rd year or beyond are also typically given support. However, responsibility for providing the financial support typically moves from the department to the student's advisor. Students must consult with advisors regarding financial support by the end of their second spring term of residence.
- All other students will be considered for support on a case-by-case basis. Criteria used in giving support to these students will include:
 - the number of course requirements already completed
 - scholarly performance, including GPA and evidence of research potential
 - the results of attempts to pass the preliminary examination
 - the score in the English Language Fluency Test, and
 - the quality of previous teaching performance (if applicable)
 - Note that it is often the case that some teaching assistantship positions become available only on very short notice before the start of a term. In order to satisfy the Department's teaching needs, these positions may be filled on an "emergency" basis, following these criteria as preferences. Students receiving these emergency appointments should be aware that their appointment does not imply any preferential treatment for appointments in subsequent terms.
- A student who has signed an assistantship contract may resign from all or part of the assignment for a given term any time up to four weeks before the start of that term. If a student does not resign from the assistantship assignment, he or she is bound by that assignment. Students violating this rule will not be eligible for assistantship positions in any subsequent term.

Fellowships and Awards

Each year, there are several opportunities for graduate fellowships and awards. It is the student's responsibility to watch for these opportunities, to determine eligibility, to seek faculty endorsement, and to complete an application.

For some external fellowships and awards, the Department may nominate a maximum number of students. When a fellowship or award limits the number of nominations, the Department will follow a four-step procedure to select the actual nominations. Note that a nomination by the department does not necessarily imply the awarding of a fellowship.

1. **Determine eligibility:** A student is eligible for a fellowship if he/she meets the criteria established by the organization that grants the fellowship. In addition, a student must be in good academic standing and meet certain criteria that are determined by the department. The specific department criteria will be announced each year prior to the fellowship deadline.
2. **Seek advisor endorsement:** An eligible student must discuss the fellowship with her/his advisor and get the agreement of the advisor to write a letter of recommendation.

3. **Complete an application:** If a student is eligible and has an advisor's endorsement, then a fellowship application should be completed and submitted to the Department of Computer Science.
4. **Selection of final nominees:** The applications will be made available to all faculty in the Department, who will vote on the final set of nominees. The faculty will vote based on the application materials and additional information about students' departmental activities that include attendance of departmental colloquia, and participation in the departmental research competitions. A student should write the application in a way that is clear to a non-specialist. The final set of nominees may submit their applications to the fellowship organization.

As an example of department criteria for fellowship eligibility:

1. Passed preliminary examination
2. An author on at least two papers
3. Primary author on at least one paper
4. A GPA of 3.60 or better

Grievance Procedures

Students who believe that a decision about their academic program has been made on the basis of incomplete or incorrect information may appeal the decision. To do this, the student should prepare a letter that outlines their position and provides evidence that supports the claim that the decision was inappropriate. The student should send the letter to the Department Chairperson, after securing the endorsement of their advisor. The Department Chairperson may either reject the appeal or forward it to the Dean for consideration. Appeals must be made within thirty days of the date of notification of any decision.

Glossary

CSD	Computer Science Department
SCI	School of Computing and Information
GAFA	Graduate Admissions and Financial Aid Committee
GPEC	Graduate Programs and Examinations Committee
GPA	Quality Point Average

Doctoral

Computer Science, PhD

Admissions Requirements

Students may be admitted to the PhD program even if they do not have an MS degree. Moreover, students admitted to the MS program are eligible to complete the requirements for the PhD degree, and if they wish to transfer to the PhD program, they must apply to the admissions committee, which will make its decision based on the student's performance in the MS program and on faculty recommendations.

The department is open to applications from exceptional students transitioning to graduate study in Computer Science from other undergraduate fields. Transitional students with demonstrated computing aptitude, as evidenced by outstanding grades in at least four (4) of the required computer science courses noted below, may be considered for admission to the graduate program. Completed minimally a selection of courses in the following topical areas (the corresponding Pitt course numbers are indicated):

In Computer Science, one course in each of:

- Intermediate Programming (CS 0401)
- Discrete Structures (CS 0441)

- Information/Data Structures (CS 0445)
- Computer Organization/Assembly Language (CS 0447)
- Theory (CS 1510 or CS 1511)
- Languages (CS 1520 or CS 1621)
- Systems (CS 1550 or CS 1651)

In Mathematics, the following:

- The two-course calculus sequence (MATH 0220, MATH 0230)
- A course in linear algebra (MATH 1180 or MATH 0280)
- A course in probability and statistics, requiring calculus as a prerequisite (STAT 1151, STAT 1152)

Degree Requirements

A student interested in earning the PhD must be admitted into that program. Master's students interested in the PhD program are encouraged to take the preliminary exams.

Residency Requirements

All students seeking the PhD degree in Computer Science must engage in a minimum of one term of full-time graduate study by the end of the term in which the comprehensive examination is taken.

Course Requirements

The PhD degree requires 72 credits of formal course work, independent study, directed study, and/or dissertation research. In addition to the credit requirement, twelve courses are required for the PhD categorized as follows: four foundation courses, six elective courses, CS 2001 (Research Topics in Computer Science) and CS 2002 (Research Experiences in Computer Science). Students are required to take CS 2001 during their first fall term and CS 2002 the following spring term.

The four foundation courses must cover each of the following four foundation areas.

Architecture and Compilers

- CS 2410 - COMPUTER ARCHITECTURE or
- CS 2210 - COMPILER DESIGN

Operating Systems and Networks

- CS 2510 - COMPUTER OPERATING SYSTEMS or
- CS 2520 - WIDE AREA NETWORKS

Artificial Intelligence and Database Systems

- CS 2710 - FOUNDATIONS OF ARTIFICIAL INTELLIGENCE or
- CS 2550 - PRINCIPLES OF DATABASE SYSTEMS

Theory and Algorithms

- CS 2110 - THEORY OF COMPUTATION or
- CS 2150 - DESIGN & ANALYSIS OF ALGORITHMS

The six elective courses must be 2100-level or higher Department courses and cannot be independent study courses (CS 2990, CS 3000), graduate internship (CS 2900), thesis project or research courses (CS 2910, CS 3900). At least two of the six courses must be at the 3000-level.

The following requirements apply to the 12 required courses:

- All must be taken for a letter grade.
- Students are required to complete the four required foundation area courses by the end of the fourth regular term of study. Regular terms include the fall and spring and do not include the summer session.

- The student must receive a grade of B or better in each of the required foundation area courses, and a grade of B- or better in each of the six additional courses; in addition, he or she must maintain an overall average QPA of 3.0 or better.
- No more than six of the 12 courses may be taken outside of the Department. This includes courses that are transferred from other universities. All courses from outside the Department must be approved by GPEC.
- All 12 courses must be successfully completed before admission to candidacy for the PhD (This normally occurs when the student passes the oral examination during the dissertation proposal.)

CS 2003 Requirement

After completing CS 2001 and CS 2002, students must enroll in CS 2003 until receiving a satisfactory grade of S for four regular terms.

In order to receive a satisfactory grade of S, students must:

- Attend at least seventy percent (70%) of Departmental Research Colloquia offered at the regularly scheduled course time over the course of the term. If there are an unexpectedly high number of Colloquia in a term (approximately more than one per week), attending only 10 Colloquia is required.
- GSO-sponsored colloquia occurring within the regularly scheduled course time shall be included in the count of colloquia offered for this requirement.
- Perform at least one (1) approved Research Activity during a regular term (fall or spring) of each academic year. Options include: Presenting a GSO-sponsored colloquium for CS 2003. Other related activities may be presented to GPEC in petition for approval. Other related activities may be presented to GPEC in petition for approval.

This annual requirement shall be evaluated only in the spring term and shall consider the academic year beginning with the prior fall term. As such, students may receive an S in the fall term having only fulfilled requirement (a), with the expectation that requirement (b) will be fulfilled in the spring.

Preliminary Examination

To complete the PhD Preliminary requirement, each student must pass the following Department courses during the first two regular terms of study:

- At least two courses at the 2100 - 2899 level with a grade of A- or higher
- At least two courses at the 2100 - 2899 level with a grade of B or higher

At least one of the courses taken for an A- must be a required foundation area course. Students are not permitted to repeat a class that they have passed (i.e., earned B or better) in order to improve the grade (i.e., to A or A-). Regular terms include the fall and spring and do not include the summer term.

Comprehensive Examination

The purpose of the comprehensive exam is to test the depth of knowledge of the student in one or more areas that are related to the student's area of research and that are approved by the comprehensive examination committee.

To pass the comprehensive exam a student must demonstrate sufficient expertise and depth of knowledge in a selected area of foundation to conduct research leading to a dissertation in that area. The comprehensive exam is an oral exam and is administered by at least three (3) Department of Computer Science faculty that compose the PhD dissertation proposal committee. The committee has to be approved by the department chair at least four (4) weeks before the scheduled exam date.

The student will prepare a 30-minute presentation which will be followed by an oral question and answer session. The exam is based on a reading list. The student should agree on a reading list with each member of the comprehensive exam committee at least two weeks prior to the exam. The length of the exam is at least two hours and the focus and goal of the presentation and the question and answer session will be specified by the committee at least two weeks before the exam.

Dissertation Proposal

All PhD students must conduct original research leading to a dissertation. This research must be conducted under the direction of a faculty advisor and begins with the preparation of a dissertation proposal. A written dissertation proposal of approximately 30-40 pages and a presentation of the

dissertation proposal are made to a committee of graduate faculty. This committee will examine the dissertation topic and research methods. The committee has to be approved by the department chair at least four (4) weeks before distributing the proposal or the dissertation to the committee.

The intent of requiring a dissertation proposal and an examination on it is to provide opportunities for substantive feedback from a student's committee on the dissertation topic and methods of research. The proposal and examination can aid the student in identifying especially promising research issues and in avoiding work that the committee deems to be unnecessary or inappropriate.

After obtaining approval of the dissertation proposal from the faculty committee, a student gains the official status of a PhD candidate. At this time the proposed research is conducted under the direction of the faculty advisor. Yearly meetings with the student's dissertation committee are required. Upon completion of the research, and subject to agreement from the faculty advisor and committee, the candidate schedules an open meeting at which the dissertation is presented and defended.

Doctoral Committee

Each PhD student should have a research advisor who must be a full time (primary appointment) Department of Computer Science faculty member and a member of the School of Computing and Information Faculty . If a student chooses to have two research co-advisors, at least one of the co-advisors should be a full-time (primary appointment) Department of Computer Science faculty member and a member of the SCI graduate faculty. A co-advisor who is not a full time Department of Computer Science faculty should have a secondary (including adjunct) appointment in the Department and be a member of the SCI graduate faculty. The student should work carefully with his or her advisor (or co-advisors) to select a doctoral committee. The committee is composed of:

- The research advisor or the two research co-advisors
- At least two other faculty members with a primary appointment in the Department of Computer Science, one of whom must be tenured in the Department.
- At least one faculty member from another department within the University that would serve as an external member. The external member(s) should also be a member of the graduate faculty. With the approval of the Dean, the external member of the committee may come from outside the University. The external member cannot serve as a co-advisor.

A majority of the committee members must be members of the SCI graduate faculty. Regulations require that the doctoral candidate and his or her committee meet at least once per year to evaluate the candidate's progress. The membership of the committee may be changed whenever it is appropriate or necessary, subject to the approval of the Department chair and the Dean. The committee, or any change to its member, has to be approved by the department chair at least four (4) weeks before distributing the proposal or the dissertation to the committee. Note that the doctoral committee need not be identical to the comprehensive examination committee, although usually there will be significant overlap between the two.

Written Proposal

A written proposal must be distributed to the examining committee at least two weeks in advance of the oral examination on the proposal.

There is no specific requirement on the length of the written proposal. However, each member of the Doctoral Committee may request that the student provides him/her with a short document (about 30-40 double-spaced pages) that summarizes the proposed research. This document normally contains:

- a clear statement of the problem to be solved,
- proposed methods of solution,
- scholarly review of related work,
- preliminary results obtained from a prototype program and/or a partial analysis, and
- a detailed research plan, stating the issues remaining to be addressed and suggestions for how they will be addressed, within a specified time frame.

Additional documents (including papers or technical reports) may be provided as appendices.

Oral Examination of the Proposal

After writing the proposal and conferring with his or her advisor (or co-advisors), the student must schedule an oral examination and send an announcement of the examination to all faculty and graduate students at least one week in advance of it. The oral examination (sometimes called the prospectus meeting) consists of two parts:

- a public presentation of the proposal open to all members of the University community, followed by questions from the general audience; this component is normally 40-50 minutes in length, and
- a private examination by the doctoral committee.

Any Department faculty member may attend the private examination, but only the examining committee will vote on results. The doctoral committee must unanimously approve the dissertation topic and research plan before the student may be admitted to candidacy for the doctoral degree.

The oral examination must be announced to the Department of Computer Science community via the faculty and graduate student mailing lists. This announcement must be at least one week prior to the examination. The announcement should include a title, abstract, committee member names, date of examination and location of examination. The abstract is due at least four (4) weeks before the scheduled proposal date.

It is the student's responsibility to schedule meetings with members of the examining committee within a few weeks after the examination to review criticisms and suggestions.

After passing the oral examination on the proposal, a student gains the official status of a PhD candidate.

Dissertation Research and Defense

The student must meet with his or her entire dissertation committee at least once per year during the time in which the research is being done. The student will also be meeting regularly with his or her advisor or co-advisors.

Upon completion of the research, the student prepares a written dissertation, and, in consultation with his or her dissertation committee, schedules a public oral defense.

The oral defense must take place at least eight months after the admission to candidacy. The normal format for the defense of dissertation is a public oral presentation of the research followed by questions by the dissertation committee and general audience. Only the dissertation committee will vote on the result. If the outcome is not unanimous, the case is referred to the Dean for resolution.

The oral defense is public and open to all members of the University community. Students must complete the defense announcement form at least four weeks prior to the scheduled exam date to allow sufficient time to publish the defense in the University Times.

It is the responsibility of the student's advisor or co-advisors to ensure that the dissertation is in final form before requesting signatures of all committee members. After the final oral examination is successfully completed, the student must submit his or hers theses or dissertation electronically. Check the graduation procedures on the SCI Current Students web page to see what you will need to submit for the Electronic Thesis and Dissertation (ETD).

Research, Internship Training Requirement

Research Training

Because the PhD degree is a research degree, students should expect to participate in research projects as a way of learning the art of doing research. Normally, a student will start by working with a faculty member on a pre-defined research problem, and later will define his or her own research problem as the subject of the dissertation.

There is no departmental requirement that students participate in the preparation of research grant proposals. However, it is desirable that all doctoral students have some exposure to the process of preparing and submitting research grant proposals. Normally this will be part of the mentoring by each student's advisor.

Internships

When an international student does an internship, he or she must use Curricular Practical Training (CPT). If a student on an F-1 visa has engaged in 12 months or more of full-time Curricular Practical Training, he/she will be ineligible for Optional Practical Training (OPT).

Timetable

Milestone	Limits
Preliminary Exam	Must be passed within two (2) regular terms after full status admission.
Foundation Area Courses	Must be passed within two (2) regular terms after admission.
Comprehensive Exam	Must be passed within four (4) calendar years of admission.
Oral Proposal	Must be passed within five (5) years after full status admission.
Defense and Dissertation	Submit an approved dissertation to the SCI Dean a minimum of eight (8) months after passing the proposal.
Statute of Limitations	PhD degree must be completed within a period of ten calendar years from the student's initial registration for graduate study (or within eight calendar years for students who enter with a Master's degree). These limits apply to all students, whether full-time or part-time.

Please note that each of the above milestones must be satisfied by the indicated deadline as part of maintaining good academic standing in the department.

Master's

Computer Science, MS

Admissions Requirements

The Department is open to applications from exceptional students transitioning to graduate study in Computer Science from other undergraduate fields. Transitional students with demonstrated computing aptitude, as evidenced by outstanding grades in at least four of the required computer science courses noted below, may be considered for admission to the graduate program. Completed minimally a selection of courses in the following topical areas (the corresponding Pitt course numbers are indicated):

In Computer Science, one course in each of:

- Intermediate Programming (CS 0401)
- Discrete Structures (CS 0441)
- Information/Data Structures (CS 0445)
- Computer Organization/Assembly Language (CS 0447)
- Theory (CS 1510 or CS 1511)
- Languages (CS 1520 or CS 1621)
- Systems (CS 1550 or CS 1651)

In Mathematics, the following:

- The two-course calculus sequence (MATH 0220, MATH 0230)
- A course in linear algebra (MATH 1180 or MATH 0280)
- A course in probability and statistics, requiring calculus as a prerequisite (STAT 1151, STAT 1152)

At the time of enrollment, the student must hold a BS degree.

Degree Requirements

Course Requirements

The MS degree requires 30 credits of formal course work. The 30 credits include a total of 24 credits plus an MS thesis, CS 2000; or 27 credits plus an MS project, CS 2910.

The 30 credits must include one course from each of the following foundation areas.

Foundation area courses must be completed with a grade of "B" or better.

Theory and Algorithms

- CS 2150 - DESIGN & ANALYSIS OF ALGORITHMS or
- CS 2110 - THEORY OF COMPUTATION or
- CS 1510 - ALGORITHM DESIGN or
- CS 1511 - INTRODUCTION TO THEORY OF COMPUTATION

Architecture and Compilers

- CS 2410 - COMPUTER ARCHITECTURE or
- CS 2210 - COMPILER DESIGN

Operating Systems and Networks

- CS 2510 - COMPUTER OPERATING SYSTEMS or
- CS 2520 - WIDE AREA NETWORKS

Artificial Intelligence and Database Systems

- CS 2710 - FOUNDATIONS OF ARTIFICIAL INTELLIGENCE or
- CS 2550 - PRINCIPLES OF DATABASE SYSTEMS

In addition to the course courses, list the two options:

- Thesis Option: six credits for the MS thesis + at least 12 additional credits of graduate (2100-level or higher) Department of Computer Science courses.
- Project Option: three credits for the MS project + at least 15 additional credits of graduate (2100-level or higher) Department of Computer Science courses.

All additional coursework must be completed with B- or better.

The additional credits cannot include independent or directed study courses (CS 2990, CS 3000), MS thesis or project, or research courses (CS 2910, CS 3900, ...).

To fulfill the additional credits, a student may count either (a) one CS 1600-level or CS 20xx course (excluding 2000-2009) or (b) petition GPEC to count one out-of-department course.

All coursework must be completed with an overall grade point average of 3.0 (B) or higher.

Thesis or Project

There are two options for completing the MS degree: the thesis option and the project option.

For the thesis option, the student must complete a written thesis, taking at least six credits of CS 2000, which must be taken with the S/N grading option. The student's advisor will assist him or her in selecting a thesis committee, to consist of at least three faculty members, at least two members must be from Computer Science (one being your advisor) and at most one from outside the department or University (all three could be from Computer Science). The committee will conduct a public oral final examination. The committee must be formed with all names sent to the graduate administrator at least four weeks before the examination date.

The committee will vote on the outcome and sign a report that will be filed in the SCI Graduate Students Office. The oral examination is public and open to all members of the Department of Computer Science. It must be announced via the faculty and graduate mailing lists at least one week prior to its scheduled date. The announcement must include a title, an abstract, name of advisor(s), name of committee members, date of examination, and location of examination.

For the project option, the student must complete a Master's project, taking at least three credits of CS 2910, with the S/N grading option. Approval of a project report by the advisor is required.

Both CS 2000 and CS 2910 are closed courses, requiring approval of the faculty advisor for enrollment.

Note that students selecting the thesis option must complete a total of four electives, plus foundation courses and thesis research (CS 2000), while students completing the project option must complete a total of five electives, plus foundation courses and directed research (CS 2910).

Internship

A maximum of one credit of MS Internship (CS 2900) can be taken by students wishing to supplement their in-class education with practical training. Note that international students must complete two semesters of full-time study prior to qualifying for CPT. Further, OIS is unlikely to approve CPT authorization during the final semester of study; please talk to the graduate studies administrator or the DGS for more information regarding these issues.

Students wishing to complete an MS Internship (CS 2900) as part of their MS degree must fill out a learning agreement in conjunction with their employer and their faculty advisor. Please note that MS Internships not contributing substantively to a student's graduate education will not be approved by the Department. Completed Learning Agreement forms (with all signatures) should be turned in to the graduate studies administrator prior to the add/drop deadline for the term in which the Internship will take place.

Timetable

MS degrees must be completed within four calendar years from the student's initial registration for graduate studies. This limit applies to all students, whether full-time or part-time. Normally, full-time students will complete the degree within two years.

Copies of the thesis must be submitted to the committee at least two weeks in advance of the examination.

The project report must be submitted to the advisor at least a week in advance of the end of the term.

Financial Support

Students whose goal is a terminal Masters degree do not receive financial support from the Department. Occasionally, opportunities for financial support for part-time instruction may be available. It is the responsibility of the student to watch and apply for these opportunities when they are announced.

Department of Informatics and Networked Systems

The Department of Informatics and Networked Systems is dedicated to innovating in education and research at the junction of information, networks, and human behavior towards discovery and modeling of new social and technical phenomena. We envision empowering humans and society through modeling and designing systems that are accountable, resilient, trustworthy, sustainable, and ethical. We seek to synthesize and advance fundamental science in information, networks, and human behavior.

We offer Master's degree programs that balance theoretical principles with hands-on learning experiences in all aspects of information systems, from storing and retrieving information to communicating information among systems. Our coursework and experiential learning opportunities enable students to explore and understand the interaction between people and information systems as well as the role of information systems and technologies in both business and society. The Bachelor and Master's degree programs we offer will prepare you for exciting careers in virtually every industry — health care, law, finance, manufacturing government, higher education, and more.

Our PhD students will have amazing opportunities to learn from faculty engaged in cutting-edge research funded by the National Science Foundation, Air Force Office of Scientific Research, National Institutes of Health, and more. As Pitt is one of the top 25 public research universities, our doctoral students have access to research projects and laboratories that will develop the next generation of information technologies. Students in both the Master's and Doctoral programs are encouraged to participate in research opportunities. Moreover, since the University is situated within a major urban area, our students have a vast array of internship and employment opportunities with major US corporations.

Our students acquire more than technical expertise; they learn how to connect people with technologies that can enhance their lives. Our goal is to educate people who are efficient on the job from day one, while providing the foundation for them to prosper professionally as their careers progress. You'll be able to build systems and manage information using today's technology—you'll also have the ability to design and master the technology of the future.

Academic Advising

Each student is assigned an academic advisor at the time of admission to graduate study. These assignments are made primarily on the basis of the student's background and interests as shown in the application. The student may at any time elect to change advisors: any such change requires the consent of the new advisor and must be reported to the Program. Forms for changing advisors are online through the School's Current Students Web site.

At the time of initial registration or before the completion of the first term, the student is encouraged to discuss a plan of study with their advisor. A plan of study is a series of courses designed to meet the minimum exit competencies judged by the faculty to be necessary for employment as an information professional. This plan is outlined in and completion is tracked through the Academic Advisement Report (AAR). Students coming into the program without prior course work or work experience in the areas covered by the plan of studies should adhere fairly closely to the suggested plan. If there has been course work or experience in one or more of the content areas of the program, students may be permitted to substitute and take courses in an area in which additional background is needed. Substitutions and exceptions must have approval of the advisor and must be documented through the Records Office. Information regarding documenting exceptions is available on the School's Current Students Web site.

Details regarding advising and resources for tracking your degree progress (the AAR) are available on the School's Catalog page, under the Advising section.

Each student must ensure that the AAR meets all of the program requirements for graduation. At the completion of the program, the Records Office coordinates with the Department to certify all students for graduation. See the SCI Catalog page for more details and regulations pertaining to graduation.

Stricter advising guidelines and regulations apply to the doctoral students. See the doctoral program regulations for details.

Policies for the Department of Informatics and Networked Systems

Beyond the School's Grading and Credit policies, the department imposes stricter rules. Rules pertaining to DINS students are as follows.

Maintenance of a 3.0 GPA

Each student must maintain a 3.0 Grade Point Average (GPA) for all credits of graduate level coursework for either a degree or graduate certificate. Failure to maintain a cumulative 3.0 GPA will result in the student being placed on academic probation. If the student does not raise the GPA to a 3.0 after the next nine credits, the student will be dismissed from the program in which he or she is enrolled. Students should refer to the Academic Standing and Dismissal section of the SCI Catalog page for full definitions and explanations of the academic standing review.

Grades for Individual Courses

All students must earn satisfactory grades in each course taken. A grade of C-, D+, D, D-, F and Unsatisfactory are unacceptable for graduation credit. A course for which such an unsatisfactory grade is earned must be repeated if it is a course that is a degree requirement (e.g., INFSCI 2500). Courses may be repeated only once. Elective courses need not be repeated; another course may be taken to replace it. However, the original course remains on the transcript and a higher grade must be earned to maintain a 3.0 GPA. Full details regarding SCI Grade and Course Repeat policies are available on the School's Catalog page.

Declaring a Specialization

The MSIS program offers areas of concentration, commonly referred to as "specializations," that appear on the student's transcript. Students may change their specialization until the end of the term in which they earn 18 credits. To do so, they must complete the Graduate Academic Plan Change Form available on the SCI Current Students Web site. Please note that approval of the academic advisor is required.

After the term in which the student earns 18 credits, no changes in specialization will be permitted with one exception: students may change to the general Plan of Study up until their last term of study. For example, a student will not be permitted to switch from the Geoinformatics specialization to the Big Data Specialization. But, they would be permitted to switch from the Big Data specialization to the General Plan of Study.

At the time of graduation, if a student has successfully earned the required number of credits for graduation but failed to meet a requirement of a specialization, the student will automatically be switched to graduate from the general program of study.

Satisfactory (S/NC) /Audit Grading System

Students are permitted to earn at most six credit hours with the grading option S as part of the credits required for the degree. An S grade is equated with a grade of B, B+, A-, A or A+. Course performance equivalent to a B- or lower will result in the assignment of an audit (N grade) and will not count towards graduation. A grade of satisfactory (S) has no quality points associated with it and is not used in calculating the GPA.

See the SCI Catalog for information regarding the selection of an alternative grading option (S/NC or Audit).

Certificate

Big Data Analytics

The Department of Informatics and Networked Systems provides several options for advanced study in information science beyond a bachelor's or master's degree. The Certificate of Advanced Study (CAS) offers a highly-concentrated curriculum on the theory and application of the most current information field trends.

The 15-credit certificate program in Big Data Analytics is designed to address the needs of professionals with a Bachelor of Science or a Master of Science degree in Information Science or a related field in order to expand their professional skills and qualifications in effectively handling large amounts of disparate data.

Big data involves three major dimensions: data size, data rate, and data diversity. Students completing the certificate will gain essential, in-depth knowledge of techniques and technologies relevant for big data management.

The courses offered allow you to tailor your program of study to your individual interests.

15-credit Post-Bachelor's Certificate

Students should have earned a BS/BE degree from an accredited college or university in Computer Science, Information Technology, Telecommunications, Computer or Electrical Engineering, Mathematics or a related field with a scholastic average of a B (3.0 on a 4.0 scale) or better.

Post-Bachelor's students must complete three of the following courses with a grade of C or better:

- INFSCI 2160 - DATA MINING
- INFSCI 2591 - ALGORITHM DESIGN
- INFSCI 2711 - ADVANCED TOPICS IN DATABASE MANAGEMENT
- INFSCI 2725 - DATA ANALYTICS

Elective courses

Post-Bachelor's students must complete two of the following courses with a grade of C or better:

- INFSCI 2130 - DECISION ANALYSIS AND DECISION SUPPORT SYSTEMS
- INFSCI 2140 - INFORMATION STORAGE AND RETRIEVAL
- INFSCI 2410 - INTRODUCTION TO NEURAL NETWORKS
- INFSCI 2430 - SOCIAL COMPUTING

- INFSCI 2801 - GEOSPATIAL INFORMATION SYSTEMS (GIS)
- INFSCI 2802 - LOCATION-BASED SERVICES
- INFSCI 2809 - SPATIAL DATA ANALYTICS
- TELCOM 2125 - NETWORK SCIENCE AND ANALYSIS
- LIS 2690 - INFORMATION VISUALIZATION

Coursework must be completed within a period of four calendar years from the student's initial registration in the certificate program.

15-credit Post-Master's Certificate

Students should have earned a MS degree from an accredited college or university in Computer Science, Information Technology, Information Science, Telecommunications, Computer or Electrical Engineering, Mathematics or a related field with a scholastic average of a B (3.0 on a 4.0 scale) or better.

Post-Master's students must complete three of the following courses with a grade of B or better:

- INFSCI 2160 - DATA MINING
- INFSCI 2591 - ALGORITHM DESIGN
- INFSCI 2711 - ADVANCED TOPICS IN DATABASE MANAGEMENT
- INFSCI 2725 - DATA ANALYTICS

Elective courses

Post-Master's students must complete two of the following courses with a grade of B or better:

- INFSCI 2130 - DECISION ANALYSIS AND DECISION SUPPORT SYSTEMS
- INFSCI 2140 - INFORMATION STORAGE AND RETRIEVAL
- INFSCI 2410 - INTRODUCTION TO NEURAL NETWORKS
- INFSCI 2430 - SOCIAL COMPUTING
- INFSCI 2801 - GEOSPATIAL INFORMATION SYSTEMS (GIS)
- INFSCI 2802 - LOCATION-BASED SERVICES
- INFSCI 2809 - SPATIAL DATA ANALYTICS
- TELCOM 2125 - NETWORK SCIENCE AND ANALYSIS
- LIS 2690 - INFORMATION VISUALIZATION

Coursework must be completed within a period of four calendar years from the student's initial registration in the certificate program.

Admissions Requirements

The following are requirements and prerequisites for admission to this program.

All applicants must submit:

- Official transcript
- Two letters of recommendation that attest to the applicant's aptitude and motivation to pursue studies at a level beyond the bachelor's or master's degree
- Personal statement
- Resume

Applicants must have successfully completed at least one three-credit college course with a grade of B or better in each of the following:

- **Structured programming language.** A course on structured programming using Java, C# or C++ is required. Either INFSCI 0017 - FUNDAMENTALS OF OBJECT-ORIENTED PROGRAMMING or CS 0401 - INTERMEDIATE PROGRAMMING USING JAVA is recommended to meet this requirement.
- **Statistics.** A course covering data collection, descriptive and inferential statistics is optimal. It should cover measures of central tendency and variability, regression, correlation, non-parametric analysis, probability and sampling, Bayesian analysis, significance tests, and

hypothesis testing. Either STAT 0200 - BASIC APPLIED STATISTICS or STAT 1000 - APPLIED STATISTICAL METHODS is recommended to meet this requirement.

- **Mathematics.** A college-level mathematics course, in discrete mathematics or calculus, is required. Any of the following Pitt courses are recommended to meet the requirement: MATH 0120 - BUSINESS CALCULUS, MATH 0220 - ANALYTIC GEOMETRY AND CALCULUS 1, or MATH 0400 - FINITE MATHEMATICS.

15-Credit Post-Bachelor's Certificates

A BS/BE degree from an accredited college or university in Computer Science, Information Technology, Telecommunications, Computer or Electrical Engineering, Mathematics or a related field with a scholastic average of a B (3.0 on a 4.0 scale) or better

15-Credit Post-Master's Certificates

An MS degree from an accredited college or university in Computer Science, Information Technology, Information Science, Telecommunications, Computer or Electrical Engineering, Mathematics or a related field with a scholastic average of a B (3.0 on a 4.0 scale) or better

Information Science

The 24-credit Certificate of Advanced Study (CAS) provides a personalized program of study beyond the MSIS degree. The program will provide you with an opportunity to explore a specific field of interest or to update skills and competencies. This certificate program is designed for people who do not wish to pursue the PhD degree.

In this quickly-evolving field, it is critical for professionals to gain knowledge of leading-edge topics and to update their skills to reflect the latest in technology and research. Our CAS will keep your skills current.

Courses

Candidates for the Information Science certificate must complete the following requirements:

- A total of 24 credits in graduate-level courses acceptable to the advisor and passed with a grade point average of at least B (3.00 on a 4.00 scale)
- Fifteen of the 24 credits must be taken from among the approved courses for the MSIS degree program.

Course work must be completed within a period of four calendar years from the student's initial registration in the certificate program.

Admissions Requirements

The following are requirements and prerequisites for admission to the certificate program.

An MS degree from an accredited college or university in Computer Science, Information Technology, Information Science, Telecommunications, Computer or Electrical Engineering, Mathematics or a related field with a scholastic average of a B (3.0 on a 4.0 scale) or better

All applicants must submit:

- Official transcript
- Two letters of recommendation that attest to the applicant's aptitude and motivation to pursue studies at a level beyond the bachelor's or master's degree
- Personal statement
- Resume

Applicants must have successfully completed at least one three-credit college course with a grade of B or better in each of the following:

- **Structured programming language.** A course on structured programming using Java, C# or C++ is required. Either INFSCI 0017 - FUNDAMENTALS OF OBJECT-ORIENTED PROGRAMMING or CS 0401 - INTERMEDIATE PROGRAMMING USING JAVA is recommended to meet this requirement.

- **Statistics.** A course covering data collection, descriptive and inferential statistics is optimal. It should cover measures of central tendency and variability, regression, correlation, non-parametric analysis, probability and sampling, Bayesian analysis, significance tests, and hypothesis testing. Either STAT 0200 - BASIC APPLIED STATISTICS or STAT 1000 - APPLIED STATISTICAL METHODS is recommended to meet this requirement.
- **Mathematics.** A college-level mathematics course, in discrete mathematics or calculus, is required. Any of the following Pitt courses are recommended to meet the requirement: MATH 0120 - BUSINESS CALCULUS, MATH 0220 - ANALYTIC GEOMETRY AND CALCULUS 1, or MATH 0400 - FINITE MATHEMATICS.

Telecommunications

Students who have graduated from a Master's program may pursue a certificate in Telecommunications.

In consultation with an advisor, students project a Plan of Study to meet their specific interests or needs, and these plans may change as the program proceeds. Students may select graduate-level courses in other departments within the University as well as at Pittsburgh Council on Higher Education-cooperating institutions. Admission to all courses is contingent upon meeting course prerequisites and is subject to the advisor's approval.

Courses

Candidates for the Telecommunications certificate must complete the following requirements:

- A total of 24 credits in graduate-level courses acceptable to the advisor and passed with a grade point average of at least B (3.00 on a 4.00 scale)
- Fifteen of the 24 credits must be taken from among the approved courses for the MST degree program.

Course work must be completed within a period of four calendar years from the student's initial registration in the certificate program.

Admissions Requirements

The following are requirements and prerequisites for admission to the certificate program.

A MS degree from an accredited college or university in Computer Science, Information Technology, Information Science, Telecommunications, Computer or Electrical Engineering, Mathematics or a related field with a scholastic average of a B (3.0 on a 4.0 scale) or better

All applicants must submit:

- Official transcript
- Two letters of recommendation that attest to the applicant's aptitude and motivation to pursue studies at a level beyond the bachelor's or master's degree
- Personal statement
- Resume

Applicants must have successfully completed at least one three-credit college course with a grade of B or better in each of the following:

- **Structured programming language.** A course on structured programming using Java, C# or C++ is required. Either INFSCI 0017 - FUNDAMENTALS OF OBJECT-ORIENTED PROGRAMMING or CS 0401 - INTERMEDIATE PROGRAMMING USING JAVA is recommended to meet this requirement.
- **Statistics.** A course covering data collection, descriptive and inferential statistics is optimal. It should cover measures of central tendency and variability, regression, correlation, non-parametric analysis, probability and sampling, Bayesian analysis, significance tests, and hypothesis testing. Either STAT 0200 - BASIC APPLIED STATISTICS or STAT 1000 - APPLIED STATISTICAL METHODS is recommended to meet this requirement.
- **Mathematics.** A college-level mathematics course, in discrete mathematics or calculus, is required. Any of the following Pitt courses are recommended to meet the requirement: MATH 0120 - BUSINESS CALCULUS, MATH 0220 - ANALYTIC GEOMETRY AND CALCULUS 1, or MATH 0400 - FINITE MATHEMATICS.

Doctoral

Information Science with a concentration in Telecommunications, PhD

The Doctor of Philosophy (PhD) degree in Information Science with a Focus in Telecommunications (henceforth called PhD in Telecommunications for short) prepares students for independently engaging in advanced work in high-quality research and teaching. It provides research oriented graduate study and professional specialization in telecommunications and emphasizes both scholarly and applied research. To earn a PhD degree, a student must demonstrate breadth of knowledge, give evidence of superior scholarship and mastery of a specialized field, and must demonstrate their ability to do significant and relevant research. In addition, the student must conceive, write and defend a PhD dissertation representing a significant and original contribution to current academic research as demonstrated by a public dissertation defense and publication in established peer-reviewed academic conferences and/or journals. Major milestones en-route to the PhD degree are the preliminary examination, the comprehensive examination, the dissertation proposal, and the dissertation defense.

Admissions Requirements

All applicants to the School of Computing and Information must adhere to the admissions requirements outlined in the School's Admission Requirements and Procedures section of the Catalog. In addition, the following are requirements for admission to graduate study in Telecommunications for pursuing a PhD degree.

1. A master's degree from an accredited university, a recognized international program, or the equivalent. Exceptional students with a technical Bachelor's degree may also be admitted. Such students must still satisfy all other requirements that follow.
2. Attainment in graduate work of a minimum quality point average of 3.3 (on a scale with A having a value of four points per credit). An international student's quality point average will be calculated on the basis of equivalency from universities that use a different scale.
3. As evidence of the ability to undertake doctoral work, an essay (not exceeding 1000 words) indicating, as specifically as possible, the student's academic and professional goals in relation to the Telecommunications doctoral program and identifying potential areas and/or topics in which the student expects to pursue dissertation research.
4. Submission of scores from the Graduate Record Examination (GRE) taken within three years of the application. Scores on all three sections (verbal, quantitative, and analytical) of the GRE must be submitted.
5. At least three references from persons in the professional and academic communities. The faculty may, on occasion, require additional references.
6. Evidence of academic completion of:
 - Two different scientific computer programming languages,
 - Introductory class in probability and statistics
 - Differential and integral calculus

In addition, a candidate may elect to include the following optional material:

1. A complete curriculum vitae that provides an overview of education, work, publication, and other professional activities.
2. An example of published writing.
3. A description of any published or unpublished research, contributions to the professional or scholarly literature, and other professional or academic experience relevant to an assessment of their capacity to pursue doctoral study successfully.

Students whose complete credentials are not available for full admission may register as special students until the completed credentials are received, provided all other requirements have been satisfied. Students with deficiencies in either coursework or scholastic achievement may be admitted provisionally. Prerequisite courses should be completed within the first two terms.

Degree Requirements

A candidate for the PhD should have broad knowledge of the field of telecommunications as well as a specialization in the area of major interest. Every candidate should have, in addition, a strong background in research methodologies.

The Telecommunications PhD program requires a minimum of 48 credits beyond a master's degree. Exceptional students with a technical bachelor's degree may be admitted on occasion and in such cases, a minimum of 72 credits beyond the baccalaureate degree is required. The 72 credits must include the required courses (or their equivalent) for the MST degree at the University of Pittsburgh.

All PhD candidates must complete:

- 12 credits of required courses
- 12 credits of doctoral seminars
- Six credits of minor courses

- At least 18 credits of dissertation research and writing (no more than 18 credits applied toward graduation)
- 48 of the 72 credits must be advanced coursework beyond the MST degree (or its equivalent).

A plan of study should be designed by the advisor and student as early as possible after admission. A copy of the plan of study must be on file in the student's folder and should be consulted during each registration period.

While these are minimum credit requirements, every PhD student may be required to take more credits of coursework to obtain the breadth and depth of knowledge required to successfully complete their dissertations. Graduation depends upon meeting the minimum credit requirements and all other requirements.

Preliminary Examination Requirements

The preliminary examination, according to Regulations Governing Graduate Study at the University of Pittsburgh, is held:

"...to assess the breadth of the student's knowledge of the discipline, the student's achievement during the first year of graduate study, and the potential to apply research methods independently.... The evaluation is used to identify those students who may be expected to complete a doctoral program successfully and also to reveal areas of weakness in the student's preparation."

The Telecommunications faculty has clarified further that the overall objectives of the preliminary examination are:

- To test the PhD students for breadth of knowledge
- To evaluate their skills, and their ability to apply them
- To evaluate their ability to do research.

Every student must complete the preliminary examination within four semesters of his/her admission (not counting Summer) into the program unless an exception is granted by the PhD Committee. Exceptions are typically not allowed for full-time students. Exceptions may be made for part-time PhD students in consultation with their advisors. The preliminary examination consists of authorship, presentation, and public defense of a publishable quality research paper as described below.

Eligibility and Preparation

To be admitted to the preliminary examination a student must:

1. Have completed a master's degree in a closely related field (e.g., telecommunications, information science, computer science, engineering, mathematics); Exceptional students admitted after a Bachelor's degree must have completed all pre-requisite coursework.
2. Be admitted to full graduate status (i.e., all provisional admission requirements must be completed);
3. Have attended the PhD orientation session;
4. Be registered in the term in which the preliminary examination is taken; and
5. Apply in writing, with the advice and consent of a faculty advisor, to the Telecommunications PhD Chair and Department administration by the announced deadline.

Traditional preparation for the preliminary examination includes graduate-level coursework and familiarity with reading and reviewing papers and identifying research gaps. In addition, doctoral students should become familiar with the proceedings of the relevant professional societies of the field and copies of recent preliminary examination papers available from Department administrators.

Content and Format

The preliminary examination consists of two parts:

1. Research Project and Paper

During the first year of doctoral study, under the direction of the advisor (or another full or adjunct member of the program's graduate faculty), students will design and complete a research project. The project should reflect only those activities undertaken during the first year of study. A previous master's thesis or other work completed prior to the start of doctoral study may not be submitted for this requirement. While much research involves working in a larger team, the student's role in the project and in writing the paper should be significant. The student must be the primary author, and ideally should be the sole author. The student should seek a project or a part of a project in which the student can take the lead in conducting the research and writing up the results under the direction of the advisor. However, unlike a dissertation or thesis, the research paper submitted for the preliminary evaluation may include co-authors. In this case, the role of each co-author should be clearly stated in writing by the

student and submitted along with the research paper. Furthermore, the paper may be integrated with other work and later submitted for publication with a longer list of authors.

Research papers take many forms, and some venues require particular nomenclature or forms. The paper submitted to the faculty to meet this requirement should include the following components:

- A clear statement of the problem
- An innovative idea that addresses the problem
- A survey of the relevant research literature
- An explication and implementation of a methodology for addressing the problem
- Evidence that the described idea achieves its goal
- Analysis and evaluation
- Discussion of the research, including but not limited to shortcomings of the work and directions for future work.
- A list of references

While it is possible to deviate from this structure, this should only be done with the support of the advisor.

2. Oral presentation and defense

Submission and presentation of the paper must be made not later than in the last January of the first four terms in the program. Students must complete six credits of doctoral courses and six credits of doctoral seminars before taking the preliminary examination. The due date for submission of the paper is the second Friday of January. On the fourth Friday of January, papers will be presented orally in conjunction with the IS PhD oral presentations to graduate faculty in a public forum. Each student will give a 20-minute long oral presentation of their paper to the faculty, followed by a 20-minute discussion. All presentations will be made on a single day. Faculty will meet the same day to grade the written and oral performance. The result of the exam will be: (a) pass, (b) fail with one more chance to re-take the exam the following year, or (c) fail with no chance to re-take the exam.

Timing and Completion of Milestone

A student has to pass the preliminary exam at the earliest opportunity (within the first four semesters) and should not wait till completion of coursework to attempt the preliminary exam. A student will have successfully completed the prelim exam after passing the oral presentation and defense and completion of the coursework as required.

With the successful completion of the preliminary examination, the student is fully admitted to doctoral study in telecommunications. The Program Chair will notify the student, in writing, of admission to doctoral study. After admission, the student must complete the remaining coursework including doctoral level seminars; probability and statistics, research design, and information science course requirements; and the residency requirement.

A student whose performance on the preliminary examination is judged to be inadequate may be subject to Academic Dismissal at the end of the term.

Comprehensive Examination

The student must satisfactorily pass a comprehensive examination designed to assess mastery of the general field of telecommunications, acquisition of both depth and breadth in the area of specialization within the field, and ability to use the research methods of the discipline. The purpose of the comprehensive examination is to assess the student's ability to understand a sub-area of telecommunications in depth. In order to do research, a student must be able to read, understand, present, and criticize research papers in the field. It is also important that the student be able to explain it in depth to someone who is unfamiliar with that area. Thus, this examination centers on the development of a tutorial as well as a lecture in which the student must explain the subject to the satisfaction of the entire Telecommunications faculty. From a learning perspective, this provides the student with the experience of structuring and explaining a technical topic in detail.

Eligibility and Preparation

Prior to the comprehensive examination, a student must complete most of the course and seminar requirements. This includes:

1. Completed most of the of graduate course and seminar work for completion of a PhD These credits include:
 1. 12 credits of doctoral-level classes (as determined by the advisor),
 2. Six credits of minor requirement (Telecommunications courses excluded), and
 3. 12 credits in doctoral seminars;
2. Completed a "state-of-the-art" paper to be submitted to graduate faculty two weeks before the examination date;
3. Be registered in the term in which the comprehensive examination is taken; and
4. Apply to the Chair of the PhD program for permission to take the comprehensive examination.

Content and Format

The comprehensive examination has a written component and an oral component. In preparation for the one-hour oral examination, the examinee must prepare a written "tutorial" paper that must be submitted to the Telecommunications faculty two weeks prior to the scheduled exam date. The "tutorial" paper is a critical essay that explores the literature of the selected topic; the student identifies, synthesizes, and evaluates the relevant literature on the topic.

The comprehensive examination will be conducted by at least four members of the graduate Telecommunications faculty. The exam will be directed at the "tutorial" paper and the various relationships among the components of telecommunications. Goals of the comprehensive examination committee are to assess the student's understanding of the topic of the "state-of-the-art" paper, the theoretical framework that supports it; the quality of the student's research skills necessary to understand, integrate, and extend knowledge gained through scholarly inquiry; and the relationships of the topic to telecommunications. The results of the exam are conveyed to the student, by the examination committee, usually within an hour after completion of the exam. The result of the comprehensive examination is a pass or fail. If a student fails, they may retake the exam one more time. A student who fails the comprehensive examination twice is no longer eligible to continue in the PhD program.

Process

The procedure to schedule and take the comprehensive examination is as follows:

1. The student will select a topic of interest in his research area in consultation with his advisor. When the advisor is satisfied that the student understands the subject matter in sufficient depth, the student prepares a tutorial paper.
2. The student will prepare a comprehensive literature survey of the research on this topic and prepare a tutorial document that is referenced and complete in itself. This document must not exceed 20 pages in length, with a font size of 12 pt, and margins of one inch on the left and right. Also, the document must be prepared so that the faculty can easily read it. A researcher in Telecommunications who is not familiar with the research topic should be able to understand and appreciate the issues in this topic by reading this document.
3. The work should be completely done by the student except for informal suggestions from the advisor. The advisor may provide only grammatical feedback; it is up to the student to decide what content is necessary and how to organize it because this is a crucial part of the tutorial. Occasionally, the advisor may suggest the inclusion of certain topics.
4. The student finds a date for the presentation where at least four of the telecommunications faculty can attend. At least two weeks before the examination date, the student must deliver a final copy of the tutorial document to all faculty members.
5. It is strongly recommended that the student provide some preliminary research results on an advancement in the topic or at least reproduce the most relevant work conducted by researchers on this topic.
6. The student has to publicly present the material from this document orally on the day of the examination to the faculty in a presentation lasting 45 minutes. The presentation will be tutorial in nature with additional results if any. The faculty may question the student to assess their understanding of the topic in question as well as in any general topic in the area. The faculty may ask questions for clarification and to test the student's grasp of the subject as well as closely related subjects and methodologies.

The response of the faculty may take on several forms, including:

- Unconditional pass
- Conditional pass, with conditions such as
 - Additional recommended or required coursework
 - Specific modification to the tutorial paper
 - Re-attempt the oral presentation
- Fail

All Telecommunications students are encouraged to attend comprehensive exams to see what is expected and learn from the tutorial presentation.

Timing and Completion of Milestone

The Comprehensive should be taken after the student has completed almost all coursework, seminars, etc. and after the student has successfully completed the Preliminary examination. Typically, a student will complete the comprehensive exam within 18 months of completing the preliminary exam.

After successfully completing the comprehensive examination, the student is admitted to doctoral pre-candidacy and works with a faculty advisor to prepare a dissertation proposal and form a dissertation committee. The dissertation proposal must be approved by the student's dissertation committee. Successful completion of the comprehensive examination and approval of the dissertation proposal permit the student's academic advisor to recommend the student for doctoral candidacy. Normally a student will begin to register for dissertation credits after being admitted to doctoral candidacy. A minimum of 18 dissertation credits is required. To be eligible for the dissertation defense the student must complete the residency requirement (three terms of full-time study of which two terms must be consecutive). The final defense of the dissertation is a public session announced in University-wide media. The dissertation must be unanimously approved by the dissertation committee.

A student whose performance on the comprehensive examination is judged to be inadequate may be subject to Academic Dismissal at the end of the term.

Candidacy and Dissertation Requirements

Pre-Candidacy and the Dissertation Proposal

Dissertation Advisor and Committee

Students must gain the agreement of a member of the telecommunications faculty, who is also a member of the graduate INS faculty, to chair the dissertation committee that will advise the student on the area of research. In most cases, the student's academic advisor continues as the dissertation advisor and chair of the dissertation committee. The advisor's agreement is recorded in the student's file. Any request to change the dissertation advisor must be submitted in writing to the chair of the Doctoral Committee and SCI Academic Records for an update to the student's digital record. Approval for the change and the selection of another dissertation advisor is filed in the student's folder.

The student's dissertation advisor:

1. Assists in choosing the dissertation committee and in confirming the eligibility of all members selected;
2. Arranges with the program administration to schedule the dissertation proposal presentation;
3. Reviews progress toward completion of the research;
4. Arranges with support staff to schedule the dissertation defense;
5. Chairs the dissertation defense;
6. Secures appropriate signatures from dissertation committee members and assures that all required paperwork is submitted in accordance with the Telecommunications, SCI, and University procedures.

The dissertation committee composition is dictated by SCI regulations; see the Doctoral Committee section of the SCI Catalog for details.

Members of the dissertation committee are to be selected by the student in consultation with the dissertation advisor. One of the members must hold a primary faculty appointment outside of the Informatics and Networked Systems graduate faculty. The dissertation committee is responsible for monitoring the research, conducting and evaluating the oral defense of the dissertation, and approving the final written presentation of the dissertation. The dissertation advisor directs the dissertation research and writing, but all committee members have the responsibility to assist the student as consultants. All members of the committee may vote.

According to university policy, meetings of the doctoral candidate and their dissertation committee must occur at least annually from the time the student gains Admission to Doctoral Candidacy. During these meetings, the committee should assess the student's progress toward the degree and discuss objectives for the following year and a timetable for completing degree requirements.

While the student prepares a dissertation proposal, they are required to enroll in and complete a minimum of 18 dissertation credits as part of their study.

Students should refer to the School's Catalog page, specifically the advising section, for further resources on the advisor/advisee relationship.

Dissertation Proposal

The student schedules a public presentation of the dissertation proposal, notifies the department administration, and provides a written copy of the proposal to the committee members at least two weeks before the presentation date. The dissertation committee must unanimously approve the dissertation topic and research plan before the student may be admitted to candidacy for the doctoral degree.

The dissertation proposal represents a contract between the student and the dissertation committee. The student should specify in as much detail as possible the problem they wish to solve and the method they intend to use to solve it.

Students demonstrate their ability to complete a sound project of original research by presenting and defending the dissertation proposal to their dissertation committee. Approval of the proposal does not imply either the acceptance of a dissertation prepared in accord with the proposal or the restriction of the dissertation to this original proposal. Originality may be reflected in several ways. For example, a candidate may pose an important new problem or formulate an existing problem in a novel and useful way. A candidate may investigate previously ignored material or develop new techniques for investigating issues. Extensions of previous investigations are acceptable provided they incorporate important new elements in the design or execution of the research.

Normally, a satisfactory dissertation will form the basis for one or more publishable articles. The dissertation committee may offer an opinion on the publishable content of the proposed research.

Written notice of the student's meeting with the dissertation committee to approve the proposal will be distributed to the Telecommunications faculty at least one week in advance. The notice will contain the student's name, the title, and abstract of the proposal, the date, time, and place of the meeting. The committee will conduct the proposal hearing and must unanimously approve the dissertation topic and the research plan. The student is responsible for filing a copy of the approved proposal with the department.

When the proposal has been successfully defended, the chair of the student's dissertation committee shall notify the Chair of the PhD Committee, the chair of the department, and the Dean that the student has achieved formal candidacy.

Timing and Completion of Milestone

The proposal may be done any time after the successful completion of the comprehensive examination. University rules require that the proposal be completed at least six months before the final defense of the dissertation. The timing of the proposal depends heavily on the student's dissertation project. The actual timing depends on the student's ability to demonstrate the project's feasibility to the committee. For some, this will occur early in the research cycle; for others, this will occur later. It is generally in the student's interest to do this earlier rather than later since it defines the scope of the completed dissertation. In any case, every student should aim at completion of their dissertation proposal within one year of passing the comprehensive exam.

Candidacy

For admission to formal candidacy for the PhD degree, a student must have:

1. Passed the preliminary examination;
2. Completed all coursework requirements (with the possible exception of dissertation credits) with a QPA of 3.3 or higher;
3. Passed the comprehensive examination;
4. Successfully presented a dissertation proposal and received permission from the dissertation committee to begin research.

When these steps have been taken, the chair of the student's dissertation committee will notify the Chair of the PhD Committee, the Chair of INS, and the Dean that the student has achieved formal candidacy. The Chair of the PhD Committee will notify the student of his admission to doctoral candidacy in writing. A copy of the notice will be placed in the student's folder. The student is expected, at this time, to schedule and present a colloquium on their research in an open forum in the School of Computing and Information.

Dissertation Research Procedural Requirements

The student must submit all forms, letters, and questionnaires related to the dissertation research to the members of the dissertation committee for approval before any such documents are publicly distributed.

The student is also responsible for meeting University requirements when human subjects are used in research. These requirements are found in the University of Pittsburgh's Guidelines to the Use of Human Subjects in Psychosocial Research. The school has a faculty representative on the Psychosocial Institution Review Board who may be contacted with questions of procedure.

The student must prepare a final copy of the dissertation conforming to the University of Pittsburgh's Style and Form Manual for the format of the dissertation. Since the bibliographic style is best determined by the subject of the dissertation, a style manual of the student's choice may be used for the content of the dissertation and must be applied consistently throughout.

For details regarding the University's formatting guidelines and other paperwork related to the Electronic Theses and Dissertations (ETD) submission process, refer to the School's Current Students page on graduation procedures. Specifically, the PhD Graduation Checklist will assist students with resources, deadlines, and related items.

If University facilities and/or faculty time are being used in dissertation research and/or the writing of the dissertation, then students are required to register for at least three credits per term or such greater amount as the School or Program deems appropriate. Students who have completed all credit requirements for the PhD degree and are working full time on their dissertation should register for fixed-fee full-time dissertation credits. If the student is a doctoral candidate and off-campus, not using University facilities and/or faculty time, the candidate need only register for one credit per academic year to maintain active enrollment status.

Dissertation Defense

The purpose of the final defense is to assess the student's ability to present and defend the result(s) of their original research project. The student must be able to clearly communicate the problem, the method, the assumptions, and the results of the project. He or she must be able to clearly articulate and support all assumptions and decisions that were made toward the process of completing the project. While the student's committee makes the final decision, the defense is public and questions are accepted from any attendee.

Dissertation

After completing the investigation and preparing the dissertation, the candidate is advised to submit the first draft to the dissertation advisor early in the term in which he/she expects to receive the degree. This allows time for any necessary revisions and the preparation of the final copies in an acceptable style and format.

Any exceptions to the style manual approved for the School must have prior approval by the advisor. Final decisions concerning style and format rest with the student's dissertation advisor. Note the dissertation can either follow the traditional book format model or a collection of published research articles. If the latter case, the published work must be logically connected and integrated into the dissertation in a coherent manner, and sufficient detail must be presented to satisfy the characteristics of a dissertation. If the published articles were co-authored, the contribution of the student must be clearly delineated in the introduction so the committee can ascertain that the student's own work satisfies the requirements of a dissertation. Instructions on incorporating articles into the dissertation are provided in the Format Guidelines for Electronic Thesis and Dissertation Preparation at the University of Pittsburgh.

Eligibility for the Dissertation Defense

To be eligible to defend the dissertation, a student must have:

1. Completed the residency requirement;
2. Completed required documents to schedule and request formal, public announcement of the defense in the University Times through the School at least four weeks before the date of the defense;
3. Distributed copies of the dissertation to the dissertation committee at least four weeks before the date of the defense.

Registration Requirements

Students completing their research work for the dissertation will be required to register for at least one credit in the term during which they expect either to complete degree requirements or have the oral defense. Students must submit an application for graduation for the term in which they have planned the dissertation defense. The application for graduation and the related deadlines and late fee structure are available on the School's Current Students web page.

If a student does complete all the work in a given term, including the dissertation oral examination, and has been cleared for graduation too late to be included on the graduation list for that term, the student may apply to graduate the following term and need not enroll for any courses or any credits, subject to approval by the Dean's office.

If a student is unable to complete the work during the expected term of graduation due to some extenuating circumstances related to the School and University (beyond the control of the student and attested to by the Dean's office), the student will not be required to register for additional credits in the term of graduation.

All requests for exceptions to the policy stated above should be sent to the Chair of the Department of Informatics and Networked Systems from the advisor for clearance and recommendation and then to the Dean for approval consideration.

Defense of the Dissertation

The dissertation defense is scheduled by the dissertation advisor early enough in the term to allow for necessary revisions and final editing of the manuscript before the graduation deadline. The candidate must submit copies of the dissertation to the dissertation advisor and the dissertation committee at least four weeks before the scheduled dissertation defense. A copy must also be filed with the Department at least four weeks before the date of the dissertation defense meeting. Notice of the dissertation topic/title/abstract; the defense date, time, and location; and the availability of the final draft copy of the dissertation will be publically posted and notice sent to the faculty at least one week ahead of the scheduled defense.

Dissertation defenses must be publicly announced and are open to the University community, but only the dissertation committee may vote. A student defends their dissertation successfully if the dissertation committee unanimously approves it. Although the dissertation defense is dedicated primarily to the field of the dissertation, other questions relating to telecommunications may be considered at this time. The chair of the dissertation committee serves as the session moderator.

A student who successfully defends the dissertation with conditions to be completed must satisfy those conditions with the approval of the dissertation advisor within one year.

Completion of the Dissertation

The dissertation should be completed within the statute of limitations described below. If the statute of limitations is about to be exceeded and there is evidence of reasonable progress, the Department may recommend an extension to the statute by a specific period usually not exceeding one year. It is the student's responsibility to present evidence of progress to their advisor along with a request for an extension before the end of the statute of limitation period. All requests for extension must be approved Department; approved requests will be submitted to the Dean's Office for final action. See details regarding the statute of limitations in the SCI Catalog page.

Publication of the Dissertation and ETD Guidelines

All candidates for a PhD degree are required to submit their official dissertations electronically using the University of Pittsburgh's procedures and formatting for Electronic Theses and Dissertations (ETD). In that case, the candidate is required to pay a fee specified by the University to Student Accounts and submit various items as outlined on the School's PhD Graduation Checklist.

Any dissertation may be published after the final defense provided that the dissertation submitted for publication is approved as to form and content by the dissertation advisor and also provided that due acknowledgment is made to the University. No form of publication, however, shall relieve the student of the responsibility for following the University's Electronic Theses and Dissertations (ETD) formatting and submission guidelines as outlined on the School's PhD Graduation Checklist.

For ETD formatting guidelines and general information, please visit the University of Pittsburgh Electronic Theses and Dissertations website. For deadlines and contact information regarding the School's required graduation and ETD paperwork, please visit the School's Current Students web page on graduation procedures.

Journal Requirement

All PhD students are required to submit an article of publishable quality (based on their dissertation) to a journal before the degree is awarded. This shall be noted when applying for graduation with signatures of the student and the advisor.

Additional Requirements

Grade Policy

Graduation depends upon meeting the minimum credit requirements and all other requirements. Graduate degrees are conferred only on those students who have completed all courses required for the degree with at least a 3.3 GPA. Grades of C or lower are unacceptable for graduation credit.

Residency Requirements

Full-time study on campus is considered most beneficial to students, but it is recognized that students may have off-campus responsibilities as well. The PhD degree, therefore, can be completed by a combination of full-time and part-time study. Three terms of full-time study are required, two of which must be consecutive and must be taken after successful completion of the preliminary examination. Full-time study is defined as nine or more graduate credits per term.

Transfer of Credits

Upon petition to the faculty and with the consent of the student's advisor, a student may be granted up to six credits of advanced standing. This credit for graduate course work completed at another institution may be granted if the credit has not been applied to a previous degree, has been earned within the six-year statute of limitations, and is relevant to the student's doctoral studies in the School of Computing and Information. Advanced standing is granted at the time of admission or during the first term of course work if approved. Petitions for transfer of credits must be received at the time of application or during the first term of attendance. Transcripts verifying the graduate courses must accompany the petition along with sufficient documentation to permit the faculty to evaluate their relevance to the doctoral program.

Transfer credits must be earned at an accredited institution granting degrees at the doctoral level. No credit will be granted toward doctoral degrees for work completed in extension courses or in off-campus centers of another institution unless those credits are approved for graduate degrees at that institution. Transfer credits will not be accepted for courses in which grades lower than a "B," or its equivalent, has been received. For details, see the University's policy on transfer of credits.

Please note these transfer credits will not be applied to core courses, independent study or doctoral seminars.

Probation and Termination

All students pursuing the doctoral degree are required to maintain a cumulative GPA of at least 3.3 after admission to graduate study and for all course work applicable to the degree. Students are automatically placed on academic probation when their cumulative GPA falls below 3.3. The graduate faculty will terminate students on probation for two consecutive terms. A cumulative GPA of 3.3 or better is required for admission to doctoral study and for the award of the doctoral degree. In addition, students must show adequate progress through an annual review to be held in May.

Statute of Limitations

All requirements for the PhD degree must be completed in not more than six calendar years from the time of first registration. Students may, in extenuating circumstances, submit a formal request for extension of their statute of limitations or for a leave of absence from the program. More details regarding the statute of limitations and extensions can be found in the SCI Catalog.

Note: All students who are candidates for doctoral degrees are governed by the regulations of the University Council on Graduate Study, which establishes minimum standards for graduate work throughout the University as well as by those regulations established by the School of Computing and Information faculty. See the University's Academic Regulations for details.

Information Science, PhD

Admissions Requirements

IS PhD applicants must either have or demonstrate the following prerequisite knowledge. These courses or their equivalents should be taken before seeking admission but may be taken during the first four terms of study. All courses must be at the graduate level and may have been taken in the course of pursuing another graduate degree:

- Statistics or Discrete Math (INFSCI 2020)
- Cognitive Psychology (INFSCI 2300 or INFSCI 2350)
- Systems Analysis and Design (INFSCI 2510)
- Data Structures (INFSCI 2500)
- Database Management (INFSCI 2710)

Applicants must have a Master's degree from an accredited university, a recognized international program, or the equivalent and have attained a minimum grade point average (GPA) of 3.3 (on a scale with an "A" having a value of four points per credit). Exceptional students with a technical Bachelor's degree may also be admitted. Such students must still satisfy all other requirements that follow. An international student's GPA will be calculated based on the equivalency from universities that use a different scale.

Your application should include:

- **Letters of Recommendation:** Identify and seek the recommendations of three individuals (e.g., professors, employers, information professionals) who are in a position to evaluate your academic performance or your potential as an information professional. Two must be from professors, preferably with PhDs.
- **Transcripts:** Only scanned copies of official transcripts will be accepted and processed at the application stage.
- **Graduate Record Examination (GRE):** You are required to submit a recent score (within five years of the date of application) on the Graduate Record Examination as part of your admission credentials. Scores on all three sections (verbal, quantitative, and analytical) of the General Section should be submitted.
- **Other Required Documentation:** Please include the following with your online application:
 - CV; and
 - Statement of Intent (not to exceed 1,000 words) indicating, as specifically as possible, you're your academic and professional goals related to the Information Science doctoral program and identifying potential areas and/or topics in which the student expects to pursue dissertation research.
- **For International Applicants:** Graduate students must possess sufficient knowledge of English to participate successfully in graduate study. International applicants must submit either the TOEFL or the IELTS (taken within two years of the date of application). A minimum score of 80 on the TOEFL or a minimum result of Band 6.5 on the IELTS is required.

Degree Requirements

There are three stages of admission to the doctoral program:

1. admission to graduate study when the student first matriculates
2. admission to doctoral study following successful completion of the preliminary examination
3. admission to candidacy following successful completion of the comprehensive examination and the approval of the dissertation proposal.

A minimum of 48 credits, including 30 course and seminar credits beyond the master's degree, and at least 18 dissertation credits are required. Students without a master's degree will be required to take a minimum of 24 additional credits of coursework or seminars, for a total of 72 credits beyond the bachelor's degree. Students who did not take the prerequisite courses as part of earlier studies should expect to complete admission requirements or equivalent courses.

A student pursuing a PhD degree is first admitted to graduate study in Information Science. During the first year of study and in preparation for the preliminary examination, PhD students should complete initial course work and attend the PhD orientation session (a two-hour review of requirements for the PhD degree).

Preliminary Examination Requirements

Preparation for the Preliminary Examination

Core Courses

Four graduate-level courses, one in each of the following areas. Students, who have taken two or more of these courses (in any cluster described below) as part of a degree at the University of Pittsburgh, may take additional courses from the remaining areas. Prerequisites for the core courses are not counted as part of the PhD course requirements

- Research methods
 - INFSCI 2040 - RESEARCH DESIGN
 - INFSCI 2160 - DATA MINING
 - INFSCI 2591 - ALGORITHM DESIGN
- Foundations
 - INFSCI 2120 - INFORMATION AND CODING THEORY
 - INFSCI 2125 - NETWORK SCIENCE & ANALYSIS
 - INFSCI 2130 - DECISION ANALYSIS AND DECISION SUPPORT SYSTEMS
 - INFSCI 2150 - INFORMATION SECURITY AND PRIVACY
 - INFSCI 2410 - INTRODUCTION TO NEURAL NETWORKS
 - INFSCI 2170 - CRYPTOGRAPHY
- Design
 - INFSCI 2430 - SOCIAL COMPUTING
 - INFSCI 2460 - SPATIAL REASONING FOR GIS
 - INFSCI 2470 - INTERACTIVE SYSTEM DESIGN
 - INFSCI 2620 - DEVELOPING SECURE SYSTEMS
- Information
 - INFSCI 2140 - INFORMATION STORAGE AND RETRIEVAL
 - INFSCI 2415 - INFORMATION VISUALIZATION
 - INFSCI 2480 - ADAPTIVE INFORMATION SYSTEMS
 - INFSCI 2711 - ADVANCED TOPICS IN DATABASE MANAGEMENT
 - INFSCI 2801 - GEOSPATIAL INFORMATION SYSTEMS (GIS)

Independent Research

Six credits of independent study focused on a research project are required. This research will normally be supervised by the student's advisor over two terms, but any IS faculty member who is a member of the graduate faculty may supervise the student. The student may opt to have different faculty supervise different parts of the independent study. The result of this research will be an original, publishable quality research paper, which will serve as the basis of the preliminary exam (see below). Previously published work may not be used to fulfill this requirement, although the independent research project might build upon previous work done by the student.

Doctoral Seminars

Three doctoral seminars (9 credits), including a required INFSCI 3005 - INTRODUCTION TO THE DOCTORAL PROGRAM, are required. INFSCI 3005 is offered every fall and should be taken during the first year of study. This course will cover the scope of research in Information Science. Advanced doctoral seminars will be focused on single research themes.

While the preliminary examination can be taken before the completion of the core courses and doctoral seminar, the preliminary examination requirement will not be considered satisfied until all core courses and doctoral seminars are completed.

Preliminary Examination

The goal of the preliminary evaluation is to assess your breadth of knowledge and your ability to conduct research in information science. The evidence of your breadth of knowledge is your performance in the core courses and seminars. The evidence of your ability to conduct research is provided by authorship, presentation, and public defense of a publishable quality research paper that:

- presents work you have done under the direction of a graduate faculty member in the department;
- demonstrates your ability to conduct research and clearly report the results of that research;
- shows your mastery of the subject matter, both in the written paper and in your oral presentation and defense.

Research Project and Paper

During the first year of doctoral study, under the direction of your advisor (or another full or adjunct member of the department graduate faculty), students will design and complete a research project. The project should reflect only those activities undertaken during the first year of study. A previous master's thesis or other work completed before the start of doctoral study may not be submitted for this requirement. While much research involves working in a larger team, your role in the project and in writing the paper should be significant. You must be the primary author, and ideally, you will be the sole author. You should seek a project or a part of a project in which you take the lead in conducting the research and writing up the results under the direction of your advisor. However, unlike a dissertation or thesis, the research paper submitted for the preliminary evaluation may include co-authors. In this case, the role of each co-author should be clearly stated in writing by the student and submitted along with the research paper. Furthermore, the paper may be integrated with other work and later submitted for publication with a longer list of authors.

Research Paper Components

Research papers take many forms, and some venues require particular nomenclature or forms. The paper submitted to the faculty to meet this requirement should include the following components:

1. a clear statement of the problem
2. an innovative idea that addresses the problem
3. a survey of the relevant research literature
4. an explication and implementation of a methodology for addressing the problem
5. evidence that the described idea achieves its goal
6. analysis and evaluation
7. discussion of the research, including but not limited to shortcomings of the work and directions for future work.
8. a list of references

While it is possible to deviate from this structure, this should only be done with the support of your advisor.

Submission and Presentation of Research Papers

Submission and presentation of your paper must be made not later than in January following your second fall semester in the program. Students must complete the six credits of Independent Research Study and IS 3005 before taking the preliminary examination. The due date for submission of the paper is the second Friday of January. On the fourth Friday of January, papers will be presented orally to the IS graduate faculty in a public forum. Each student will give a 20-minute long oral presentation of his/her paper to the faculty, followed by a 20-minute discussion. All presentations will be made on a single day. The faculty will meet the same day to grade the written and oral performance. The result of the exam will be: (a) pass, (b) fail with one more chance to re-take the exam the following year, or (c) fail with no chance to re-take the exam. While the submission and presentation of your paper may be made before the completion of the core courses and doctoral seminar, the preliminary evaluation will not be considered satisfied until all core courses and doctoral seminars are completed.

Comprehensive Examination Requirement

Preparation for the Comprehensive Exam

Students will have successfully completed the preliminary examination. In preparation for the comprehensive exam, it is expected that the student will complete three credits of advanced statistics.

To be admitted to the comprehensive examination a student must have:

- successfully completed the preliminary examination;
- completed the one-term residency requirement; and
- notify via e-mail the Chair of the PhD Committee and Department administration of the comprehensive examination at least two weeks before the exam.

This notification should include the title of the Comprehensive Exam, the date, and the Committee members.

Comprehensive Examination

The comprehensive examination requires successful completion of the preliminary exam. The student will propose three areas of concentration. These areas must be approved by the examining committee, which will consist of the advisor who will chair the examining committee, and two other full-time graduate faculty members from INS selected by the student with the approval of the advisor. To gain this approval, the student should complete and send the "Comprehensive Areas of Concentration Approval" form to all committee members for their signatures. In exceptional cases, where the student's focus requires outside expertise, one committee member may come from outside the INS graduate faculty body if recommended by the advisor and approved by the chair of the PhD Program.

The student must meet with the members of the committee to discuss the topics and foci. The student, with the consent of the committee, is free to select areas within information science that are not on the list of topics on the areas of concentration from, so long as the committee is unanimous in approving the topics. Once the committee and the topic areas are selected, the student will prepare an activity and reading list with the advice and approval of the committee members. The student will then proceed with the review of the literature, based on the reading list. When the student is ready, he/she will inform the advisor who will ask each member of the committee to submit one or more questions to the advisor. The advisor will be responsible for coordinating the exam with an appropriate balance over the three topic areas. The student will be given the questions and allowed one week to prepare written answers to the questions. After a review of the written answers, a two-hour oral examination will be scheduled and open to the public. The final reading list, questions and answers should be published and available to the School community on the School's Web site. As soon as finalized, forward this information with the "Comprehensive Exam Submission Approval for Web Publishing" form to the staff, with copies sent to the PhD Chair and all comprehensive committee members. The oral examination will normally be within a week of the completion of the written exam, but in all cases no later than within three weeks. The student will make a 10-minute presentation on the key points. The oral questions will cover the answers on the written examination, and more broadly, about knowledge of the material in the three areas of concentration. The result of the comprehensive examination will be a pass or fail. If a student fails, they may retake the exam one more time.

All required forms are available on the School's Current Students web page.

Candidacy and Dissertation Requirements

Pre-Candidacy

Once the comprehensive examination is successfully completed, the student can propose and defend a dissertation topic. The student and the dissertation advisor should select the dissertation committee.

Dissertation

Each student must write a dissertation that presents the results of a research project carried out by the student. This research project involves a substantive piece of original and independent research grounded in an appropriate body of literature.

Dissertation Credits

Doctoral students are required to take a minimum of 18 dissertation credits as a part of their study. Dissertation credits should be taken during terms when a student is actively working on the dissertation. Most research activities during the first two years of the program are better completed as part of an independent study or a doctoral seminar. In any term in which a student is enrolled for dissertation credits, the student should meet with their advisor on a regular basis to monitor that appropriate progress is being made towards the completion of the dissertation proposal or the dissertation. The specific activities in a given term should depend on the current stage of the dissertation process. In addition to writing the proposal and dissertation itself, other appropriate activities may include reviewing the literature, programming, prototyping, running preliminary studies, writing grant proposals, preparing journal articles related to the dissertation or presenting preliminary results at conferences.

Doctoral students who have completed all credit requirements for the PhD degree, including minimum dissertation-credit requirements, are encouraged to register for "Full-time Dissertation Study," with a fixed-fee registration per term plus applicable fees. Enrollment in this course provides a student with full-time status and fulfills the University requirements for registration in the term of graduation.

Dissertation Advisor

Students must gain the agreement of a member of the INS graduate faculty to chair the dissertation committee that will advise on the area of research and the design of the dissertation study. The advisor's agreement is recorded in the student's file. Any request to change the dissertation advisor must

be submitted in writing to the Chair of the IS PhD Program Approval for the change and the selection of another dissertation advisor is placed in the student's file.

In most cases, the student's program advisor continues as the dissertation advisor and chair of the dissertation committee. By University regulations the dissertation advisor must be a graduate faculty member of the Department of Informatics and Networked Systems. In the event that either the student or advisor desires a change, another INS graduate faculty member may serve as dissertation advisor and chair of the dissertation committee.

The student's dissertation advisor together with the student:

- assists in choosing the dissertation committee and in confirming the eligibility of all members selected;
- arranges with the staff to schedule the dissertation proposal presentation;
- reviews progress toward completion of the research;
- arranges with support staff to schedule the dissertation defense;
- chairs the dissertation defense;
- secures appropriate signatures from dissertation committee members and assures that all required paperwork is submitted in accordance with School and University procedures.

Dissertation Committee

The dissertation committee composition is dictated by SCI regulations; see the Doctoral Committee section of the SCI Catalog for details.

The dissertation committee is responsible for monitoring the research, conducting and evaluating the oral defense of the dissertation, and approving the final written presentation of the dissertation. The dissertation advisor directs the dissertation research and writing, but all committee members have the responsibility to assist the student as consultants.

Dissertation Proposal

After successfully completing the comprehensive examination, the student, in consultation with the dissertation advisor, must prepare a dissertation proposal. The written proposal is presented to the dissertation committee and defended in a hearing before the dissertation committee.

Students must demonstrate their potential to complete a sound project of original research by presenting and defending the dissertation proposal to their dissertation committee. The dissertation committee must unanimously approve the dissertation topic and research plan before the student may be admitted to candidacy for the doctoral degree. Approval of the proposal does not imply either the acceptance of a dissertation prepared in accord with the proposal.

Originality may be reflected in a number of ways. For example, a candidate may pose an important new problem or formulate an existing problem in a novel and useful way. A candidate may investigate previously ignored material or develop new techniques for investigating issues. Extensions of previous investigations are acceptable provided they incorporate important new elements in the design or execution of the research.

The student must submit the dissertation proposal to the committee at least two weeks before the scheduled hearing. Copies of the dissertation proposal are made by the student at their own expense. When the proposal has been successfully defended, the student's dissertation advisor shall notify the Chair of the PhD Committee, the Chair of the Information Science Program, and the Dean that the student has achieved formal candidacy. After approval of the dissertation proposal, major changes may not be made without the approval of the student and the dissertation committee. The student is responsible for filing a copy of the approved proposal in the IS Program office.

Electronic notice of the student's meeting with the dissertation committee to approve the proposal will be distributed to the INS faculty at least two weeks ahead of time. The notice will contain the student's name; the title of the proposal; the date, time, and place of the meeting; and a link to the electronic version of the dissertation proposal.

The dissertation proposal meeting is open to all INS faculty and PhD students who wish to attend and others by invitation of the student.

Once the comprehensive examination is successfully completed, the student is officially a doctoral candidate. After becoming a doctoral candidate, the student can propose and defend a dissertation topic.

Candidacy

For admission to candidacy for the PhD degree, a student must have:

- passed the preliminary examination;
- completed a minimum of 30 credits beyond the master's degree with a GPA of 3.3 or higher;
- passed the comprehensive examination;
- successfully presented a dissertation proposal and received approval of the dissertation proposal by the dissertation committee.

When these steps have been taken, and the dissertation advisor has notified the Program and the School, the Program Chair will notify the student in writing of his admission to doctoral candidacy. A copy of the notice will be placed in the student's folder. The student is expected, at this time, to schedule and present a colloquium on their research to the Program and the public.

Meetings of the doctoral candidate and the dissertation committee must occur at least annually from the time the student gains admission to doctoral candidacy. During these meetings, the advisor should assess the student's progress toward the degree, discuss objectives for the following year, and project a timetable for completing degree requirements.

Eligibility for the Dissertation Defense

To be eligible to defend the dissertation, a student must have:

- completed the residency requirement;
- at least four weeks before the date of the defense, requested the formal announcement of the defense in the University Times;
- at least two weeks before the date of the defense, distributed copies of the dissertation to the dissertation committee and make it available to the School's faculty. These copies are provided by the student at their own expense.

Preparation for the Defense

Procedural Requirements

The student should work with the advisor to ensure that the dissertation will be produced in an acceptable style and format. Document preparation materials are located here.

The student must submit all forms, letters, and questionnaires related to the dissertation research to the departmental members of the dissertation committee for approval before any such documents are publicly distributed.

The student is also responsible for meeting University requirements when human subjects are used in research. These requirements are found in the University of Pittsburgh's Reference Manual for the Use of Human Subjects in Research. The school has a faculty representative on the Institutional Review Board who may be contacted with questions of procedure.

The student must prepare a final copy of the dissertation conforming to the University of Pittsburgh's Style and Form Manual for the format of the dissertation. Since the bibliographic style is best determined by the subject of the dissertation, a style manual of the student's choice may be used for the content of the dissertation and must be applied consistently throughout.

If University facilities and/or faculty time are being used in dissertation research and/or the writing of the dissertation, then students are required to register for at least three credits per term or such greater amount as the School deems appropriate or Full-Time Dissertation Study.

Registration Requirement

Students completing their research work for the dissertation will be required to register for at least one credit in the term during which they expect either to complete degree requirements or have the oral defense. Students who have completed all credit requirements for the PhD degree may register for "Full-Time Dissertation Study." If the student is a doctoral candidate and off-campus, not using University facilities and/or faculty time, the candidate need only register for 1 credit per academic year to maintain active enrollment status.

If a student does complete all the work in a given term, including the dissertation defense, and has been cleared for graduation too late to be included on the graduation list for that term, the student may apply to graduate the following term and need not enroll for any courses or any credits, subject to approval by the Dean's office. Students must submit an application for graduation for the term in which he or she has planned the dissertation defense. The application for graduation and the related deadlines and late fee structure are available here.

If a student is unable to complete the work during the expected term of graduation due to some extenuating circumstances related to the School and University (beyond the control of the student and attested to by the Dean's office), the student will not be required to register for additional credits in the term of graduation.

All requests for exceptions to the policy stated above should be sent to the Program Chair from the advisor for clearance and recommendation and then to the Dean for consideration and approval.

Defense of the Dissertation

Dissertation defenses must be publicly announced four weeks in advance and are open to the University community, but only the dissertation committee may vote. A student defends their dissertation successfully if the dissertation committee unanimously approves it. Although the dissertation defense is dedicated primarily to the field of the dissertation, other questions relating to information science may be considered at this time. The chair of the dissertation committee serves as the session moderator.

A student who successfully defends the dissertation with conditions to be completed must satisfy those conditions with the approval of the dissertation advisor within one year.

Publication of the Dissertation

The candidate for a PhD degree is required to pay a fee specified by the University to Student Accounts and submit various items as outlined on the School's PhD Graduation Checklist found under 'Graduation Application Procedures, PhD Students.'

The abstract must not be more than 350 words (2450 typewritten characters) in length. With 70 characters per line, there are at most 35 lines in the abstract. All copies of the abstract must be approved and initialed by the dissertation advisor in the upper right-hand corner of the abstract. The dissertation and abstract will be examined and approved by the student's dissertation advisor for style, format, and related matters.

Any dissertation may be published after the final defense provided that the dissertation submitted for publication is approved as to form and content by the dissertation advisor and also provided that due acknowledgment is made to the University. No form of publication, however, shall relieve the student of the responsibility for following the University's Electronic Theses and Dissertations (ETD) formatting and submission guidelines as outlined on the School's PhD Graduation Checklist.

For ETD formatting guidelines and general information, please visit the University of Pittsburgh Electronic Theses and Dissertations website. For deadlines, forms, and contact information regarding the School's required graduation and ETD paperwork, please visit the graduation procedures section of the SCI Current Students web page.

Typical Timeline for Coursework/Exams

All students will complete:

- Required coursework (30 credits)
 - Four core courses (12 credits)
 - One introductory doctoral seminar (three credits)
 - Two topical doctoral seminars (six credits)
 - Two independent research studies (six credits)
 - One advanced statistics course (three credits)
- Dissertation work (18 credits)
- A minimum of 18 credits of dissertation study

Typical Timeline for Coursework/Exams:

Year	Term	Exams/Defenses	Student Registers in Credits via Enrollment System		
First	Fall		INFSCI 3005	Core Course	Core Course

	Spring		Core Course	Doctoral Seminar	Core Course	Research Study
	Summer		Independent Study, research and/or teaching			
Second	Fall		Doctoral Seminar	Advanced Statistics	Research Study	
	Spring	Preliminary Examination	Dissertation Work - nine credits			
	Summer		Independent Study, research and/or teaching			
Third	Fall	Comprehensive Exam	Dissertation Work - nine credits			
Fourth	Fall	Dissertation Proposal Defense	Dissertation Work - FTDJ			
Fifth	Fall	Dissertation Defense	Dissertation Work - FTDJ			

Note: International students must maintain full-time status in Fall and Spring terms. ALL students must be enrolled in a minimum of one credit during their graduation term.

Additional Requirements

Grade Policy

Doctoral degrees are conferred only on those students who have completed all courses required for the degree with at least a 3.3 GPA. Courses numbered below 2000 do not meet the minimum requirements for doctoral study, although they may be taken to supplement a doctoral program.

Residency Requirements

Full-time residency, in addition to requiring full-time study, affords the student the opportunity for daily professional interaction with faculty and other PhD students. This interaction is a major component in the student's preparation for research. Despite the benefits that full-time residency affords, it is recognized that students may have off-campus responsibilities as well.

The PhD degree, therefore, can be completed by a combination of full-time and part-time study. Two terms of full-time study are required. Full-time study is defined as nine or more graduate credits per term. All students, whether on campus or away, must maintain active status by registering according to the requirements stated below.

Note: No matter your status, you must meet with their advisor at least once per year. Annually, students will submit an annual progress report to the PhD Program Chair, program administrator and the advisor. The report is due on the second Friday of January. The INS graduate faculty will meet to discuss annual reviews in the last week of January.

Registration Requirements

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

In keeping with University policy, all graduate students must be enrolled for a minimum of one credit in the term in which they graduate.

Doctoral students who have completed all credit requirements for the PhD degree, including minimum dissertation credit requirements, and are working full time on their dissertations, are encouraged to register for "Full-time Dissertation Study," with a fixed-fee registration per term plus fees. Enrollment in this course fulfills the University requirements for registration in the term of graduation.

Transfer of Credits

Upon petition to the faculty and with the consent of the student's advisor, a student may be granted up to 6 credits of advanced standing. This credit for graduate course work completed at another institution may be granted if the credit has not been applied to a previous degree, has been earned within the 6-year statute of limitations, and is relevant to the student's doctoral studies in the School of Computing and Information. Advanced standing is granted at the time of admission or during the first term of course work if approved. Petitions for transfer of credits must be received at the time of application or during the first term of attendance. Transcripts verifying the graduate courses must accompany the petition along with sufficient documentation to permit the faculty to evaluate their relevance to the doctoral program.

Transfer credits must be earned at an accredited institution granting degrees at the doctoral level. No credit will be granted toward doctoral degrees for work completed in extension courses or in off-campus centers of another institution unless those credits are approved for graduate degrees at that institution. Transfer credits will not be accepted for courses in which grades lower than a "B," or its equivalent, has been received. For details, see the University's policy on transfer of credits.

Please note these transfer credits will not be applied to core courses, independent study, or doctoral seminars.

Probation and Termination

All students pursuing the doctoral degree are required to maintain a cumulative GPA of at least 3.3 after admission to graduate study and for all course work applicable to the degree. Students are automatically placed on academic probation when their cumulative GPA falls below 3.3. The graduate faculty may choose to terminate students on probation for two consecutive terms. A cumulative GPA of 3.3 or better is required for admission to doctoral study and for the award of the doctoral degree. In addition, students must show adequate progress through an annual review to be held in the last week of January.

Statute of Limitations

All requirements for the PhD degree must be completed in not more than six calendar years from the time of first registration. Students may, in extenuating circumstances, submit a formal request for extension of their statute of limitations or for a leave of absence from the program.

Note: All students who are candidates for doctoral degrees are governed by the regulations of the University Council on Graduate Study, which establishes minimum standards for graduate work throughout the University as well as by those regulations established by the School of Computing and Information faculty. See the University's Academic Regulations for details.

Graduate Certificate

Information and Network Security

This 15-credit Graduate Certificate in Information & Network Security is designed to address the needs of professionals who hold a baccalaureate degree in Information Science or a related field in order to expand their professional skills and qualifications in cybersecurity.

The University of Pittsburgh's School of Computing and Information is widely recognized for our excellence in cybersecurity research and education. Since 2004 when we were first designated a National Center of Academic Excellence in Information Assurance Education (CAE-IAE) to our recent top ten ranking out of more than 400 institutions of higher education, our school has been at the forefront of emerging trends in the Cybersecurity field.

Students in the Graduate Certificate in Information and Network Security program must:

- complete the two core courses with a grade of B- or better
- complete three of the elective courses with a grade of C or better.

Course work must be completed within a period of four calendar years from the student's initial registration in the graduate certificate program.

Required Core Courses

Students must complete the two following courses with a grade of B- or better:

- INFSCI 2150 - INFORMATION SECURITY AND PRIVACY
- TELCOM 2821 - NETWORK SECURITY

Elective Courses

Students must complete three elective courses with a grade of C or better. A list of recommended elective courses is provided below. With advisor approval, students may choose an alternate elective.

- INFSCI 2170 - CRYPTOGRAPHY
- INFSCI 2230 - CYBERCRIME
- INFSCI 2620 - DEVELOPING SECURE SYSTEMS
- INFSCI 2621 - SECURITY MANAGEMENT AND COMPUTER FORENSICS
- INFSCI 2625 - CYBERSECURITY AND PRIVACY REGULATION
- INFSCI 2731 - SECURITY IN E-COMMERCE
- INFSCI 2955 - SPECIAL TOPICS: SYSTEMS
- TELCOM 2120 - NETWORK PERFORMANCE
- TELCOM 2813 - SECURITY MANAGEMENT AND COMPUTER FORENSICS
- TELCOM 2820 - CRYPTOGRAPHY
- TELCOM 2825 - INFORMATION SYSTEMS AND NETWORK INFRASTRUCTURE PROTECTION

Admissions Requirements

The following are requirements and prerequisites for admission to the certificate program.

All applicants must submit:

- Official transcript
- Two letters of recommendation that attest to the applicant's aptitude and motivation to pursue studies at a level beyond the bachelor's or master's degree
- Personal statement
- Resume

Applicants must have successfully completed at least one three-credit college course with a grade of B or better in each of the following:

- **Structured programming language.** A course on structured programming using Java, C# or C++ is required. Either INFSCI 0017 - FUNDAMENTALS OF OBJECT-ORIENTED PROGRAMMING or CS 0401 - INTERMEDIATE PROGRAMMING USING JAVA is recommended to meet this requirement.
- **Statistics.** A course covering data collection, descriptive and inferential statistics is optimal. It should cover measures of central tendency and variability, regression, correlation, non-parametric analysis, probability and sampling, Bayesian analysis, significance tests, and hypothesis testing. Either STAT 0200 - BASIC APPLIED STATISTICS or STAT 1000 - APPLIED STATISTICAL METHODS is recommended to meet this requirement.
- **Mathematics.** A college-level mathematics course, in discrete mathematics or calculus, is required. Any of the following Pitt courses are recommended to meet the requirement: MATH 0120 - BUSINESS CALCULUS, MATH 0220 - ANALYTIC GEOMETRY AND CALCULUS 1, or MATH 0400 - FINITE MATHEMATICS.

15-Credit Post-Bachelor's Certificates

A BS/BE degree from an accredited college or university in Computer Science, Information Technology, Telecommunications, Computer or Electrical Engineering, Mathematics or a related field with a scholastic average of a B (3.0 on a 4.0 scale) or better.

15-Credit Post-Master's Certificates

An MS degree from an accredited college or university in Computer Science, Information Technology, Information Science, Telecommunications, Computer or Electrical Engineering, Mathematics or a related field with a scholastic average of a B (3.0 on a 4.0 scale) or better.

Master's

Information Science, MS

Admissions Requirements

Applicants for graduate study must have earned a baccalaureate degree from an accredited college or university with a scholastic average of B (3.0 on a 4.0 scale) or better.

Prerequisites for admission to the Master of Science in Information Science (MSIS) degree program include one three-credit college course in each of the following (the corresponding Pitt course numbers are indicated):

- **Programming:** A course on structured programming using Java, C#, or C++. (INFSCI 0017 or CS 0401)
- **Statistics:** A course covering data collection, descriptive and inferential statistics is optimal. It should cover measures of central tendency and variability, regression, correlation, non-parametric analysis, probability, and sampling, Bayesian analysis, significance tests, and hypothesis testing. (STAT 0200 or STAT 1000)
- **Mathematics:** A college-level mathematics course, in discrete mathematics or calculus. (MATH 0120, MATH 0220, or MATH 0400). If a student has not taken this before enrollment, they may take INFSCI 2020 to meet this requirement.

Note: some specializations within the MSIS program of study require additional pre-requisite courses are not calculated in the total credits required to earn the degree. Please see the specializations details below.

The application for admission will require that the following be submitted:

- two letters of recommendation
- official transcripts
- a recent score (within five years) on the Graduate Record Examination
- Resume or CV
- Statement of Intent, consisting of no more than 500 words and outlining your career goals.

International applicants must submit either the TOEFL or the IELTS results from within 2 years.

Degree Requirements

The Master of Science in Information Science (MSIS) degree is conferred upon students who have:

- acquired proficiency in the core areas of information science;
- obtained a substantial understanding of the larger problems, particularly the use, non-use, and misuse of information, and the function of information in a global society;
- completed a minimum of 36 credits that may include a practicum or thesis;
- satisfied the general University requirements relating to graduate degrees.

A minimum of 36 credits is required to complete the general MSIS degree. Basic course requirements are as follows*:

- Six credits of course work in the Foundations area
- 18 credits of course work in the Systems and Technology areas (INFSCI 2500 required)
- Six credits of course work in the Cognitive Science or Cognitive Systems areas
- Six credits of electives-students may pursue a thesis or a practicum as one of the elective options. Students should know that a thesis is not a requirement of the MSIS degree.

**This distribution may vary depending upon the specialization.*

Specific course requirements for the degree are outlined on the student's AAR.

With the possible exception of six credits of advanced standing, all course work must be completed in residence in the MSIS degree program (i.e., registering while matriculated as an SCI student) at the University of Pittsburgh.

The student's advisor may approve certain exceptions to this policy:

- Up to six credits taken at other member institutions in the Pittsburgh Council on Higher Education (PCHE).
- Up to six credits of independent study course work may be applied toward a graduate degree in information science and will be counted as meeting one of the area (foundations, etc.) requirements.
- Up to six credits of upper-division (1000-1999) undergraduate course work may be applied toward a graduate degree in information science. These will normally be very specialized courses that meet some particular need. Prerequisite programming course work is explicitly excluded from this condition. Other credits (including the practicum or thesis) must be at the graduate level (2000 or 3000-course numbers). No University of Pittsburgh courses numbered below 1000 may be applied toward master's degree requirements.
- Up to six credits of Practicum experience. Practicum credits are counted as electives.

Approval for these exceptions must be obtained BEFORE enrollment in the course in question and must be documented with advisor approval. No combination of such exceptions will exceed nine credits. All requirements for a specialization or general degree requirements (i.e. two Foundation courses, two Cognitive courses, and six Systems and Technology courses) must still be met.

Course substitutions and requirement exceptions must be obtained BEFORE enrollment in the course in question, must have the approval of the advisor, and must be documented through the Records Office. Substitutions and exceptions will be noted on the student's Academic Advisement Report (AAR).

Specializations

Students may select a specialization in their application for admission. The student then follows a more stringent distribution of credits depending on their specialization. As well, some specializations have additional pre-requisites for admission and therefore students may need to complete courses above and beyond the standard 36 credit requirement.

The following sections describe the specializations; the specific distribution of credits for the individual specializations are outlined on the student's AAR.

Students select their specialization on the application for admission and may change it until the end of the term in which they are to complete 18 credits. A form and instructions for changing specializations is available on the School's Current Students web page.

Students who do not meet their chosen specialization's requirements for graduation will automatically be changed to the general MSIS track.

Specializations are noted on a student's final transcripts as "Degree awarded in Master of Science in Information Science with a concentration in [specialization]."

Big Data Analytics

The Big Data Analytics specialization will provide the graduates of the MSIS degree program with the essential in-depth knowledge of technologies relevant to big data management. Coursework will cover the design and maintenance of infrastructure to efficiently store, easily access, and transfer over wide area networks, extremely large amounts of data. However, the volume and diversity of data make it extremely challenging to store, retrieve, analyze and utilize this information. As society will soon be routinely trying to use petabytes of data stored in multiple formats across different platforms, experts are needed who have the skills and knowledge to design, develop and deploy complex information systems and applications that deal with multi-terabyte data sets.

Students should have an undergraduate data-structures course in addition to the standard MSIS admissions pre-requisites. While this course can be taken after admission, it would require that 13 courses rather than 12 be taken to complete the degree.

Database and Web Systems

Storage and distribution subsystems are fundamental components of any information system. As information moved to digital form, storage systems evolved into various forms of database systems. In the environment we call the World Wide Web, people interact with databases and information storage systems through web protocols using web-based interfaces to facilitate distribution.

The database and web systems specialization covers both fundamental concepts of modern database management systems (DBMSs) and advanced issues that typically arise in the context of large-scale-enterprise data management. Coursework is focused on developing practical skills in building and administering realistic database systems, data integration, data warehousing, and Web-based data management. Database research projects offer tremendous opportunities for students in specialties including scalable architectures for wide-area environments with heterogeneous information servers, query optimization in highly distributed databases, and wireless and mobile databases.

The web systems coursework introduces current Web technologies including XML, and new distributed architectures for service provision.

Students should have an undergraduate data-structures course in addition to the standard MSIS admissions pre-requisites. While this course can be taken after admission, it would require that 13 courses rather than 12 be taken to complete the degree. As well, students are encouraged to have programming experience in more than one language (C# or C++ and Java are the ideal combinations).

Geoinformatics

The goal of the Geoinformatics specialization is to provide students in the MSIS degree program with both the breadth and depth of knowledge in geoinformatics required for solving real-world problems. Students will gain the unique knowledge and skills necessary to facilitate the design, development, and deployment of complex systems and applications in a rapidly emerging geoinformatics profession. Graduates of the Geoinformatics specialization will be able to deploy and manage geoinformation systems in industry, conduct research in geotechnologies, and pursue PhD research in geoinformatics.

Human-Centered Computing

Human-centered computing (HCC) is concerned with the development and management of systems in which the central focus is the user. The systems should be: aware of the user, easy to use, ubiquitous, and intelligent. In the final analysis, human-centered systems improve workplace satisfaction, capitalize on information in the environment, and act on behalf of the user. Current research in HCC focuses on the building of adaptive interfaces, navigation through information spaces, social computing, and the use of virtual environments in information science. Within this specialization, you will take courses to help you to understand humans and model their preferences, interests, and knowledge; analyze explicitly and implicitly generated data; and design systems with natural and intuitive interfaces.

Information Security

Providing security and assurance to information systems has emerged as one of the most daunting technological and social challenges of recent times. Major corporations and private industry are expending a great deal of resources to develop cybersecurity technology to secure their information systems. The School is pleased to meet the expected demand for professionals trained to protect information systems by offering the security specialization. This track will provide a unique education in the development, design, and deployment of secure information systems with an emphasis on networked information systems. It will produce information technology professionals with the ability to meet special security challenges (e.g., intrusion detection) posed by conventional and emerging network information systems.

Students should have an undergraduate data-structures course in addition to the standard MSIS admissions pre-requisites. While this course can be taken after admission, it would require that 13 courses rather than 12 be taken to complete the degree.

Sub-tracks within this Specialization

Students pursuing the Security Assured Information Systems (SAIS) specialization can select key courses relevant to another discipline or area of interest. Students can select several courses relevant to Big Data Analytics, Health Informatics, or Database and Web Systems that will also meet the requirements of the SAIS specialization. Thus, the student can complete the SAIS specialization, while also acquiring the core skillset and knowledge related to these other critical areas.

Please note: The SAIS specialization must be officially declared via the Graduate Academic Plan (Degree/Specialization) Change Form; it will appear on your transcript. Sub-tracks do not need to be declared, are not tracked for graduation or degree progress purposes, and will not appear on the transcript.

Telecommunications and Distributed Systems

The Telecommunications and Distributed Systems (TDS) specialization focuses on one of the fastest growing Information Technology fields. Distributed computing involves the study of information systems in which the data and computational processing are spread over more than one computer-usually in a network. Networking is critical to efficient communication among widely distributed participants and has become the backbone of industries ranging from Telecommunications firms to healthcare systems. Thanks to the Internet and more powerful computation/communication devices, industry and society are demanding more pervasive networks, more efficient and effective information systems, and more professionals trained to design and manage these complex and vital systems.

With this specialization, students will gain the knowledge and skills to face the challenges of deploying, designing, and managing distributed applications across networked systems. Graduates will be able to design and manage client-server and peer-to-peer systems, manage network-based information systems, and design networks and systems that are secure.

Students should have an undergraduate intro to Telecommunications and Networking (TELCOM 2000 - INTRODUCTION TO TELECOMMUNICATIONS) course in addition to the standard MSIS admissions pre-requisites. While this course can be taken after admission, it would require that 13 courses rather than 12 be taken to complete the degree.

Master's Degree Program with GSPIA

The School of Computing and Information (SCI) has a joint agreement with the Graduate School of Public and International Affairs (GSPIA). The program allows students to complete the Master of Science in Information Science (MSIS) degree and one of three degrees in GSPIA simultaneously. To be admitted fully into the joint program, students must be accepted first by GSPIA and then by SCI.

Students wishing to enter this program need to submit the regular MSIS online application form, along with two recommendation letters, an official transcript, and a copy of GRE or GMAT. International students have additional submission requirements. It is recommended that GSPIA students apply after their first term in the Graduate School of Public and International Affairs.

All students are expected to have completed the pre-requisites established for the MSIS degree program.

Course of Study for Joint Degree Students

The course of study for the Master of Science in Information Science (MSIS) degree under the joint agreement consists of a minimum of 30 credits in the MSIS program, plus an additional 30-39 credits at GSPIA depending on the selected area of study. Students must have a minimum of 24 credits of residency at SCI by the completion of the degree. Students should consult with the Records Office before enrolling in classes each term in order to ensure they are enrolling under the appropriate school code.

Please be aware that there is a small tuition differential between the two schools.

Degree requirements are outlined on the student's Academic Advisement Report (AAR).

Additional Requirements

Grading Policy

Each student must maintain a 3.0 Grade Point Average (GPA) for all credits of graduate level coursework for either degree or the certificate. Failure to maintain a 3.0 GPA in any term will result in the student being placed on academic probation immediately. If the student does not raise the GPA to a 3.0 after the next nine credits, the student will be dismissed from the program in which he or she is enrolled.

Grades for Individual Courses

All students in the Information Science/Telecommunications degree programs must earn satisfactory grades in each course taken. A grade of C-, D+, D, D-, F, and Unsatisfactory are unacceptable for graduation credit. A course for which such an unsatisfactory grade is earned must be repeated if it is a course that is a degree requirement (e.g., INFSCI 2000 or INFSCI 2500/2592). Courses may be repeated only once. Elective courses need not be repeated; another course may be taken to replace it. However, the original course remains on the transcript and a higher grade must be earned to maintain a 3.0 GPA.

Telecommunications, MST

Admissions Requirements

The Department of Informatics and Networked Systems offers a Master of Science in Telecommunications degree that incorporates the rapid changes in technology that are influencing the Telecommunications industry. MST students will master both theory and applications of data analytics, machine learning, information processing, and how networks can serve humans.

The Department of Informatics and Networked Systems seeks students with diverse interests and abilities. The admission requirements for the Master of Science in Telecommunications degree (MST) reflect the interdisciplinary nature of our program and roughly correspond to an undergraduate degree in a technical discipline (e.g., math, physics, computer science, electrical engineering, computer engineering, information science, etc.)

- Must have earned a baccalaureate degree from an accredited college or university with a scholastic average of B (3.0 on a 4.0 scale) or better
- A 3-credit course on structured programming using Java, C#, or C++ is required
- A 3-credit college level course in probability
- A 3-credit college level course in calculus

Note, other courses, such as an introduction to telecommunications class may be a pre-requisite for many courses in the program. It is not a requirement for admission but the equivalent Pitt course (TELCOM 2000) will not count toward the MST degree.

The application for admission will require that the following be submitted:

- two letters of recommendation
- official transcripts
- a recent score (within five years) on the Graduate Record Examination
- Resume or CV
- Statement of Intent, consisting of no more than 500 words and outlining your career goals.

International applicants must submit either the TOEFL or the IELTS results from within two years.

Degree Requirements

Completion of the Master of Science in Telecommunications degree requires a minimum of 37 credits. Three credits may be in a practicum (a structured supervised employment situation) or a thesis. Students should know that a thesis is not a requirement of the MST degree but for research-oriented students, the faculty strongly recommends a three-credit thesis instead of course work.

The 37-credit minimum of course work should include the following:

- 24 credits of **required Systems** courses including
 - Two of the following four courses
 - TELCOM 2010 - COMPUTER NETWORKING LABORATORY
 - TELCOM 2100 - FUNDAMENTALS OF TELECOMMUNICATIONS
 - TELCOM 2310 - APPLICATIONS OF NETWORKS
 - TELCOM 2700 - INTRODUCTION TO WIRELESS NETWORKS
 - Six of the following recommended classes
 - Either of the remaining classes from the list above
 - INFSCI 2710 - DATABASE MANAGEMENT
 - INFSCI 2725 - DATA ANALYTICS
 - INFSCI 2750 - CLOUD COMPUTING
 - INFSCI 2595 - MACHINE LEARNING
 - TELCOM 2326 - ADVANCED TOPICS IN DATABASE MANAGEMENT
 - TELCOM 2820 - CRYPTOGRAPHY
 - TELCOM 2821 - NETWORK SECURITY
 - TELCOM 2825 - INFORMATION SYSTEMS AND NETWORK INFRASTRUCTURE PROTECTION
 - Practicum

- INFSCI and TELCOM graduate classes except for TELCOM 2000, INFSCI classes in the **Systems and Technology category preferred**.
- One-credit **Telecommunications Seminar** course.
- Six credits of **required Foundations** courses
 - TELCOM 2120 - NETWORK PERFORMANCE
 - TELCOM 2810 - INFORMATION SECURITY AND PRIVACY
- Six credits of coursework related to Human Information behavior Cognitive courses.

Specific course requirements for the degree are outlined on the student's Academic Advisement Report (AAR).

Course substitutions and requirement exceptions must be obtained BEFORE enrollment in the course in question, must have the approval of an advisor, and must be documented through the Records Office. Substitutions and exceptions will be noted on the student's AAR. Information regarding documenting exceptions is available on the School's Current Students Web site.

Students may choose to take more than the 37 credits required for the MST degree. However, the School is not able to extend any financial aid beyond the required number of courses; any visa issues pursuant to extended study would have to be resolved by the student.

Grading Policy

Each student must maintain a 3.0 Grade Point Average (GPA) for all credits of graduate level coursework for either degree or the certificate. Failure to maintain a 3.0 GPA in any term will result in the student being placed on academic probation immediately. If the student does not raise the GPA to a 3.0 after the next nine credits, the student will be dismissed from the program in which he or she is enrolled.

Grades for Individual Courses

All students in the Information Science/Telecommunications degree programs must earn satisfactory grades in each course taken. A grade of C-, D+, D, D-, F, and Unsatisfactory are unacceptable for graduation credit. A course for which such an unsatisfactory grade is earned must be repeated if it is a course that is a degree requirement (e.g., TELCOM 2810). Courses may be repeated only once. Elective courses need not be repeated; another course may be taken to replace it. However, the original course remains on the transcript and a higher grade must be earned to maintain a 3.0 GPA.

Statute of Limitations

Course work must be completed within a period of four calendar years from the student's initial registration in the program.

Department of Information Culture and Data Stewardship

For more than 100 years, Pitt has been educating the professionals who will lead us through the information age: librarians, information and knowledge managers, archivists, and digital content managers. As the nature and form of information evolves and becomes more complex with each passing year, the education of its managers becomes increasingly vital.

Our Department of Information Culture and Data Stewardship (ICDS) offers an array of graduate degree programs and areas of focus designed to prepare students for careers in this critical profession. We offer one of the most recognized programs in the nation - our Master of Library and Information Science (MLIS) degree is accredited by the American Library Association (ALA).

The Doctor of Philosophy Program prepares students for advanced work in research, teaching, and administration. The program will allow students to gain the skills in teaching or research appropriate for careers at major research universities, teaching institutions, and library systems.

From the faculty who drive our reputation as a top-tier research university to our course work, which is highly relevant to a field that is always changing, the School offers the right environment to prepare you for a successful and challenging career in the library and information science field.

Academic Advising

ICDS will assign new students an academic advisor at the time of admission to graduate study. These assignments are made based upon the cohort that is created at the start of each fall term. If a student elects to change advisor because of an area of interest, the change requires the consent of the new advisor and must be reported to the Program. Forms for changing advisors are online through the School's Current Students Web site.

At the time of initial registration or before the completion of the first term, the student is encouraged to discuss a plan of study with their advisor. A plan of study is a series of courses designed to meet the minimum exit competencies judged by the faculty to be necessary for employment as an information professional; this plan is outlined in and completion is tracked through the Academic Advisement Report (AAR). If there has been course work or experience in one or more of the content areas of the program, students are permitted to substitute and take courses in an area in which additional background is needed. Substitutions and exceptions must have the approval of the student's advisor and must be documented through the Records Office. Information regarding documenting exceptions is available on the School's Current Students Web site.

Details regarding advising and resources for tracking your degree progress (the AAR) are available on the School's Catalog page, under the Advising section. Each student must ensure that the AAR meets all of the program requirements for graduation. At the completion of the program, the Records Office coordinates with the Department to certify all students for graduation. See the School's Catalog page for more details and regulations pertaining to graduation.

Stricter advising guidelines and regulations apply to doctoral students. See the doctoral program regulations for details.

Departmental Policies

Grade Policies for Graduate Students

Maintenance of a 3.0 GPA

Each student must maintain good academic standing with a 3.0 Grade Point Average (GPA) for all credits of graduate-level coursework. Failure to maintain a cumulative 3.0 GPA result in the student being placed on academic probation. For full details regarding academic standing, see the Academic Standing and Dismissal section of the SCI Catalog.

Grades for MLIS Core Courses

The six required core courses are:

- LIS 2020 - LIFECYCLES OF DATA AND INFORMATION
- LIS 2030 - DATA AND INFORMATION IN SYSTEMS
- LIS 2040 - THE INFORMATION PROFESSIONAL IN THE COMMUNITY
- Design Methods Sequence
 - LIS 2021 - IDENTIFYING INFORMATION NEEDS OF KNOWLEDGE ORGANIZATIONS
 - LIS 2022 - IMPLEMENTING SOLUTIONS FOR KNOWLEDGE ORGANIZATIONS
 - LIS 2023 - INTEGRATING SOLUTIONS FOR KNOWLEDGE ORGANIZATIONS
- LIS 2774 - SCHOOL LIBRARY MEDIA CENTER MANAGEMENT (for SLCP students)

A student must earn a grade of B or better in each core course. If a grade of B or better is not earned in a core course, the student must register for the course in the next term offered and earn a grade of B or better. A core course may be repeated only once; all other School policies regarding the repetition of courses apply (see Academic Standing and Dismissal section).

Grades for Elective Courses

All students must earn satisfactory grades in each elective course taken. Grades of C-, D+, D, D-, F, and Unsatisfactory are unacceptable for credit toward graduation. A course for which such a grade is earned must be replaced with another course or retaken, with a higher grade earned. In either case, a higher grade must be earned and a 3.0 GPA must be maintained. A course for which a grade of C- or lower was earned may be repeated only once.

Academic Provisional Admission

At the discretion of the faculty, a limited number of students who do not meet the 3.0 GPA minimum required for full admission into the MLIS program may be considered for admission. If such students are able to provide additional evidence of academic potential (e.g., outstanding scores on the Graduate Record Exam or the Miller Analogies Test) or professional potential (e.g., outstanding letters of recommendation and/or outstanding work experience), they may be admitted to the MLIS program with academic provisions. Such students must earn a B average (3.0 GPA) in the first twelve credits earned toward the degree. Failure to achieve a cumulative 3.0 GPA at the conclusion of the first twelve credits, may result in dismissal from the MLIS program.

Incomplete Grades and Class Enrollment for Master's Students

A master's student who has two incomplete grades (either "G" or "I") on their transcript will be barred from enrolling in further courses until the incomplete coursework and grades have been resolved.

Stricter grade guidelines and regulations apply to doctoral students. See the doctoral program regulations for details.

Doctoral

Library and Information Science, PhD

The Doctor of Philosophy in Library and Information Science program, in the Department of Information culture and Data Stewardship (ICDS), prepares students for careers in research, education, and professional practice. The primary purpose of the PhD program is to develop an understanding of library and information science beyond the master's degree, with particular emphasis on the conduct of original research, the production of significant research findings, and the contribution of such findings to public knowledge.

Admissions Requirements

The following are requirements for admission to the PhD/LIS Program:

- A master's degree from a program accredited by the American Library Association, a recognized international program, or the equivalent in a closely related field of study. Students must submit official transcripts as evidence.
- Attainment in previous graduate work of a minimum quality point average of 3.50 (on a scale with A having a value of four points per credit). An international student's quality point average will be calculated on the basis of equivalency from universities that use a different scale.
- Submission of scores from a predictor test, such as the Graduate Record Examination (or other test listed below) taken within the last three years.
- At least three references from persons in the academic and professional communities. The LIS Committee on Doctoral Studies may, on occasion, require additional references.
- An interview (in person, by telephone or using web conferencing tools) may be required as part of the admissions process for selected candidates, after an initial screening of their application materials.
- Submission of an application fee.

The Department of Information Culture and Data Stewardship seeks students with diverse educational and career backgrounds. By nature, LIS degrees are multi-disciplinary, and we welcome applicants with Bachelor's degree and/or advanced degrees from diverse disciplinary backgrounds. Our multi-disciplinary nature is reflected in the wide range of standardized tests that are accepted by our admissions committee, which include the GRE, MAT, MCAT, GMAT, and LSAT

Supporting Documents for Admission

As evidence of the ability to undertake doctoral work, the student's application must be accompanied by:

- An essay (not exceeding 1,000 words) indicating, as specifically as possible, the student's detailed academic and professional goals in relation to the Library and Information Science doctoral program and discussing in detail potential areas and/or topics in which the student expects to pursue dissertation research. Students SHOULD identify one or more ICDS faculty members with whom they want to work.
- A complete curriculum vitae that provides an overview of education, publications, work, and other activities.

- At least one example of scholarly research or professional writing in any format (print or electronic), which should be authored solely by the applicant. The applicant should explain the status of any published or unpublished research, thesis, contributions to the professional or scholarly literature, and other professional or academic experience relevant to an assessment of his or her capacity to pursue research successfully. If the only suitable writing sample available for submission is a co-authored publication, the applicant must explain the nature and extent of his or her contribution to the work (e.g., percentage of the finished work written by the applicant), and should attach additional evidence as verification (for example, a statement by the primary author or co-author of the work, confirming the parts of the work contributed by the applicant).
- If the candidate has had appropriate professional work experience in libraries, information centers, publishing, the information industry, education, or similarly related areas of professional activity, a brief description should be provided.

Credentials of prospective students are reviewed by the ICDS Committee on Doctoral Studies.

However, students who are applying for financial aid should be aware that they must be admitted and meet financial aid deadlines to ensure consideration for funding.

Beyond the criteria and materials previously outlined for application submission, these programs do not require specific coursework for admissions consideration.

Application Deadline

All admissions materials must be submitted by January 15th of each year for beginning studies in the forthcoming fall term and for consideration for financial aid.

Commencement of Study

PhD students may begin their studies only in the Fall Term in order to ensure a coherent program of study.

Matriculation

On-Campus English Proficiency Test: Upon arrival, students who have not met the minimum TOEFL or IELTS scores will be given the on-campus administered English Language Proficiency Test. If remedial courses in English as a foreign language are recommended, the student must complete the remedial course during the first two terms of study. This may extend the length of the program of study.

Academic Advising and Plan of Studies

An advisor will be assigned to the student upon entering the program; however, the student is free to select a different advisor for subsequent advising and registration. The PhD student should seek a faculty Program Advisor who is knowledgeable in the student's major area of study. The advisor must be a member of the graduate faculty in the Information Culture and Data Stewardship Department who is able to spend the time and effort necessary for the advising role, will be available for examinations, and with whom a productive and comfortable working relationship can be established.

Program Advisor

The advisor selected by the student for the period before the dissertation stage of the program is the Program Advisor. The Program Advisor and the Dissertation Advisor may be the same person, but the student has the option to select a different advisor for the dissertation. Upon agreement of the faculty member to act as the student's advisor, the signed agreement is placed in the student's folder. Any subsequent change of Program Advisor should be submitted in writing to the Chair of the ICDS Committee on Doctoral Studies and placed on record in the student's folder.

Doctoral students are ultimately responsible for their own direction and progress through the program and are encouraged to seek advice from any member of the SCI faculty or other University faculty in this endeavor. The Program Advisor, however, is the one primarily responsible for providing guidance, insight, advice, information, explanation of University and School policies, and general assistance in the pursuit of the PhD degree. The Program Advisor will also approve those actions requiring a faculty signature.

The Program Advisor assists the student in

1. developing a plan for the program of study and
2. arranging for the preliminary and comprehensive examinations.

Degree Requirements

This PhD degree requires a minimum of 54 credits beyond the master's degree with a total credit minimum of 72. A minimum of 36 credits must be taken in advanced course work. The student must receive a letter grade in each course taken in this 36-credit requirement, except for the teaching practicum course.

An additional 18 credits are required which must be applied to dissertation research and writing; however, regardless of the number of credits taken, no more than 18 credits for dissertation research and writing may be applied toward graduation. The grade for these credits will appear as an "S" on the student's transcript. In order to register for, and successfully complete, dissertation credits, students must show evidence of work toward the dissertation by completing the "Dissertation Credit Tracking Checklist" and updating it at the end of the term.

The minimum of 36 credits of course work, all of which must be on the graduate level, must be distributed as follows:

- 3 credits: LIS 3000 - INTRODUCTION TO DOCTORAL STUDIES
- 9 credits: 3000-level doctoral seminars offered by SCI
- 3 credits: LIS 3950 - TEACHING PRACTICUM or FACDEV 2200 - PRACTICUM ON UNIVERSITY TEACHING
- 6 credits: Courses in research methodology and statistics
- 6 credits: Courses in the cognate field
- 9 credits: Courses may be:
 - 3000-level independent studies or doctoral seminars offered by SCI
 - Additional 3000-level doctoral seminars offered by SCI
 - Additional cognate courses (up to six credits)
 - Additional research methodology courses
 - 2000-level courses in SCI (subject to be approved by the student's advisor)

Additional Requirements

GPA Requirement

PhD degrees are conferred only on those students who have completed all courses required for the degree with at least a 3.50 GPA.

Cognate Requirement

Doctoral students are required to devote some portion of their studies to work on other disciplines in order to broaden their perspectives and deepen their understanding of library and information science. To fulfill the cognate requirement, students are required to take a minimum of six credits and a maximum of 12 credits in some area of graduate study outside the field of library and information science. These credits may be from more than one department or school.

Students may enroll for all or part of their cognate course work at institutions other than the University of Pittsburgh, but only when prior approval has been obtained from the ICDS Committee on Doctoral Studies. Courses in the School of Computing and Information generally cannot be used to fulfill the cognate requirement. Cross-listed courses may be counted as cognates if they originate outside the School. SCI courses may occasionally be approved as cognate courses if the subject matter is highly specialized and distinct from the student's disciplinary focus; students must petition the ICDS Committee on Doctoral Studies for approval in advance of registering for the course. Cognate areas and courses shall be selected with consultation and approval by the student's advisor.

If a student has significant course work at the graduate level or an advanced degree in another discipline and desires that it be considered as the cognate field, the student has the right to petition the ICDS Committee on Doctoral Studies for exemption from the cognate requirement. A minimum of 36 course credits and 18 credits of dissertation writing and research will still be required for the PhD students who opt to petition for exemption from the cognate requirement. Such a petition should be submitted as early as possible, preferably in the first term, in order to plan a coherent program of study.

Research Methodology Requirement

Research methodology courses may include courses in statistical analysis, general research methodology, and specific research methods or research methods used in specific fields of study, for instance, historiography, ethnography, or case and field study. Doctoral students should work with their advisors to identify the appropriate research methodology courses.

Research methodology courses may be taken within SCI or in another School. Research methodology courses taken from schools outside SCI cannot be used to fulfill the cognate requirement.

The research methodology course requirement must be fulfilled prior to taking the Preliminary Examination.

Teaching Practicum

A three-credit teaching practicum is required for all doctoral students in order to provide the student with teaching experience that may become part of the student's professional dossier. The teaching practicum is usually taken after the completion of two terms of study. The student is responsible for identifying an appropriate course related to their area of interest and obtaining the agreement of the instructor of record. Appropriate activities as part of the teaching practicum include involvement in course design, attendance at all class sessions, presentation of some course materials, office or tutorial hours, and involvement in grading. The student's teaching responsibility should involve preparation and presentation of specific topics throughout the term and sole responsibility for at least one class session. The teaching practicum is graded on a pass/fail basis.

Doctoral students may also fulfill this requirement by completing the University Teaching Practicum course offered through the Faculty of Arts and Science. The course, FACDEV 2200, is a graduate seminar designed for Teaching Assistants and Teaching Fellows who will be teaching a class independently for the first time.

Public Presentation Requirement

During the course of the PhD program, each student is required to make a formal presentation to faculty and students in the School or in another academic setting. The topic of this presentation may be a research project the student is engaged in or preliminary results of the dissertation project. This presentation may be a guest lecture in a course, a public colloquium, a presentation sponsored by the Doctoral Guild or a presentation at an academic conference. Documentation of the presentation should be provided for inclusion in the student's file.

Attendance at colloquia is required of students in their term of residence and is recommended throughout the PhD program.

Probation and Termination

All students pursuing the LIS doctoral degree are required to maintain a cumulative GPA of at least 3.5 after admission to graduate study for all course work applicable to the degree. Students are automatically placed on academic probation when their cumulative GPA falls below 3.5. The graduate faculty may choose to terminate students on probation for two consecutive terms. A cumulative GPA of 3.5 or better is required for admission to LIS doctoral study and for the award of the LIS doctoral degree. In addition, students must show adequate progress in the subsequent benchmark examinations and defenses.

Each student will submit a LIS Doctoral Student Annual Progress Report in the spring term for review by the ICDS Committee on Doctoral Studies.

Residence and Registration Guidelines

The University's Regulations Pertaining to Doctoral Degrees contains myriad policies related to registration and residence. Students must review these regulations as well as those governed at the School level. In addition, PhD students should adhere to the following guidelines.

A student may not register for dissertation credits until the successful completion of the preliminary exam.

Full-time dissertation study is achieved once all required courses (36 credits minimum) and all dissertation credits (18 credits of LIS 3999 minimum) are completed. Once the preliminary exam is successfully completed (after a minimum of 24 credits of coursework) students may begin taking a combination of dissertation credits and required credits until both requirements have been completed. Students may, with the approval of their dissertation advisor, register for up to nine dissertation credits per semester until the 18 credits are achieved, but a combination of dissertation credits and required coursework can also be taken in each semester, so long as at least nine credits of one or the other or both are taken in each fall and spring semester. If additional coursework (beyond the required 36 credits) is desired by the student or recommended by the advisor (for example, classes in statistical methods, programming, additional cognate courses, etc.), a mix of dissertation credits and such additional coursework may be

taken as well (for example, six credits of dissertation and one three-credit additional course, or three credits of dissertation and six credits of additional coursework).

Doctoral students who have completed all credit requirements for the PhD degree, including the 36 required credits and the 18 dissertation credits (54 credits total), have had their Dissertation Proposal approved, and are working full time on their dissertations, should register for "Full-time Dissertation Study." Enrollment in this course fulfills the University requirements for registration in the term of graduation.

International students studying on an F-1 visa must maintain full-time registration status on an exact and regular basis that is stricter than the residency rules required by the school as stated above. Due to federal immigration regulations, if the term preceding a student entering full-time dissertation status occurs during the fall or spring terms, the student must enroll full-time (nine or more credits). A "reduced course load" request cannot be approved by the Office of International Services (OIS) unless the request is made for the student's term of graduation. Even if a student needs to complete only six credits before entering full-time dissertation status, federal regulations trump the school's program requirements and they must enroll full-time in all fall and spring terms excepting their term of graduation.

Preliminary Examination

Eligibility

To be admitted to the preliminary examination a student must:

- Have completed 24 credits of study or be completing 24 credits in the exam term, including 6 credits from courses in research methodology and/or statistics
- Be registered in the term in which the preliminary examination is taken;
- Apply in writing and with the advice and consent of a faculty advisor to ICDS support staff by the announced deadline.

Students (whether full-time or part-time) are encouraged to take the preliminary examination, with the advice of the faculty advisor, as early as possible. Full-time students MAY take the preliminary examination near the end of the 1st year spring term and SHOULD take it no later than the 2nd fall term.

Preliminary Examination Procedure

Upon completion of 24 credits of coursework, the student will submit a portfolio comprising the best representation of their work completed so far to the faculty for review. Each student will also be required to present this portfolio to the ICDS Committee on Doctoral Studies as a whole, and the whole committee will vote on whether or not the portfolio is acceptable. A date for the portfolio presentation for the Preliminary Examination will be set at the beginning of each term. Students are required to submit their portfolio to ICDS Department support staff two weeks in advance of the Preliminary Examination. Preliminary Examinations are held in the fall and spring terms.

Preliminary Examination Portfolio

The preliminary evaluation will be based on the breadth and depth of knowledge as addressed through coursework, as well as whether the coursework taken will support the research plan of the student. This portfolio will minimally consist of the following elements:

1. Course plan

- List of courses completed with dates
- Projected list of remaining courses with dates
- Notations concerning how all course requirements are to be met

2. Research prospectus

- Research prospectus or plan and how this relates to coursework (taken and planned). This section will consist of a proposed area of concentration for the dissertation, justification for the research, and description of the methodological approach in some detail. It will also include an analysis of what types of resources will be needed to carry out the plan and to support the student through the completion of the dissertation.

3. Two examples of major work

- Two examples of major work completed while working towards the PhD (for example, a substantial coursework assignment, and a published or submitted conference paper or journal article). At least one of these should be a significant piece of writing, authored solely by the candidate. The other can also be a paper or could be another type of work demonstrating depth of knowledge and research in an area. If a jointly authored paper is included in the portfolio, the candidate should be named as the first author, and they must explain the nature and extent of the contributions of each co-author.

4. Additional items

- Professional activities (e.g., papers presented at conferences)
- Awards

Preliminary Examination Outcomes

The Chair of the ICDS Committee on Doctoral Studies will respond to the presentation with an evaluation memo to the student either noting the acceptability of the portfolio or noting the areas in which the student is deficient. The memo may be very specific and prescribe specific types of courses, work products, or other elements necessary for the student to complete their research plan or the required course work. If a portfolio is not passed by a majority of those hearing the case, the student may make a second attempt in a later term.

With the successful completion of the preliminary examination, the Chair of the ICDS Committee on Doctoral Studies will notify the student in writing of admission to doctoral study and will note the results on the Preliminary Examination Results Form.

Failure to pass the Preliminary Examination on the second attempt will result in dismissal from the doctoral program.

Failure to pass the Preliminary Examination by the end of the second spring term (or third spring term for part-time students) will result in dismissal from the doctoral program.

Comprehensive Examination

Eligibility

To be admitted to the comprehensive examination a student must:

- Have completed 36 credits of study
- Be registered in the term in which the comprehensive examination is taken;
- Apply in writing using the Application to Sit for the Comprehensive Exam form and with the advice and consent of a faculty advisor to the ICDS Department support staff at least six weeks before the scheduled exam time.

Full-time students should take the comprehensive exam in the fall or spring term of the second year. All students must successfully complete the Comprehensive Exam within 18 months of passing the preliminary examination (24 months for part-time students).

Comprehensive Examination Procedure

In the Information Culture and Data Stewardship Department, the Comprehensive Examination will have written and oral components, and will normally be offered in the fall and spring terms. Students will notify their advisor and the Chair of the ICDS Committee on Doctoral Studies of their interest in taking the Comprehensive Examination at least six weeks before the examination date, using the form provided. The dates for each student will be determined in consultation with the student and the student's comprehensive examination committee.

Students will be examined in two areas:

- A broad perspective on current issues in library and information science, or archival studies, and
- The student's designated research focus.

In the PhD Library and Information Science program, the following procedures apply:

- The examination will be conducted by a three-person committee: the student's advisor and two faculty members chosen by the student and the faculty advisor. Faculty members chosen to serve on the committee must give their consent.
- The examination will consist of two parts: a written, take-home exam over two weeks (three weekends) and an oral examination conducted by the student's committee.
- The written examination will consist of four questions, two in each of the areas of the examination. The student will choose one of the two questions in each area. Though the student is required to answer only two questions, there is the expectation that the response will be comprehensive and include a high level of analysis of the material. In terms of length, 12-15 pages would constitute a minimal answer for each question though longer papers are expected. The student will be given two weeks (including three weekends) to complete the written examination.
- The second part of the examination will be an oral examination expanding on any points from the written work that the committee wishes to address or any questions arising from the broad, general area of interest. The oral examination (approximately two hours) will take place as soon as possible after the written component has been evaluated.

Comprehensive Examination Outcomes

The result of the comprehensive examination will be a pass or fail. If a student fails, they may retake the exam one more time. Students use the Comprehensive Examination Results Form to document this benchmark. Failure to pass the Comprehensive Examination on the second attempt will result in dismissal from the doctoral program.

Failure to pass the Comprehensive Examination within the required time frame of within 18 months of passing the preliminary examination (or 24 months for part-time students), will result in dismissal from the doctoral program.

Dissertation

Dissertation Advisor

Students must gain the agreement of a member of the ICDS graduate faculty to chair the Dissertation Committee that will advise on the area of research and the design of the study. The advisor's agreement must be obtained and recorded in the student's file. Any request to change the Dissertation Advisor must be submitted in writing to the Chair of the ICDS Committee on Doctoral Studies after discussion with the Dissertation Advisor. Students retain the right to change advisors with impunity. It is important for students to be aware of and sensitive to various issues, including: 1) the importance of mutual consideration in the relationship between advisor and advisee; and 2) the academic benefits of continuity in the relationship with a major advisor and other members of the dissertation committee. Approval for the change and the selection of another Dissertation Advisor is filed in the student's folder.

The student's dissertation advisor:

- Assists in choosing the members of the Dissertation Committee and in confirming the eligibility of all members selected;
- Arranges with ICDS support staff to schedule the dissertation proposal presentation;
- Reviews progress toward completion of the research;
- Arranges with LIS support staff to schedule the dissertation defense;
- Chairs the dissertation defense;
- Secures appropriate signatures from Dissertation Committee members and assures that all required paperwork is submitted in accordance with the ICDS, School of Computing and Information, and University procedures.

Dissertation Committee

The Dissertation Committee, selected by the student and major dissertation advisor, shall consist of at least four members, with the majority being from the graduate faculty of the School of Computing and Information. At least one, but not more than two, should be from another School of the University. Work in the cognate area may provide the student with the opportunity to select an appropriate outside member for the Dissertation Committee from a discipline related to the student's area of specialization. Upon the recommendation of the Dissertation Advisor, and with the approval of the LIS Committee on Doctoral Studies, a member may be appointed from outside the University. Outside members of the Dissertation Committee are not obligated to attend dissertation related events in person. If an outside person from another University or agency does attend in person, the ICDS Department is not responsible for covering any expenses involved in the attendance of the outside member at meetings. Finally, the

major advisor proposes the members of the committee for approval to the ICDS Doctoral Program Chair and the Dean, using the Doctoral Committee Form found under "PhD Student Forms" to document approval of committee composition.

Meetings of the doctoral candidate and the Dissertation Committee must occur at least annually from the time the student gains admission to Doctoral Candidacy. During these meetings, the committee should assess the student's progress toward the degree, discuss objectives for the following year, and project a timetable for completing degree requirements.

Any language requirement relates to proficiencies necessary for successful completion of doctoral research. Depending upon the student's program, proficiencies in modern languages, linguistics, and/or computer languages may be specified. The student's Dissertation Advisor will determine the language requirement in consultation with the Dissertation Committee at the time the proposal is accepted.

Dissertation Procedural Requirements

The student must submit all forms, letters, and questionnaires related to the dissertation research to the ICDS members of the Dissertation Committee for approval before any such documents are publicly distributed.

The student is also responsible for meeting University requirements when human subjects are used in research. These requirements are enforced by the University's Human Research Protection Office (HRPO) and the Institutional Review Board (IRB). The school has a faculty representative on the Institutional Review Board who may be contacted with questions of procedure.

Bibliographic style is best determined by the subject of the dissertation; a style manual of the student's choice may be used for the content of the dissertation and must be applied consistently throughout.

The final approved version of the dissertation must be submitted electronically to the University. For the full instructions on the formatting and submission of Electronic Thesis and Dissertation (ETD), please visit the University's ETD Web site and the SCI Current Student Web site.

Dissertation Proposal Defense

Before scheduling the dissertation proposal defense, the student must have completed all required coursework, and successfully completed the Preliminary and Comprehensive Examinations, which may not be scheduled in the same term as the dissertation proposal defense. Please complete the required form containing the scheduling information and the abstract.

The student should defend the proposal of the dissertation within 18 months of successfully completed the comprehensive exam (24 months for part-time students). All students must successfully complete the Dissertation Proposal Defense within 24 months of passing the Comprehensive Examination (36 months for part-time students). Failure to successfully complete the dissertation proposal defense within the required period of time will result in dismissal from the doctoral program.

The student should work closely with the Dissertation Advisor during the preparation of the proposal for dissertation research. Only when the proposal is reviewed and approved by the Dissertation Advisor will the student initiate the proposal defense process. The proposal must be submitted to the members of the Dissertation Committee at least two weeks before the scheduled time of the proposal defense. The presentation portion of the proposal defense is an open event and will be announced to the faculty and students in the school. If scheduling problems for committee members occur, telephone conferencing may be used. Faculty discussion about the presentation is closed and only the members of the Dissertation Committee will participate.

The Dissertation Committee must unanimously approve the dissertation topic and research plan before the student may be admitted to candidacy for the doctoral degree. However, approval of the proposal does not imply either the acceptance of a dissertation prepared in accordance with the proposal or the restriction of the dissertation to this original proposal. Please use this Proposal Defense Results form to document the results of the defense.

Candidacy

For admission to formal candidacy for the PhD in LIS degree, a student must have fulfilled the following requirements:

- Passed the Preliminary Examination;
- Completed a minimum of 36 credits beyond the master's degree with a GPA of 3.5 or higher;
- Passed the Comprehensive Examination;
- Successfully defended the dissertation proposal and received permission from the Dissertation Committee to begin research.

When these steps have been taken, the chairperson of the student's Dissertation Committee will notify the Chair of the ICDS Committee on Doctoral Studies, the Chair of the Information Culture and Data Stewardship Department, and the Dean of SCI that the student has achieved formal candidacy.

Dissertation

In accordance with the University Regulations Pertaining to the Doctor of Philosophy, each student must write a dissertation that presents the results of a research project carried out by the student. An appropriate research project involves a substantive piece of original and independent research, grounded in an appropriate body of literature, and employing systematic methods and procedures to investigate a defined question or problem. It is relevant to an identifiable field as it is currently practiced, and provides a significant contribution or advancement in that field. It presents either a hypothesis tested by data and analysis, or an analysis of data supporting the development of a theory, or leading to new or substantially improved insights. It is the responsibility of the student's doctoral committee to evaluate the dissertation in these terms and to recommend the awarding of the doctoral degree only if the dissertation is judged to demonstrate these qualities.

Characteristics which a dissertation should demonstrate are:

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

Dissertation Defense

The student should work with the Dissertation Advisor to decide the right time for their dissertation defense. The student must obtain the Dissertation Advisor's approval before initiating the dissertation defense process. The student is responsible for presenting one copy of the dissertation in final form to each member of the Dissertation Committee at least two weeks before the date of the defense. The deliverable format is to be determined by each individual committee member.

The date, time, location, and subject of the dissertation defense shall be publicized in The University Times four weeks before the defense is held. All members of the Dissertation Committee and such other persons as are interested may attend the final defense, but acceptance of the dissertation is determined by a vote of members of the Dissertation Committee. Only members of the Dissertation Committee may be present during the final deliberations and may vote on the passing of the candidate. A report of this examination, signed by all the members of the Dissertation Committee, must be sent to the ICDS Department Chair and the Dean. If the decision of the committee is not unanimous, the case is referred to the Dean for resolution. The Chair of the Dissertation Committee should ensure that the dissertation is in its final form before requesting signatures of the members of the committee.

A student who defends the dissertation, but with conditions to be met before the degree can be awarded, must meet those conditions within the required time frame:

- Minor corrections (largely presentation, e.g., typographical errors) - to be completed within one calendar month, subject to approval by the Dissertation Advisor;
- Substantial amendments (involving more significant revisions and/or additions, e.g., rewriting sections of chapters) - to be completed within three calendar months, subject to approval by members of the Dissertation Committee.

In both of the above cases, the student's statute of limitations will automatically be extended if necessary for the period specified, without the need for a petition.

A student who does not successfully defend the dissertation may revise and resubmit the dissertation for examination within the time frame allowed by their statute of limitations.

Students must be registered for at least one credit or full-time dissertation credit in the term in which they defend their dissertation.

Graduation

Eligibility

The student must have successfully defended their dissertation and received final approval of the dissertation, including all corrections, by the Dissertation Committee. All students apply to graduate; receipt of the graduation application initiates a review of the student's coursework, grades, and milestone completion. As well, an international student's SEVIS record will be updated with a new "program end date." Registration is required for a minimum of one credit (or full-time dissertation) in the term of graduation although exceptions may be approved by the Dean's Office on a case-by-case basis. Finally, the student's Dissertation Chair and the School's Director of Records must approve the submission and publication of the Electronic Thesis and Dissertation (ETD).

For the full instructions on the formatting and submission of ETDs, please visit the University's ETD Web site and the SCI Current Student Web site.

Statute of Limitations

All requirements for the PhD degree must be completed in not more than six calendar years from the time of first registration (or eight calendar years for part-time students). Students may, in extenuating circumstances, submit a formal request for extension of their statute of limitations or for a leave of absence from the program. Requests for either an extension to a statute of limitations or for a leave of absence are submitted through online forms; these forms are shared with the student's advisor and then presented to the ICDS Committee on Doctoral Studies for a decision.

In all other matters of policy, see the University and School's Catalogs, then consult with the School's Director of Academic Records.

Master's

Library and Information Science, MLIS

MLIS Degree and the Profession

The role of information professionals has changed dramatically as the volume of available information has increased and technology for information search and retrieval has advanced. In response, the MLIS degree was redesigned in 2019 to offer a new foundational core that features three new courses, numerous electives that allow students to tailor the degree to their career interests, and a newly created Design Methods Sequence that highlights immersive experiential learning.

The new foundational core, based on the culture and values of librarianship and information science, will prepare students to understand the roles both information and data play in society. These courses focus on the lifecycles of data and information, data and information in systems, and the roles of information professionals in communities. The MLIS program, accredited by the ALA through 2020, is responsive to the information marketplace and encourages the development of creativity, professionalism, and a proactive attitude to the needs of various clientele in the library and information service environments.

Upon completion of the Master of Library and Information Science degree, graduates will incorporate the theories, knowledge, skills, ethical foundations, and social responsibilities of the information professions into critical and reflective professional practice for the benefits of individuals and communities. The MLIS degree program integrates library, archival, information, data sciences and data stewardship within the information professions.

Specifically, MLIS graduates will be able to:

Goals for Graduates of the MLIS program

1. Identify and communicate the ethical and historical foundations and core values of the information professions, data professions, and related disciplines.
2. Apply the principles of the management of information and organizations to various functions in data and information environments.
3. Select, plan, implement, and apply information technology using creative, contextualized, and ethical approaches.
4. Design, plan, implement, evaluate, and advocate for information services that embody a commitment to inclusion and dedication to underrepresented and marginalized users and communities.

5. Understand and apply research in the library, archival, museum studies, information science, data science, and stewardship, as well as other disciplines.
6. Develop and advance the contribution of the information professions to society through advocacy, continuing education, and lifelong learning for information professionals and the communities they serve.

Revised and affirmed by the faculty of the Department of Information Culture and Data Stewardship in April 2018

Admissions Requirements

The Department of Information Culture and Data Stewardship (ICDS) seeks students with diverse educational and career backgrounds. By nature, LIS degrees are multi-disciplinary, and we welcome applicants with a Bachelor's degree and/or advanced degree from diverse disciplinary backgrounds.

Beyond the criteria and materials previously outlined for application submission, these programs do not require specific coursework for admissions consideration.

Degree Requirements

With the possible exception of six credits of advanced standing, all course work must be completed in residence in the MLIS degree program (i.e., registering while matriculated as an SCI student) at the University of Pittsburgh.

The faculty may approve certain exceptions to the degree requirements outlined in the following sections. Approval for exceptions must be obtained BEFORE enrollment in the course in question and must be documented through the Records Office. See the Advising section of the SCI Catalog for more details.

The MLIS degree is a 36-credit program that can be completed in three consecutive terms of full-time study or up to four years (twelve terms) of part-time study.

There is a series of mandatory core courses -- the remaining courses are tailored to your career goals or chosen area of interest. It is important to plan carefully, in consultation with your faculty advisor, to make the best use of the educational opportunities available.

Students will take the six required courses* for the MLIS degree. Students must earn a B or better in each core course.

- LIS 2020 - LIFECYCLES OF DATA AND INFORMATION
- LIS 2030 - DATA AND INFORMATION IN SYSTEMS
- LIS 2040 - THE INFORMATION PROFESSIONAL IN THE COMMUNITY
- DESIGN METHODS SEQUENCE (to be taken sequentially)
 - LIS 2021 - IDENTIFYING INFORMATION NEEDS OF KNOWLEDGE ORGANIZATIONS
 - LIS 2022 - IMPLEMENTING SOLUTIONS FOR KNOWLEDGE ORGANIZATIONS
 - LIS 2023 - INTEGRATING SOLUTIONS FOR KNOWLEDGE ORGANIZATIONS
- LIS 2774 - SCHOOL LIBRARY MEDIA CENTER MANAGEMENT (*for SLCP students only)

Students should work with their advisors to ensure that they are following the proper course of study.

A thesis is not a requirement of the MLIS degree.

Thematic Areas

Students may elect a focused area of study which follows a more specific distribution of credits.

These thematic areas have been developed in response to needs expressed by the profession. In addition to the core knowledge of the information professions, you'll gain specific skill sets pertinent to your career goals. We offer six elective thematic areas:

- Academic Library Services
- Archives and Information Science
- Children and Youth Services
- Information Technologies
- Public Library Services

- School Library Certification Program

The following sections describe the thematic areas; the specific distribution of credits for the individual areas are outlined on the student's Academic Advisement Report (AAR). For more details regarding this dynamically generated advising tool, see the Advising section of the SCI Catalog.

Students select their focus of study on the application for admission and may change at any time. A form and instructions for changing specializations is available on the School's Current Students Web site.

Students who do not meet their chosen thematic area's requirements for graduation will automatically be changed to the general MLIS track and certified for graduation against the general degree requirements.

Academic Library Services

This thematic area is designed to provide you with the theoretical knowledge, contextual understanding, and practical skills to work effectively as a librarian or information professional in a higher education sector that is continually evolving. Our teaching is informed and inspired by personal experience, current research and leading thinking in the field. The courses will equip you for the challenges and demands of planning, managing and delivering resources and services in academic libraries, through the exploration of their historical contexts, current positions, and future directions.

Archives and Information Science

Recordkeeping, from governmental to organizational to personal, is one of the most ancient and essential human and institutional functions. Records are created and maintained for purposes of evidence; accountability; and personal, social and corporate memory. Archives serve a crucial cultural function, providing society with a sense of identity and memory. Records management programs help organizations to be compliant with regulatory agencies, responsible to constituent groups, and effective and efficient in the use of informational resources. Critical to the administration of records is the maintenance of records over long periods of time, traditionally called preservation and now being influenced by discussions concerning digital curation and stewardship.

Our program will give you the skills and knowledge to identify and analyze recordkeeping systems from legal, evidential, historical, and cultural perspectives. Students study in an engaging and intellectually stimulating environment.

Children and Youth Services

SCI acknowledges the changing landscape of children's and young adult librarianship. Without forgetting our important roots in children's literature, our school prepares information professionals who can reach out to the child of the 21st century.

Available to both the on-campus and online MLIS students, this thematic area will give you the practical skills and theoretical knowledge necessary to succeed as an information professional in a wide variety of positions.

Individualized

Available to both the on-campus and online MLIS students, this thematic area will give you the practical skills and theoretical knowledge necessary to succeed as an information professional in a wide variety of positions.

Information Technologies

This thematic area will enable graduates to assess, organize, and manage the various electronic systems that support library services. The faculty will explore the theoretical underpinnings of such systems as well as provide a thorough understanding of their functions. The program will emphasize database design and implementation, information architecture, and information visualization.

Public Library Services

Our teaching is informed and inspired by personal experience, current research and leading thinking in the field. The courses in the Public Libraries thematic area will equip you for the challenges and demands of planning, managing and delivering resources and services through the exploration of their historical contexts, current positions, and future directions.

School Library Certification Program

The School Library Certification Program (SLCP) will allow you to earn both your MLIS degree and your Instructional I teaching certificate in Library Science, K-12, from the Pennsylvania Department of Education. You will gain the critical skills needed through competency-based learning experiences in collaboration with practitioners. You will be prepared to embark upon one of the most challenging and rewarding careers in the Library and Information Sciences field.

Independent and Experiential Learning Opportunities

This program is designed to provide you with both the theoretical knowledge and practical skills for managing and making decisions related to your chosen academic pathway. As part of your course of study, you can gain critical experience through a for-credit Field Experience or you may also register for an Independent Study which affords the opportunity to work on research projects and publications.

Students must have completed a minimum of twelve credit hours in good academic standing in order to register for the Field Experience.

Intelligent Systems Program

The Intelligent Systems Program (ISP) is a degree-granting program in the University of Pittsburgh's School of Computing and Information that enables graduate students to pursue diverse interdisciplinary studies in applied artificial intelligence. The scope of the program is broad but it encourages students to explore concentrations in specific areas, such as biomedical informatics, machine learning and decision making, intelligent tutoring systems and educational technology, natural language processing and information retrieval, AI and law, and social computing.

Many of Pitt's acclaimed schools are represented through our associated faculty, including the School of Medicine, the School of Law, the School of Education, the Dietrich School of Arts and Sciences, and the Swanson School of Engineering. There are especially strong connections to research groups in the Department of Computer Science, the Department of Informatics and Networked Systems, the Department of Biomedical Informatics, the Law School, and the Learning Research and Development Center.

The program offers a Master of Science and Doctor of Philosophy degrees and an area of concentration in biomedical informatics.

Admissions Information

Briefly, an application consists of the standard School of Computing and Information admission form and supplemental materials. As well, applicants must include a concise statement of purpose, providing information on the following points:

- The objective in pursuing a PhD or MS in intelligent systems.
- Theoretical background in relevant areas.
- Background in relevant tools and applications, particularly programming languages, including your level of proficiency.
- Relevant practical experience, including industrial or commercial experience.

Applicants to the Biomedical Informatics track of the Intelligent Systems Program must specifically indicate their interest in this track on their application to the Intelligent Systems Program.

Financial Assistance

Students in ISP program are funded through a variety of sources, including externally supported research and training grants, University fellowships, and program funds.

Policies for the Intelligent Systems Program

- When a new student arrives, the student is assigned space. As the student finds an advisor and starts working on projects, he/she usually moves to other labs designated for that faculty.
- The progress of all ISP students is reviewed and mailed to the students in the fall of every year.

- ISP students are eligible to apply for a limited amount of conference travel funds each year. To find out more, refer to the ISP Web page.
- Every ISP student is expected to maintain a Web site listing their current contact information, publications, and current research. They are also responsible for ensuring that the Web site is linked from the ISP Student Directory.
- ISP students are required to attend all but two of the scheduled AI Forum talks *per term* and sign in so they get credit. Failure to meet this requirement will be taken into account when determining a student's eligibility for funding such as the Provost Fellowship in ISP candidacy, summer GSA funding, ISP Travel Grants and similar funding. *In case of extenuating circumstances, the student should communicate the possible absence to the ISP director and administrator as soon as possible before the Forum.*
- ISP students are required to complete the Research Integrity Module. "Upon completion of this activity, participants should be able to describe generally accepted practices and ethical principles associated with authorship and publication, generation and use of data, mentoring, research misconduct, and other investigator responsibilities." Once completed, the last page must be printed and submitted to the ISP administrator.

Maintenance of a 3.0 GPA

Each student must maintain a 3.0 Grade Point Average (GPA) for all credits of graduate level coursework for either degree. Failure to maintain a cumulative 3.0 GPA will result in the student being placed on academic probation. Students should refer to the Academic Standing and Dismissal section of the SCI Catalog page for full definitions and explanations of the academic standing review.

Grades for Individual Courses

Students must earn a grade of B- or better in each of the courses in the appropriate ISP curriculum (the General Intelligent Systems Track or the Biomedical Informatics Track).

Transfer Credits

Transfer credit limits are determined by the University while the process is managed at the School level. See the Transfer Credits section of the SCI Catalog page for details and forms. Note, the explicit approval of the student's advisor and the ISP director is required. Students must provide all items outlined in the Transfer Credit Request Form in order for the request to be reviewed by the ISP Director.

Substituting Other Courses at the University of Pittsburgh

Course substitutions require the approval of the student's advisor and the ISP director. To apply for a course substitution, a student should first obtain the approval of his or her advisor. Then, the student should submit the following information to the ISP director: (1) whether the class is a graduate or undergraduate class, (2) exactly which requirement the course is meant to satisfy, (3) an indication of approval by the student's advisor, (4) justification for the substitution, and (5) sufficient information about the course syllabus for the director to judge whether the substitution would be appropriate.

Course substitution must be documented and shared with the Records Office to expedite graduation certification review.

Doctoral

Intelligent Systems, PhD

Requirements for the PhD

The student's adviser must be a member of the ISP faculty. Note that each new student is initially assigned an administrative adviser. A student's administrative adviser will not necessarily be the student's MS or PhD adviser.

To obtain a degree, a student must also be in good standing and at full student status (not provisional). To remain in good standing, a student must make sufficient progress on their degree requirements, and also attend all but two (2) of the scheduled AI Forum talks per term and sign in so they get

credit. Failure to meet this requirement will affect their application for various fellowship candidacies, GSA funding, travel grants, and similar funding. In the case of extenuating circumstances, the student should communicate the possible absence to the ISP director and administrator.

Students pursuing the Doctor of Philosophy degree in ISP must adhere to the SCI requirements for graduation and complete a minimum of 72 credits as outlined below. Students must earn a grade of B- or better in each of the courses in the appropriate ISP curriculum (the general track or the Biomedical Informatics track) and maintain a QPA of at least 3.0

Course Requirements

Prerequisites: Students are expected to have the undergraduate prerequisites needed to take the graduate courses required by the ISP. These may be required if not taken.

General Intelligent Systems Track

First-year students

- ISSP 2020 - TOPICS IN INTELLIGENT SYSTEMS
- INFSCI 3005 - INTRODUCTION TO THE DOCTORAL PROGRAM
- ISSP 2030 - ADVANCED TOPICS IN INTELLIGENT SYSTEMS

Core

- ISSP 2160 - FOUNDATIONS OF ARTIFICIAL INTELLIGENCE / CS 2710 - FOUNDATIONS OF ARTIFICIAL INTELLIGENCE
- AND Choose Two of the Following:
- ISSP 2170 - MACHINE LEARNING / CS 2750 - MACHINE LEARNING
- ISSP 2230 - INTRO NATURAL LANGUAGE PROCESSING / CS 2731 - INTRO NATURAL LANGUAGE PROCESSING
- ISSP 2180 - COMPUTER VISION / CS 2770 - COMPUTER VISION
- ISSP 3712 - KNOWLEDGE REPRESENTATION / CS 3740 - KNOWLEDGE REPRESENTATION

Theory

Applied or mathematical statistics. Choose one of the following:

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- BIOST 2042 - INTRODUCTION TO STATISTICAL METHODS 2
- BIOINF 2118 - STATISTICAL FOUNDATIONS OF BIOMEDICAL INFORMATICS
- STAT 2131 - APPLIED STATISTICAL METHODS 1
- STAT 2132 - APPLIED STATISTICAL METHODS 2

Theory of computation, algorithms. Choose one of the following:

- CS 2110 - THEORY OF COMPUTATION
- CS 2150 - DESIGN & ANALYSIS OF ALGORITHMS
- ISSP 3520 THEORY OF LEARNING ALGORITHMS / CS 3120 THEORY OF LEARNING ALGORITHMS

One additional course required. Any of the theory courses listed above are acceptable.

Advanced courses

Four ISSP advanced lecture courses, numbered 2000 or higher and approved by the PhD adviser.

Biomedical Informatics Track (ISP/MI)

This assumes that a student already has training in a health care field; if this is not so, then the faculty will select a set of courses that teach the student basic medical knowledge, and the student may take these courses as electives.

First-year students

- ISSP 2020 - TOPICS IN INTELLIGENT SYSTEMS
- INFSCI 3005 - INTRODUCTION TO THE DOCTORAL PROGRAM
- ISSP 2030 - ADVANCED TOPICS IN INTELLIGENT SYSTEMS

Core

- ISSP 2083 - BIOMDCL INFORMATICS JOURNAL CLUB / BIOINF 2032 - BIOMEDICAL INFORMATICS JOURNAL CLUB
- ISSP 2015 - FOUNDATIONS OF CLINICAL AND PUBLIC HEALTH INFORMATICS / BIOINF 2011 - FOUNDATIONS OF CLINICAL AND PUBLIC HEALTH INFORMATICS
- ISSP 2160 - FOUNDATIONS OF ARTIFICIAL INTELLIGENCE / CS 2710 - FOUNDATIONS OF ARTIFICIAL INTELLIGENCE

Then choose;

One of the following:

- ISSP 2170 - MACHINE LEARNING / CS 2750 - MACHINE LEARNING
- ISSP 2230 - INTRO NATURAL LANGUAGE PROCESSING / CS 2731 - INTRO NATURAL LANGUAGE PROCESSING
- ISSP 2180 - COMPUTER VISION / CS 2770 - COMPUTER VISION

AND choose one of the following:

- CS 1510 - ALGORITHM DESIGN
- CS 2150 - DESIGN & ANALYSIS OF ALGORITHMS
- CS 3150 - ADV TOPICS DESIGN & ANALYSIS ALGORITHM

AND choose one of the following:

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- BIOST 2042 - INTRODUCTION TO STATISTICAL METHODS 2
- BIOINF 2118 - STATISTICAL FOUNDATIONS OF BIOMEDICAL INFORMATICS
- STAT 2131 - APPLIED STATISTICAL METHODS 1
- STAT 2132 - APPLIED STATISTICAL METHODS 2

AND choose two of the following:

- ISSP 2070 - PROBABILISTIC METHODS / BIOINF 2101 - PROBABILISTIC METHODS
- ISSP 2081 - FOUNDATIONS OF BIOINFORMATICS
- ISSP 2240 - DECISION ANAL & DECISION SUPPORT SYS / INFSCI 2130 - DECISION ANALYSIS AND DECISION SUPPORT SYSTEMS
- BIOINF 2121 - HUMAN-COMPUTER INTERACTION AND EVALUATION METHODS
- BIOINF 2117 - APPLIED CLINICAL INFORMATICS
- BIOINF 2016 - FOUNDATIONS OF TRANSLATIONAL INFORMATICS
- BIOINF 2124 - PRINCIPLES OF GLOBAL HEALTH INFORMATICS

Advanced Courses

Three Graduate-level Courses (2000 or higher, three credits or more) ISSP lecture course that has your adviser's approval as being relevant to your studies in the ISP required.

TA

TA any biomedical informatics (BIOINF) course that is cross-listed as an ISSP course.

MS Project and PhD Preliminary Examination

For this requirement, the student must complete a research project, approved by the student's preliminary evaluation committee, involving (1) significant research, design, or development work, (2) a written report, and (3) an oral presentation. Students must form an MS project committee (MS) or a preliminary evaluation committee (PhD) consisting of three faculty members, two of whom must be ISP faculty. The student's adviser chairs the committee and must be an ISP faculty member.

Preferably, the research project is completed by the end of the summer term of the second year. Students who have not defended their research project by end of the fall term of their third year in the program will be placed on provisional status in the program, unless extenuating circumstances warrant an extension, as judged by the student's preliminary evaluation committee.

Although not a requirement, it is strongly suggested that the student submit the project report for publication in a refereed journal or conference. Thus, the scope of the research project is intended to be at the level of a paper that is of publishable quality in a peer-reviewed AI journal or conference.

The steps to completing the project are as follows:

- Submit a project proposal to your committee for its approval.
- Perform the work, and write a project report.
- Submit your project report to your committee at least two weeks in advance of your oral presentation of the work.
- Present your work in a talk given to your committee. As a guideline, you should give about a 30-minute talk and leave about 30 minutes for questions and discussion. The ISP faculty should be invited to the oral presentation. General questions relating to the field of AI are appropriate at this examination. The oral presentation may take place in an open forum, such as the ISP AI Forum, followed by a closed session with just your committee and any other ISP faculty members who wish to be present.

The committee will evaluate the project and presentation. The following criteria should be considered: The project and presentation should represent independent research, design, or development work; they should be technically sound; and they should be relevant to the ISP. Also, the student should display the breadth of knowledge, understanding of the significance and motivation of the work, and understanding of the relationship of the work with prior work; and, the presentation should be clear. The committee will combine that evaluation with an evaluation of the student's progress in coursework to arrive at an overall evaluation of one of the following:

- Pass at the PhD level.
- Provisional pass at the PhD level: Must complete additional requirements specified by the committee in order to obtain a pass.
- Pass at the MS level: Student obtains a terminal MS degree, once all course requirements for the MS are completed.
- Fail.

Students who pass will need a card signed by their committee to obtain credit for passing. Contact the ISP program secretary at least two weeks before the oral portion of the preliminary evaluation, so the card can be available at the meeting to be signed.

PhD Comprehensive Examination

For the PhD comprehensive examination, students should follow these steps:

Form a comprehensive examination committee consisting of at least three faculty members, two of whom must be ISP faculty. The student's PhD adviser chairs the committee and must be an ISP faculty member. The faculty members on a given student's comprehensive examination committee are often the same as the faculty on that student's preliminary evaluation committee, but they need not be.

Choose three major subareas of AI. One of these areas is flexible; the other two should be chosen from the ISP list of sub-areas below. The flexible area must be unanimously approved by the students' committee (but does not need to be approved by the director). Biomedical Informatics students should choose "Biomedical Informatics" as one of the subareas.

- AI and Business/Accounting
- AI and Law

- AI and Medicine
- AI and MIS
- Bioinformatics
- Case-based Reasoning
- Cognitive Architectures (or Subsymbolic Approaches)
- Connectionist Approaches
- Statistics and Evaluation Methods
- Expert Systems
- Intelligent Interfaces
- Intelligent Tutoring Systems
- Knowledge Representation
- Machine Learning
- Biomedical Informatics
- Natural-language Processing
- Planning
- Reasoning About Uncertainty
- Robotics
- Vision

Work with the committee to finalize the reading for the three chosen subareas. Have the committee approve the list.

Work with your committee members (or their designated administrative assistants) to set the following dates for the examination:

- The date and time the written examination is distributed to you.
- The date and time you return the examination, which by default is nine days after receiving it. Your committee can designate an examination period of fewer or more than nine days, and through your advisor you may request that they do so.
- The date and time you orally defend your examination answers before your committee. You should schedule two hours for your oral exam defense, although typically less time will be needed.

Your committee will provide a list of written questions. Unless an exception is made by your committee, you will have nine days to provide the written answers to these questions. At the end of those nine days, you should distribute your answers to each of your committee members. Be sure to check that each has received your answers.

An oral examination will take place after the comprehensive committee has read your answers; the committee should be given a minimum of three days to read your answers before the oral examination. The ISP faculty (only) will be invited. You will be asked questions by your committee about your answers on the written examination, and more broadly, about your knowledge of the material in the three areas of concentration you have chosen.

At the end of your oral examination, your committee will evaluate your performance as one of the following:

- Pass.
- Provisional pass: Must complete additional requirements specified by the committee in order to obtain a pass.
- Fail.

An evaluation by the comprehensive examination committee of "fail" will be considered by the ISP faculty at large, who will make a determination as to the status of the student in the ISP, including whether the student is allowed to re-take the examination or whether he or she is terminated from the program.

Students who pass the comprehensive examination will need a card signed by their committee to obtain credit for passing. Contact the ISP program secretary at least two weeks before the oral portion of the comprehensive examination, so the card can be available at the meeting to be signed.

PhD Dissertation

In pursuing the PhD dissertation, students should follow these steps:

1. Find a dissertation adviser and form a dissertation committee. The composition requirements for the Doctoral dissertation committees is detailed in the Doctoral Committee section of the SCI Catalog page; see the section for details.

2. Write a dissertation proposal. Present the proposal to your committee. Your committee must approve your proposal. You will need a form signed by your committee and the ISP director to complete this process. Contact the program administrator at least two weeks before meeting so the form can be available for signature at the meeting.
3. Carry out the research. Write the dissertation.
4. An announcement of your dissertation defense must appear in University Times and Pitt Chronicle. Send information to the ISP administrator at least five weeks before your oral defense date. This information will be sent to the University Times and Pitt Chronicle. The announcement includes the student name, the title of the dissertation, and the time and place of the defense.
5. Have an oral defense that is open to the University at large. You will need a card signed by your committee to obtain credit for passing the dissertation requirement. Contact the program secretary two weeks before your defense, so the card can be available for signature at the meeting.
6. Credit for doctoral research is ordinarily obtained through the ISSP 3000 - RESEARCH AND DISSERTATION PHD course. Students who have completed all course requirements, passed the PhD comprehensive examination, completed 72 credits of graduate study, and are working full-time on their dissertations are encouraged to register for FTDJ 0000 - FULL-TIME DISSERTATION STUDY.

Master's

Intelligent Systems, MS

Degree Requirements

Students pursuing the Master of Science degree in ISP must adhere to the SCI requirements for graduation and complete a minimum of 30 credits as outlined below, as well as an MS Project. Students must also earn a grade of B- or better in each of the courses in the appropriate ISP curriculum (the general track or the Biomedical Informatics track) and maintain a QPA of at least 3.0.

General Track Curriculum

First-year students are encouraged but not required to take:

- ISSP 2020 - TOPICS IN INTELLIGENT SYSTEMS
- INFSCI 3005 - INTRODUCTION TO THE DOCTORAL PROGRAM
- ISSP 2030 - ADVANCED TOPICS IN INTELLIGENT SYSTEMS

Core

• ISSP 2160 - FOUNDATIONS OF ARTIFICIAL INTELLIGENCE / CS 2710 - FOUNDATIONS OF ARTIFICIAL INTELLIGENCE
AND Choose Two of the Following:

- ISSP 2170 - MACHINE LEARNING / CS 2750 - MACHINE LEARNING
- ISSP 2230 - INTRO NATURAL LANGUAGE PROCESSING / CS 2731 - INTRO NATURAL LANGUAGE PROCESSING
- ISSP 2180 - COMPUTER VISION / CS 2770 - COMPUTER VISION
- ISSP 3712 - KNOWLEDGE REPRESENTATION / CS 3740 - KNOWLEDGE REPRESENTATION

Theory

Applied or mathematical statistics. Choose one of the following:

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- BIOST 2042 - INTRODUCTION TO STATISTICAL METHODS 2
- BIOINF 2118 - STATISTICAL FOUNDATIONS OF BIOMEDICAL INFORMATICS
- STAT 2131 - APPLIED STATISTICAL METHODS 1

- STAT 2132 - APPLIED STATISTICAL METHODS 2

Theory of computation, algorithms. Choose one of the following:

- CS 2110 - THEORY OF COMPUTATION
- CS 2150 - DESIGN & ANALYSIS OF ALGORITHMS
- ISSP 3520 THEORY OF LEARNING ALGORITHMS / CS 3120 THEORY OF LEARNING ALGORITHMS

One additional course required. Any of the theory courses listed above are acceptable.

Advanced courses

Four ISSP advanced lecture courses, numbered 2000 or higher and approved by the PhD adviser.

Biomedical Informatics Track (ISP/MI)

This assumes that a student already has training in a health care field; if this is not so, then the faculty will select a set of courses that teach the student basic medical knowledge, and the student may take these courses as electives.

First-year students are encouraged but not required to take:

- ISSP 2020 - TOPICS IN INTELLIGENT SYSTEMS
- INFSCI 3005 - INTRODUCTION TO THE DOCTORAL PROGRAM
- ISSP 2030 - ADVANCED TOPICS IN INTELLIGENT SYSTEMS

Core

- ISSP 2083 - BIOMDCL INFORMATICS JOURNAL CLUB / BIOINF 2032 - BIOMEDICAL INFORMATICS JOURNAL CLUB
- ISSP 2015 - FOUNDATIONS OF CLINICAL AND PUBLIC HEALTH INFORMATICS / BIOINF 2011 - FOUNDATIONS OF CLINICAL AND PUBLIC HEALTH INFORMATICS
- ISSP 2160 - FOUNDATIONS OF ARTIFICIAL INTELLIGENCE / CS 2710 - FOUNDATIONS OF ARTIFICIAL INTELLIGENCE

Then choose;

One of the following:

- ISSP 2170 - MACHINE LEARNING / CS 2750 - MACHINE LEARNING
- ISSP 2230 - INTRO NATURAL LANGUAGE PROCESSING / CS 2731 - INTRO NATURAL LANGUAGE PROCESSING
- ISSP 2180 - COMPUTER VISION / CS 2770 - COMPUTER VISION

AND choose one of the following:

- CS 1510 - ALGORITHM DESIGN
- CS 2150 - DESIGN & ANALYSIS OF ALGORITHMS
- CS 3150 - ADV TOPICS DESIGN & ANALYSIS ALGORITHM

AND choose one of the following:

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- BIOST 2042 - INTRODUCTION TO STATISTICAL METHODS 2
- BIOINF 2118 - STATISTICAL FOUNDATIONS OF BIOMEDICAL INFORMATICS
- STAT 2131 - APPLIED STATISTICAL METHODS 1
- STAT 2132 - APPLIED STATISTICAL METHODS 2

AND choose two of the following:

- ISSP 2070 - PROBABILISTIC METHODS / BIOINF 2101 - PROBABILISTIC METHODS
- ISSP 2081 - FOUNDATIONS OF BIOINFORMATICS
- ISSP 2240 - DECISION ANAL & DECISION SUPPORT SYS / INFSCI 2130 - DECISION ANALYSIS AND DECISION SUPPORT SYSTEMS
- BIOINF 2121 - HUMAN-COMPUTER INTERACTION AND EVALUATION METHODS
- BIOINF 2117 - APPLIED CLINICAL INFORMATICS
- BIOINF 2016 - FOUNDATIONS OF TRANSLATIONAL INFORMATICS
- BIOINF 2124 - PRINCIPLES OF GLOBAL HEALTH INFORMATICS

Three (3) Graduate level (2000 or higher, three credits) ISSP lecture courses that have been approved by your advisor as being relevant to your studies in the ISP.

MS Project

For this requirement, the student must complete a research project, approved by the student's preliminary evaluation committee, involving (1) significant research, design, or development work, (2) a written report, and (3) an oral presentation. Students must form an MS project committee (MS) or a preliminary evaluation committee (PhD) consisting of three faculty members, two of whom must be ISP faculty. The student's adviser chairs the committee and must be an ISP faculty member.

Preferably, the research project is completed by the end of the summer term of the second year. Students who have not defended their research project by end of the fall term of their third year in the program will be placed on provisional status in the program, unless extenuating circumstances warrant an extension, as judged by the student's preliminary evaluation committee.

Although not a requirement, it is strongly suggested that the student submit the project report for publication in a refereed journal or conference. Thus, the scope of the research project is intended to be at the level of a paper that is of publishable quality in a peer-reviewed AI journal or conference.

The steps to completing the project are as follows:

- Submit a project proposal to your committee for its approval.
- Perform the work, and write a project report.
- Submit your project report to your committee at least two weeks in advance of your oral presentation of the work.
- Present your work in a talk given to your committee. As a guideline, you should give about a 30-minute talk and leave about 30 minutes for questions and discussion. The ISP faculty should be invited to the oral presentation. General questions relating to the field of AI are appropriate at this examination. The oral presentation may take place in an open forum, such as the ISP AI Forum, followed by a closed session with just your committee and any other ISP faculty members who wish to be present.

The committee will evaluate the project and presentation. The following criteria should be considered: The project and presentation should represent independent research, design, or development work; they should be technically sound; and they should be relevant to the ISP. Also, the student should display the breadth of knowledge, understanding of the significance and motivation of the work, and understanding of the relationship of the work with prior work; and, the presentation should be clear.

The committee will combine that evaluation with an evaluation of the student's progress in coursework to arrive at an overall evaluation of one of the following:

MS

- Pass.
- Provisional pass: Must complete additional requirements specified by the committee in order to obtain a pass.
- Fail.

PhD

- Pass.
- Provisional pass at the PhD level: Must complete additional requirements specified by the committee in order to obtain a pass.
- Pass at the MS level: Student obtains a terminal MS degree, once all course requirements for the MS are completed.
- Fail.

Students who pass will need a card signed by their committee to obtain credit for passing. Contact the ISP program administrator at least two weeks before the oral portion of the preliminary evaluation, so the card can be available at the meeting to be signed.

The School of Computing and Information

Admissions Requirements and Procedures

General guidelines for applying to a graduate program at the University of Pittsburgh should be reviewed prior to submitting an application for admission. These guidelines are available on the University's Application for Admission Catalog page .

The School of Computing and Information seeks students with diverse interests and abilities for its graduate degree and certification programs. All applicants will be judged on their own merits. Applicants for Master's study must have earned a Bachelor's degree from an accredited college or university with a scholastic average of B (3.0 on a 4.0 scale) or better; the doctoral programs have more stringent requirements. For those who have been in the workforce, admission will be based upon academic achievement, area of study, career orientation, and work experience.

Apply Online: Applications for graduate study must be completed and submitted entirely online. Applicants must set up a free account with the ApplyYourself Application Network, which enables you to work on your application over several sessions. Your information is transmitted through a secured server and is kept private until you submit your application. After submission, your application materials will be managed confidentially within the review process.

Individual programs require supplemental application materials, and some programs require prerequisite coursework and skills knowledge. More details regarding expectations for statement of intent or writing portfolios, pre-requisite courses, and other supplemental application materials can be found on the individual program pages (through the appropriate program).

Admissions Status: Students are admitted to a graduate program and granted one of the following three types of status: *Full graduate*, *Provisional graduate* or *Special graduate*.

1. Full graduate status: when all admission requirements are met; for full details, see *Admissions Status* in the *Regulations Governing Graduate Study at the University of Pittsburgh*.
2. Provisional graduate status: when some admission requirements are not (or inadequately) met;

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

Students at the School of Computing and Information are expected to complete a Provisional Condition Review form in order to have their status reviewed upon completion of provisions/removal of deficiencies. Students are notified by e-mail when they have reached full graduate status and may request a new admissions letter at that time.

3. Special graduate status: to take specific graduate-level courses for one or more terms without the intent of earning a degree or certificate.

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

Application Processing: Begin the online application process at www.sci.pitt.edu.

Your application will be available for review by the department or program once all the recommendation letters are submitted and all test results and transcripts are uploaded.

Applications are reviewed after receipt of all required documents. Please note that, during the December-January timeframe, numerous applications are received. Due to the volume of submissions, there may be a delay in confirmation of receipt of materials.

Applicants are encouraged to check their online application account to ascertain if documentation has been received or if an admissions decision has been made PRIOR to contacting the School for such details. Note, the status of your application, related documents and admission decision cannot be verified until you have submitted the application fee (which is the final step in submitting your application).

Applicants are notified via e-mail when an admissions decision has been posted to the online application system.

The University of Pittsburgh participates in the Council of Graduate Schools' (CGS) "Resolution Regarding Graduate Scholars, Fellows, Trainees and Assistantships" also known as the "April 15 Resolution." Participation in the resolution allows admitted graduate students to consider all offers of financial support through April 15. In turn, the resolution binds students to their decisions made or held in place after April 15. SCI's cooperation ensures that both students and programs conduct their admissions in an ethical manner, and that they receive equal treatment and consideration in the financial support decision-making process. Further details regarding the "April 15 Resolution," including a list of participating institutions, can be found on the CGS Web site.

Deadlines for US Citizens and Permanent Residents: see the individual degree or program pages for application deadlines. Note, SCI processes applications on a rolling basis. However, priority consideration will be given to applications received by these deadlines.

Deadlines for International Students: Due to delays in the issuance of visas it is recommended that international students apply as early as possible, preferably at least six months prior to the start of the term of admittance, so that paperwork can be processed in a timely manner.

Deadlines for international students' applications to the School of Computing and Information are:

Term of Admission	Application Deadline	Deadline by which you must accept your offer of admission in order for your visa to be processed
Fall	January 15	Between April 15 and June 15
Spring	June 15	November 1
Summer	December 15	March 1

Admission of International Students: Non-US Citizens must read through the International Graduate Student Admission section of the University's Application for Admission page for a complete overview of University admissions requirements, including TOEFL or IELTS scores, for students from other countries.

English Language Proficiency Requirements: Graduate students must possess sufficient knowledge of English to study without being hindered by language problems, to understand lectures, and to participate successfully in class discussion. International applicants must submit either the TOEFL or the IELTS (taken within two years of the date of application).

Applicants must contact Educational Testing Services directly to request that an official score report be sent to the School of Computing and Information. The institution code for the University of Pittsburgh is 2927. Submission of TOEFL test results is required for admission to graduate study in this School. Individual degree programs may have varying minimum requirements, which are outlined on each program's Catalog page. Applicants who are citizens of a country where English is the official language are exempt from submitting the results of the TOEFL or IELTS. In addition, applicants who have earned a Bachelor's degree or higher degree from a regionally accredited institution in the U.S. are also exempt from submitting the results of the TOEFL or IELTS. However, the School reserves the right to ask for TOEFL scores if deemed necessary for the evaluation of the application. Please note: degrees where anything less than the entire degree was completed in-residence within the English-speaking country will be reviewed on a case-by-case basis. Students in these circumstances may be required to complete the TOEFL or IELTS with the required minimum score upon review.

Prior to registration, students with TOEFL scores less than 100 (Internet-based) will be given the on-campus administered English Language Proficiency Test.

Students may choose to take the International English Language Testing System exam (IELTS) in place of the TOEFL. Students must receive a score of Band 6.5. Students who do not achieve a score of Band 7.0 score or better will be given the on-campus administered English Language Proficiency Test.

If remedial courses in English as a second language are recommended as an outcome of the test, the student must complete the remedial course during the first academic year of study; some programs may require students to follow a shorter completion timeline for remedial courses.

Deferred Admissions: Admission to graduate study is valid for the academic year. A student may defer admission for up to one year without reapplication. The student must submit a deferral request through the online application system. Additional course work taken during the deferred year and a new affidavit of financial support should also accompany any financial aid request. Approval of a student's request to defer admission does not necessarily mean that any financial aid awarded is also deferred - the offer of financial aid will be reassessed for the student's deferred admit term.

Reinstatement: Students who have left the University for one calendar year or more (whether of their own volition or as a result of a suspension), who did not complete work at another institution, and who wish to continue their studies must apply for reinstatement through the School's online application system; exceptions noted in the Leave of Absence (LOA), Readmission, and Reinstatement section.

Readmission: Students who previously attended the University of Pittsburgh before attending another institution and who wish to return to the University are considered transfer students and must reapply following the guidelines for transfer students. Former students who have enrolled in other institutions may apply for readmission with advanced standing. Such students should submit a new application to their graduate degree program via the School's online application system. All supporting materials must be submitted; revision of essays is suggested. Inclusion of all transcripts - including new coursework completed during the period of leave - are required.

For more details regarding the different definitions and regulations for readmitted and reinstated students, see the Leave of Absence (LOA), Readmission, and Reinstatement section of the SCI Catalog page.

Transferring Between SCI Departments or Programs Students may transfer to a different department or program within SCI. Transfers between SCI departments or programs will be reviewed by the receiving department's admissions committee - including a thorough assessment of the student's academic performance in previous institutions as well as within SCI. Faculty will review the student's original application materials and may require that the student submit supplemental application materials.

To initiate a transfer between SCI Departments or Programs, a student must submit the Graduate Academic Plan Change Form at least one month prior to the start of the new admission term. If a University break occurs during that time, students should allot for additional time for their transfer to be evaluated by the department's admissions committee and their official student record to be processed.

Students should note that transfer to a different department or degree is not guaranteed.

Appointments and Financial Information

Teaching and Research Appointments

Financial assistance for graduate students is provided in the form of teaching and research appointments, fellowships, traineeships, tuition scholarships, and loans. Application for financial aid should be made on the Application for Admission to Graduate Study. All applications for financial assistance are reviewed at the departmental or program level and awards are made to the extent of available funds. Admission to graduate study does not carry any implications concerning the award of financial aid. Only students with full graduate status are eligible for teaching assistantships and fellowships.

In recognition of academic merit, the University offers teaching assistants (TA), teaching fellows (TF), graduate student assistants (GSA), and graduate student researchers (GSR) full or proportional tuition scholarships, and students are required to register for the number of credits proportional to appointment. If appointed in the summer term, students should register for a minimum of 3 credits (or full-time dissertation study, if eligible), unless additional registration is needed for academic purposes.

Policies governing TA/TF/GSA/GSR positions can be found on the Provost's *Guidelines and Resources* page.

Tuition Fees and Billing

The University updates the *Tuition, Fees, and Billing* page in July for the upcoming academic year.

Academic Regulations and Standards

University Registration Policies: Policies on full-time/part-time status, adding and dropping courses, cross-registration, grading systems, etc. are governed by the University at large. Students should refer to the University's Academic Regulations for general information and contact the SCI Records Office for more details on applying these policies in practice.

Highlighted are frequent topics of inquiry: Satisfactory/No Credit, Registration (Enrollment), Cross-Registration, Withdrawing or Resigning, Grading and Records, Academic Record and Grade Reports

In addition to those University-wide regulations and standards detailed in the section on General Academic Regulations, each student in the School of Computing and Information is expected to be familiar with the following School-specific regulations and academic standards.

Grading Policies

Courses for which a G, I, N, R, or W grade is recorded and courses numbered below 1000 (0-0999) do not contribute either credits or grade points toward graduation. Courses numbered below 2000 only contribute credits or grade points toward graduation when approved by the department or program PRIOR to enrollment.

Students must achieve the minimum GPA, in no case less than 3.00, and individual course grade minimums established by their department or program in order to be eligible to retain teaching assistantships or fellowships, to undergo the preliminary evaluations, to take comprehensive examinations, to be admitted to candidacy for the PhD degree, and to graduate. No grade lower than a C will be counted toward graduation requirements; yet all letter grades will be calculated into the student's cumulative GPA unless if a class is repeated and a course repeat form processed. See "Repetition of Courses" section for more information.

Auditing Courses and Selecting a Grading Option

With the consent of the school and instructor, students may choose to audit a course or complete it with a Satisfactory/No Credit (S/NC) option. Regulations for S/NC credit allowances are governed by the Departments and are subject to the grade options allowed for each particular course (i.e., not all courses may be taken as S/NC). To audit a course, a student must register and pay tuition for the course. The audit grade (N) is not counted toward graduation or the GPA.

Graduate students choose a grading option (letter grade or S/NC) during enrollment from those listed within the University's Student enrollment system. Any decision to change the grading option after a class has been added to the student's enrollment must be processed no later than one week after the end of the Add/Drop period. The University's Office of the Registrar does not require submission of a Grade Option/Audit Request form for graduate courses. However, the SCI Records Office does require this documentation for course auditing.

The default is for all classes to be graded with a letter grade (unless otherwise stipulated by the Course Catalog) and decisions to select an alternative grading option (S/NC or Audit) should be discussed with the student's advisor. After a grading option has been selected and documented, this decision may not be changed.

Grade Changes

Grade changes are submitted by the course instructor. Grades will not be changed more than one year after the term's end nor if a student's record has become inactive or if a student has graduated.

Incomplete (G or I) Grades

The G grade signifies unfinished course work due to extenuating personal circumstances. Students assigned G grades are required to complete course requirements no later than one year after the term in which the course was taken. After the deadline has passed, the G grade will automatically be replaced by "NG" or "no grade" and will remain on the record. The student will be required to reregister for the course if it is needed to fulfill requirements for graduation.

The I grade signifies incomplete course work due to nature of the course, clinical work, or incomplete research work in individual guidance courses or seminars.

If an instructor is to assign an incomplete grade, the student and instructor must come to an agreement regarding the expected timeline of completion, grading, etc. The Records Office can provide assistance in documenting and enforcing this agreement through the "Incomplete Grade Contract."

Repetition of Courses

Required courses for a major must be repeated or replaced by a comparable course if a grade does not meet the degree's minimum requirements (see Department or program page for specifics). Course repetitions are subject to further regulations:

- Students typically only repeat a course in which the grade of C- or lower has been earned, however, upon department or program approval the student may repeat a course in which they have earned a B- or lower.
- A student may not enroll in the same course at another institution and have that grade replace the original grade earned at the University.
- The original course and grade remain on the transcript; however, the grade and credits originally earned are not counted in the calculation of the GPA.
- The grade earned by repeating a course is used instead of the grade originally earned. W, R, or N grades reported for the repeated course will not be identified as a course repeat, and therefore the original grade earned will continue to be counted in the GPA. Incomplete grades (G and I) are not identified as repeated courses until the course work is completed.
- Students are only permitted to repeat a course up to two times. Programs may have stricter course repeat policies.
- Any grade earned in the repeated course will be recorded on the academic transcript and calculated in the GPA, even if it is lower than the original grade.

The School automatically submits a course repeat form for students, however it is the responsibility of the student to ensure their repeat course grades have been updated with the "Repeated - Excluded from GPA" flag on their academic record and that all credits have been calculated correctly. Students should discuss repeat courses with their advisor at the beginning and end of the term of enrollment.

Credit & Enrollment Policies

Pre-requisite courses, and any coursework required to prepare for pre-requisite courses, are not calculated in the total credits required to earn a degree. For a list of pre-requisite courses for a degree and/or a degree specialization, refer to the individual degree Catalog pages.

Students who have completed graduate courses in degree-granting graduate programs at other appropriately accredited institutions prior to admission to the University of Pittsburgh and who would like to request a transfer of credits should submit official transcripts from those institutions in addition to the School's Transfer Credit Request form so that the courses can be evaluated for transfer credit.

Transfer Credit Requests are reviewed and approved by the department or program faculty before the form is submitted to the Records Office. As with all School forms, this can be found on the School's Current Students > School forms webpage.

Requests must adhere to the University's limitations for transfer credits. See the University's Academic Regulations for details.

The quality of education that graduate students receive is greatly enhanced with good academic advising at all stages of their program. Given the diversity of these needs, each program must determine the best way to provide these services. Academic advising provides the foundation upon which students plan their studies. It is the policy of the School for each student to have an academic advisor whose responsibilities include providing guidance in developing the student's career goals and academic programs, approving course selections, and advising as needed on issues affecting the student's academic and professional careers. Students are matched with an advisor upon admission; they may, however, change advisors at any time. A student's assigned advisor can be viewed in the Student Center via my.pitt.edu. The goal of academic advising is to develop a consistent academic program coordinated to meet general program requirements and specific needs of individual students. Ideally, the student and faculty advisor function as a team working toward the objective of career preparation by means of the strongest possible academic experiences for the student. Students should meet each term with their advisors to ensure timely progress through their program.

All departments and programs are responsible, with Dean's Office oversight, for implementing policies and practices consistent with the University's in *Elements of Good Academic Advising*. Unresolved problems relating to the advising of graduate students at the department or program level should first be addressed with the Chair of the department or program.

Note regarding Graduate Faculty advisors and enrollment: Advising holds/service indicators, permission numbers, withdrawals, and questions regarding the mechanics of enrollment should be referred to the Records Office via SCIreg@pitt.edu. Course selection, research development and interests, and curriculum-based inquiries should be vetted through the student's advisor.

Exemptions to enrollment policies and degree requirements are approved by the department or program and are mediated through the student's advisor. Exemptions are then relayed to the Records Office, via various forms (see School Forms) for inclusion in the student's academic record.

Tracking your degree progress: In order for students to verify that they are making progress toward graduation, they should meet regularly with their academic advisor and review their progress and plans for future study.

In addition, Master's students should make use of the academic advisement report (AAR) as a self-advising tool. This report is submitted with the graduation application as a contract between the School and the student. The AAR provides detailed course options for fulfilling all requirements for the degree. When using the AAR online, students have quick access to schedule details for approved courses and links to enrollment. It is recommended that students continually monitor their AAR and utilize this tool frequently for enrollment and advisement purposes.

If a student finds errors in their AAR, they should speak to their advisor and request updates to their AAR. Requests for updates include "Best Fit" changes (re-directing courses to the appropriate requirement area), authorized student exemptions (exemptions pre-approved by the Program Director and/or the Dean's Office), and corrections to transfer credits. See the School's Current Students site for related forms (School Forms).

Informational videos and documents related to the AAR can be found on the Registrar's Student Training website. Detailed advising information is available on the program offering pages.

: The purpose of the statute of limitations is to ensure that a graduate degree from the University of Pittsburgh represents mastery of current knowledge in the field of study. Individual schools within the University may adopt policies that are more stringent than the University policies. Variations and additions to those rules within the School of Computing and Information are as follows:

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

From the student's initial registration for graduate study, all requirements for the PhD degree must be completed within a period of 10 years, or within eight years if the student has received credit for a Master's degree appropriate to the field of study. Some departments may have a more stringent statute of limitations for completion of Master's or Doctoral degrees. See the program offerings for specific details.

Under exceptional circumstances, a candidate for an advanced degree may apply for an extension of the statute of limitations. Requests for an extension must state the reason for the delay, provide evidence of continuing progress toward the completion of the degree, and include a detailed plan of study and proposed date for completion. The request must be approved by the chair of the student's Doctoral or Master's committee (if applicable) and the department or program chair or director of graduate studies, and be submitted to the Dean's Office for final action.

Leave of absence (LOA), Readmission, and Reinstatement: Graduate students may be granted a leave of absence under special conditions. Students who have resigned without requesting a leave of absence or have been away from the University for one or more years must apply for readmission or reinstatement. By University definitions, *readmitted students* previously attended the University of Pittsburgh and then enrolled at another external institution. *Reinstated students* previously attended the University of Pittsburgh and left for one or more calendar years, not attending external institutions in the meantime. These terms are attached to specific graduation requirements. All students interested in readmission or reinstatement must submit an application except for those on an approved leave of absence (see Special Admissions section for details).

Readmitted students follow the School and degree graduation requirements and rules based upon their term of readmission. Their statute of limitations is reset to their term of readmission and their transfer credits, advanced standing, and previously authorized exemptions will be reevaluated at the point of readmission.

Reinstated students follow the School and degree requirements and rules based upon their original term of entry to the School. Their statute of limitations is calculated against their original term of entry to the University and their transfer credits, advanced standing, and previously authorized exemptions will be accepted as previously approved at the point of reinstatement.

Exceptions to the reinstatement rules include:

- Students whose leave exceeds two years. All students who have been away from the University more than two years will be subject to the requirements of the School and of their major and/or certificate programs at the time of their reinstatement, rather than those in place at the time of their last attendance.
- Students on an approved leave of absence.

Under special conditions, graduate students may be granted one leave of absence. A maximum leave of two years may be granted to Doctoral students or one year to Master's students. The length and rationale for the leave of absence must be stated in advance, submitted via the School's Leave of Absence Request form (found on the Current Students > School Forms webpage), recommended by the Department or Program, and approved by the Dean's Office.

If granted approval by the Dean's Office, a student is ensured that the time of the leave shall not count against the degree's statute of limitations, the student's transfer credits and previously authorized exemptions will be accepted as previously approved. If a student petitioned the faculty and received permission to enroll in an external institution during their LOA for transfer credit in advance of their LOA, the credits may still transfer upon the student's return.

Students who have an approved LOA do not have to apply for readmission nor reinstatement. Instead, instructions for returning to the School will be shared with the student in the letter sent approving their leave.

A note on advising appointments and a returning from a break in continuous enrollment:

Since registration open enrollment begins in the twelfth week of the preceding term, applications for reinstatement should be received prior to that period so that the student's application can be reviewed and their record updated. Similarly, students who are returning from a LOA should keep this timeline in mind for setting up an appointment with their advisor and/or notifying the Records Office of their return to studies. Only after a student on an approved LOA has notified the Records Office will their enrollment service indicator (registration hold) be released from their record.

Regardless of the conditions surrounding a student's leave - e.g., an intentional leave of absence, suspension, or an extended lapse in enrollment requiring reinstatement - when a student returns, they return in the standing attached to their record (good, warning, or probation) at the term of their departure.

Academic Integrity

Students have the responsibility to be honest and to conduct themselves in an ethical manner while pursuing academic studies. Students have the right to be treated by faculty in a fair and conscientious manner in accordance with the ethical standards generally recognized within the academic community (as well as those recognized within the profession). Should a student be accused of a breach of academic integrity or have questions

regarding faculty responsibilities, procedural safeguards including provisions of due process have been designed to protect student rights. These may be found in Guidelines on Academic Integrity: Student and Faculty Obligations and Hearing Procedures.

Academic Standing and Dismissal

Academic standing is maintained and monitored each term by the Dean's office in conjunction with the School's various departments and programs. A student's academic standing is comprised of two factors: cumulative GPA and progress toward a degree. In order to be in good academic standing, students are expected to maintain a cumulative GPA of 3.00 or above and make continued progress towards their degree.

Students are placed in the **Academic Probation** status after earning a cumulative GPA below 3.00. Students may also be placed on Academic Probation if they fail to make progress toward their degree, as determined by their Department or Program, or fail to meet provisional conditions as outlined in their admissions letter (if applicable). Students placed on Academic Probation will be notified in writing by the Dean's Office. It is important to note that students on Academic Probation are not eligible for a teaching assistantships or fellowships, nor are they eligible to complete degree milestones (i.e., comprehensive examinations, thesis proposal, oral defense, or graduation).

Students who are on Academic Probation for failing to meet GPA requirements must earn a GPA of at least 3.00 for each term that they enroll until they have achieved a cumulative GPA of 3.00 or above. If such a student fails to earn 3.00 term GPA, they are subject to **Academic Dismissal**. Students who are on Academic Probation for failure to make degree progress must satisfy the conditions set forth by the department or program and communicated by the probation letter by the specified deadline. If such a student fails to satisfy these conditions by the specified deadline, they are subject to **Academic Dismissal**. *Dismissal is a final action. Dismissed students are not eligible for reinstatement at the University of Pittsburgh.*

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

Master's Degree Requirements

University policies governing Master's programs can be found in the *Regulations Pertaining to Master's Degrees policy*. The information below summarizes further SCI-specific regulations.

Credit Requirements

The minimum requirement for any Master's degree is 30 credits. Not more than six credits may be granted toward the completion of the requirements for a Master's degree for work completed at another graduate institution. Students must achieve the minimum GPA established by their department or program, in no case less than 3.00, to take the comprehensive examination and to graduate.

Comprehensive Examination

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

Thesis Option and Procedures

The requirement of a thesis or its equivalent is at the discretion of individual departments or programs. If a thesis is submitted, its form must be in accord with specifications available from The ETD Format Guidelines Manual and approved by the Associate Dean for Academic Programs. A report of the final oral examination in defense of the Master's thesis must be filed with the SCI Records Office on the 5th floor of the Information Sciences building. For further information on thesis requirements, including the makeup of the thesis committee, see *Thesis Option* under *Regulations Pertaining to Master's Degrees*.

PhD Degree Requirements

University policies governing PhD programs can be found in the *Regulations Pertaining to Doctoral Degrees policy*. The information below summarizes further SCI-specific regulations.

Credit Requirements

The minimum requirement for the PhD degree of 72 credits may be earned in formal course work, directed study, independent study, and/or thesis and dissertation research. Students must achieve the minimum GPA established by their department or program, in no case less than 3.00, to be eligible to undergo the preliminary examination, to take the comprehensive examination, to be admitted to candidacy for the PhD degree, and to be graduated.

Preliminary Examination

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

Comprehensive Examination

Comprehensive examination results must be reported promptly to the SCI Dean's Office, and no later than the last day of the term in which the examination is administered. Students must be enrolled in the term in which they are completing the Comprehensive Examination. See *Comprehensive Examination* under *Regulations Pertaining to Doctoral Study* for further detail on regulations regarding the exam.

Doctoral Committee

Departmental membership status: University of Pittsburgh faculty members with a primary or joint appointment in a SCI department are considered internal members of that department. Individuals holding primary appointments outside of the department are considered as external to the department. However, a University of Pittsburgh faculty member who holds a secondary appointment in a SCI department and is an active participant within the department may petition the department to be considered as an internal member, as determined by departmental criteria. Upon receiving internal status within a department, a faculty member may no longer act in an external capacity.

Committee composition: Doctoral dissertation committees are comprised of at least four members, including at least three internal members, and at least one external member from another department at the University of Pittsburgh or from an appropriate graduate program at another academic institution. The primary advisor and chair of the doctoral dissertation committee must be an internal member of the doctoral candidate's home department. The majority of committee members must be from the University of Pittsburgh, and all committee members from the University of Pittsburgh must be members of the graduate faculty (<https://ir.pitt.edu/graduate-faculty-roster/>). Under certain circumstances, active researchers with appointments outside of academia may be approved as external committee members. The composition of the committee must be approved by the Department Chair and the Associate Dean for Academic Programs prior to scheduling the dissertation proposal.

Internal committee members who leave the University after a graduate student has been admitted to candidacy may remain on the committee in their original capacity for a period of up to 12 months. If the chair of the dissertation committee leaves the University, they may continue to serve as the sole chair of the committee for a period of up to 6 months; after this time, a co-chair must be appointed from within the department or program. After this 12-month period, a departed committee member is no longer eligible to be an internal member or committee chair, but may be added to the committee as an external member; this may necessitate the addition of further internal committee members. If a committee member retires, they may remain on the committee as long as they are still willing to serve, and are still active professionally in the academic community.

Any changes in the membership or roles of the committee must be approved by the Department Chair or Program Director and the Associate Dean for Academic Programs.

Admission to Candidacy for the PhD Degree

After completion of the overview/proposal, the student should, in consultation with the student's major advisor, file the application for admission to candidacy for the Doctor of Philosophy degree. Students are informed of admission to candidacy by written notification from the Associate Dean for Academic Programs. Students must be enrolled in the term in which they are completing the overview for candidacy. For a listing of requirements for admission to candidacy, see *Admission to Candidacy for the Doctor of Philosophy Degree*.

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

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

Dissertation

See *Dissertation and Abstract* under *Regulations Pertaining to Doctoral Degrees* for an overview of requirements and form for the dissertation and abstract.

Language of the Doctoral Dissertation

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

Final Oral Examination

Students preparing to take their final oral examination in defense of their dissertation should refer to *Final Oral Examination* under *Regulations Pertaining to Doctoral Degrees* for details on the examination. School-specific timelines and processes are outlined, below.

The final examination must be scheduled at least four weeks in advance. When determining a date for the examination, students should consider the ETD processing deadlines, allowing themselves sufficient time between final oral examination and ETD deadline to revise their dissertation and gather the related paperwork.

When an examination date is established, the chair of the doctoral committee must submit a defense scheduling form to the Dean's office, listing the title of the dissertation and the time and place for its defense. This allows adequate time for announcement in the University Times as required by University regulations.

At least two weeks prior to the dates set for the final oral examination, all members of the doctoral committee should be provided with a copy of the dissertation.

All members of the doctoral committee must physically attend the examination; exceptions can be made with the permission of the Associate Dean for Academic Programs. A report of this examination and a report on approval of the dissertation, signed by all members of the doctoral committee, must be sent to the Associate Dean for Academic Programs for approval. The report on the approval of the dissertation may be signed concurrently with or subsequently to the report of the final oral examination. If the decision of the committee is not unanimous, the case is referred to the Associate Dean for Academic Programs for resolution.

It is the responsibility of the student's advisor to ensure that the dissertation is in final form before requesting signatures of all committee members. After the final oral examination is successfully completed, the student must submit their dissertation electronically. As well, the University requires students submit various forms, publication agreements, and fees in addition to the Electronic Thesis and Dissertation (ETD). Students submit all materials outlined in the SCI PhD Graduation Checklist by the ETD & Paperwork deadline. Any paperwork that is signed must be the original and therefore should be mailed if you are unable to submit it in person. See the checklist for details. ETD deadlines and the SCI PhD Graduation Checklist can be found on the SCI Current Students > Graduation Procedures webpage.

After submission of the ETD and paperwork, the Records Office will review all items for completion and adherence to University formatting guidelines. Students must be available to make additional edits to formatting of their ETD; this process typically takes one month to complete before the document is approved for publication.

Students will be required to register for at least one credit in the term during which they expect either to complete degree requirements or have the oral defense. Students who have completed all credit requirements for the PhD degree may register for "Full-Time Dissertation Study." If the student is a doctoral candidate and off-campus, not using University facilities and/or faculty time, the candidate need only register for 1 credit per academic year to maintain active enrollment status.

If a student does complete all the work in a given term, including the dissertation defense, and has been cleared for graduation too late to be included on the graduation list for that term, the student may apply to graduate the following term and need not enroll for any courses or any credits, subject to approval. See "Student status during term of graduation" section for details.

Graduation

Student status during term of graduation: Graduate students are required to be in "active status" (registered for one credit per academic year) and enrolled during their term of graduation. If a student does not plan to enroll in credits during their graduation term, they must provide a valid and extenuating reason for this policy exemption via the request for a Graduation Enrollment Waiver form. All requests for this policy exemption will be reviewed by the Records Office and approved by the SCI Dean's Office and the University Registrar.

Application: *Graduation is not an automatic process.* Students must file an application for graduation, including additional materials as outlined on the School's Current Students website. The School's deadlines, related late fees, worksheets for tracking progress toward degree completion, and contact information for graduation applications are available on its Current Students website.

If your graduation is postponed, *you must reapply* by completing another Graduation Application.

University Commencement: Candidates for graduation are encouraged to appear in person at the University Commencement Ceremony. Although degrees are conferred at commencement for all graduation periods, the official certification for April and May graduates occurs several weeks after the ceremony.

School Ceremony: The School of Computing and Information hosts an event to recognize its graduating students and awardees at the end of each term.

Certification of degree graduation requirements is processed after the recognition ceremony; Reading of a student's name at the Recognition Ceremony is not an indication of the student having met graduation requirements.

Event details, travel tips, and information regarding tickets are hosted on the School's website at www.sci.pitt.edu.

POST-GRADUATION PROCESSING

Certification: Graduation certification is the process run by advisors and staff to ensure students have met all graduation requirements. This process is run after grades are posted for the term in question. Students who are concerned about their graduation eligibility should first review their academic advisement report (AAR) and then meet with their academic advisor.

Documentation (transcripts, diplomas, etc.): Official documentation of graduation is managed by the University Registrar's Office. Inquiries regarding transcripts and diplomas should be directed to that office's Graduation/Diplomas service area.

All diplomas are mailed to students approximately four weeks after the official certification date for each graduation period.

Special Academic Opportunities/Programs

Multiple Independent Degree Programs within SCI

Students may pursue two independent graduate degrees simultaneously in two different schools within the University (joint degree) or two different departments within the same school (dual degree). Students desiring to enroll in two degree programs must have approval from both program faculties and their respective deans, must be admitted into both programs, and must satisfy the degree requirements of both programs. Students are billed at the tuition rate of the primary academic program. Normally, such students should be enrolled for no more than a total of 15 credits per term.

The same examination, thesis, or dissertation cannot be used to fulfill requirements for two independent degrees, although a maximum of 6 credits of course work may be used in partial fulfillment of the requirements of both degrees. It is the responsibility of the dean or deans, if two schools are involved, to ensure that this regulation is enforced.

For further detail, please refer to the University policy regulating pursuit of *Two Independent Degree Programs Simultaneously*.

Joint SCI/GSPIA MSIS Degree Program

The School of Computing and Information will continue to honor the joint degree agreement made between the School of Information Sciences and the Graduate School of Public and International Affairs (GSPIA). The program allows for students to complete the Master of Science in Information Science (MSIS) degree and one of three degrees in GSPIA simultaneously. To be admitted fully into the joint program, students must be accepted by both GSPIA and SCI. Admissions and course of study details are available on the MSIS degree requirements page of this catalog.

Programs and Course Offerings

School of Computing and Information Faculty

Name	Title	Department	Highest Degree	Awarding Institution
Mai Abdelhakim	Visiting Assistant Professor	Informatics and Networked Systems	PhD	Michigan State University

Daniel Ahn	Assistant Professor	Computer Science	PhD	University of Illinois at Urbana-Champaign
Dmitriy Babichenko	Professor of Practice	Informatics and Networked Systems	PhD	University of Pittsburgh
Mary K. Biagini	Associate Professor	Information Culture and Data Stewardship	PhD	University of Pittsburgh
Jacob Biehl	Associate Professor	Computer Science; Information Culture and Data Stewardship	PhD	University of Illinois at Urbana-Champaign
Kayla Booth	Visiting Assistant Professor; Assistant Director, i3 Program	Information Culture and Data Stewardship	PhD	Pennsylvania State University
Peter Brusilovsky	Professor	Informatics and Networked Systems	PhD	Moscow State University
Matthew Burton	Visiting Assistant Professor	Information Culture and Data Stewardship	PhD	University of Michigan
Shi-Kuo Chang	Professor	Computer Science	PhD	University of California at Berkeley
Bruce R. Childers	Professor	Computer Science	PhD	University of Virginia
Panos Chrysanthis	Professor	Computer Science	PhD	University of Massachusetts at Amherst
James "Kip" Currier	Assistant Professor	Information Culture and Data Stewardship	PhD	University of Pittsburgh
Nicholas L. Farnan	Lecturer	Computer Science	PhD	University of Pittsburgh
Rosta Farzan	Assistant Professor	Informatics and Networked Systems	PhD	University of Pittsburgh
William C. Garrison	Visiting Lecturer	Computer Science	PhD	University of Pittsburgh
Marcela Gomez	Visiting Research Assistant Professor	Informatics and Networked Systems	PhD	University of Pittsburgh
Milos Hauskrecht	Professor	Computer Science	PhD	Massachusetts Institute of Technology
Daqing He	Professor	Informatics and Networked Systems	PhD	University of Pittsburgh
Stephen Hirtle	Professor	Informatics and Networked Systems	PhD	University of Michigan
Timothy L. Hoffman	Lecturer	Computer Science	Master's	University of Pittsburgh
Rebecca Hwa	Associate Professor	Computer Science	PhD	Harvard University
Seong Jae Hwang	Assistant Professor	Computer Science	PhD	University of Wisconsin-Madison
James B.D. Joshi	Professor	Informatics and Networked Systems	PhD	Purdue University
Hassan Karimi	Professor	Informatics and Networked Systems	PhD	University of Calgary
Sherif Khattab	Lecturer	Computer Science	PhD	University of Pittsburgh

Thumrongsak Kosiyaatrakul	Lecturer	Computer Science	PhD	Syracuse University
Adriana I. Kovashka	Assistant Professor	Computer Science	PhD	University of Texas in Austin
Prashant Krishnamurthy	Professor	Informatics and Networked Systems	PhD	Worcester Polytechnic Institute
William J. Laboon	Visiting Lecturer	Computer Science	PhD	Carnegie Mellon University
Alexandros Labrinidis	Professor	Computer Science	PhD	University of Maryland, College Park
John R. Lange	Associate Professor	Computer Science	PhD	Northwestern University
Alison Langmead	Associate Professor	Information Culture and Data Stewardship	PhD	Columbia University
Adam J. Lee	Associate Professor	Computer Science	PhD	University of Illinois-- Urbana Champaign
Stephen Lee	Assistant Professor	Computer Science	PhD	University of Massachusetts, Amherst
Michael Lewis	Professor	Informatics and Networked Systems	PhD	Georgia Institute of Technology
Yu-Ru Lin	Assistant Professor	Informatics and Networked Systems	PhD	Arizona State University
Diane J. Litman	Professor	Computer Science	PhD	University of Rochester
Elizabeth Mahoney	Lecturer	Information Culture and Data Stewardship	PhD	University of Albany
Rami Melhem	Professor	Computer Science	PhD	University of Pittsburgh
Leona Mitchell	Professor of Practice	Informatics and Networked Systems	Master's	University of Pittsburgh
Danie Mosse	Professor	Computer Science	PhD	University of Maryland, College Park
Paul Munro	Associate Professor	Informatics and Networked Systems	PhD	Brown University
Balaji Palanisamy	Assistant Professor	Informatics and Networked Systems	PhD	Georgia Institute of Technology
Konstantinos Pelechrinis	Associate Professor	Informatics and Networked Systems	PhD	University of California, Riverside
Robert Perkoski	Chair, Undergraduate Program; Lecturer	Informatics and Networked Systems	PhD	University of Pittsburgh
Kirk R. Pruhs	Professor	Computer Science	PhD	University of Wisconsin-Madison
John C. Ramirez	Senior Lecturer	Computer Science	PhD	University of Pittsburgh

Marcia Rapchak	Lecturer	Information Culture and Data Stewardship	Ed.D.	Duquesne University
Song Shi	Visiting Assistant Professor		PhD	University of Massachusetts, Amherst
Xulong Tang	Assistant Professor	Computer Science	PhD	Pennsylvania State University
David Tipper	Professor	Informatics and Networked Systems	PhD	University of Arizona
Christinger Tomer	Associate Professor	Information Culture and Data Stewardship	PhD	Case Western Reserve University
Erin Walker	Associate Professor	Computer Science	PhD	Carnegie Mellon University
Martin Weiss	Professor	Informatics and Networked Systems	PhD	Carnegie Mellon University
Stacy Wood	Assistant Professor	Information Culture and Data Stewardship	PhD	University of California, Los Angeles
Lingfei Wu	Assistant Professor		PhD	City University of Hong Kong
Joseph Yurko	Lecturer		PhD	Massachusetts Institute of Technology
Vladimir Zadorozhny	Associate Professor	Informatics and Networked Systems	PhD	Russian Academy of Sciences, Moscow
Youtao Zhang	Associate Professor	Computer Science	PhD	University of Arizona
Taieb Znati	Chair & Professor	Computer Science	PhD	Michigan State University

School of Dental Medicine

Established in 1896, the University of Pittsburgh School of Dental Medicine has been educating students to take their places among the best dental practitioners, researchers and educators in our region, across the country, and even around the world. We are one of six Schools of Health Sciences at the University and are the only school to manage our own clinic. Our accomplishments reflect the dedication and success of each member of the School of Dental Medicine family.

We are proud of our long tradition as innovators in dental medicine. Our first female student was admitted 117 years ago, and today more than half of our vibrant and diverse first-year pre-doctoral class are women. We nurture in our students a strong foundation in the biological, behavioral and clinical sciences^[1] and a belief in the importance of professionalism and life-long learning.

Half a century ago we pioneered the specialty dental care that we now deliver in our fully equipped Center for Patients with Special Needs. The School's general dental clinics and 11 specialty clinics play an integral role in improving the oral health of the patient population of southwestern Pennsylvania and beyond. Some patients travel hundreds of miles to access the high-quality care our clinics provide every day.

Our researchers expand the horizons of knowledge and are internationally renowned for their groundbreaking developments in the areas of craniofacial genetics and craniofacial regeneration. We are identifying genes that contribute to complex human phenotypes, and are using tissue engineering to heal wounds and restore function and appearance to defects of the face and skull.

Every day, the positive contributions of our faculty, staff, residents and students-the Pitt Dental Medicine family-demonstrate their commitment to our mission of advancing the future of dental medicine through teaching, research and service.

Degree Programs

Along with several specialized degree programs, degrees offered at the School of Dental Medicine include the doctor of dental medicine (DMD); doctor of philosophy (PhD); master of science (MS); master of public health (MPH) offered in conjunction with the Graduate School of Public Health; and bachelor of science (BS).

The four-year Predoctoral (DMD) Program prepares students to provide comprehensive care to a diverse patient population. The competency-based curriculum emphasizes health promotion and disease prevention, and prepares students to provide individualized treatments using the best scientific evidence available. Graduates are equipped to practice as independent, entry-level general practitioners.

The Advanced Standing (DMD) Program places qualified graduates of foreign dental schools as third-year dental students. These students are integrated into the program and complete the third- and fourth-years of the pre doctoral curriculum with the rest of the class.

The Oral Biology Program (MS and PhD) encompasses the study of fundamental biological phenomena related to the development, structure, and function of the craniofacial region as well as the development of new therapies, biomaterials, and diagnostic tools for the treatment of diseases and disorders in the craniofacial area with the aim of improving health. Current research focuses involve craniofacial regeneration and genetics.

The School of Dental Medicine offers advanced residency certificate and Master of Dental Medicine degree programs in each of the full array of dental specialties.

In collaboration with Pitt Public Health, the four-year DMD/MPH in dental public health offers customizable course selection with a special emphasis on oral health-specific public health issues.

The University of Pittsburgh School of Dental Medicine's Dental Hygiene Program provides students a unique academic environment where they can earn either an Associate of Science or a Bachelors Degree in Dental Hygiene. The intreprofessional educational experiences within the school's specialty dental clinics and the University-based hospitals, in conjunction with didactic, community outreach, and research activities, affords the delivery of high-quality education. To learn more about the Dental Hygiene Program, please visit the Pitt Undergraduate Catalog.

General Dentistry and Specialty Clinics

The School of Dental Medicine provides clinical education and patient care through 15 dental clinics encompassing general dentistry, anesthesiology, special needs, emergency, endodontics, implants, oral and maxillofacial pathology, oral and maxillofacial surgery, orthodontics and dentofacial orthopaedics, pediatric dentistry, periodontics and preventive dentistry, dental hygiene, endodontics, prosthodontics, radiology, and restorative dentistry/comprehensive care.

Clinical Centers

The Multidisciplinary Implant Center focuses on patient care, teaching, and research related to the treatment of tooth loss and the functional bone and soft tissue deficits that can follow tooth loss.

The Center for Patients with Special Needs was established by Dean Thomas W. Braun as a school priority to centralize and increase treatment capacity for patients with physical, developmental, neurological, and intellectual disabilities.

University Dental Health Services (UDHS) is a legally separate nonprofit practice plan that is closely affiliated with the School of Dental Medicine. UDHS providers are full- or part-time faculty members, many of whom are board-certified specialists and nationally recognized experts in their respective fields.

Research Strengths

Research efforts include dental and craniofacial genetics, craniofacial anomalies, caries, periodontal disease, pharmacology, pain control, tissue engineering, craniofacial regeneration, educational research, informatics, and implantology.

Identification

The School of Dental Medicine is undertaking investigations to identify genes that contribute to complex human phenotypes, primarily those involved in dental and craniofacial disorders, including behavioral and epidemiological factors. New territory is being charted to develop the first-known collection of DNA samples paired with anonymized dental records to support genetics research.

Treatment

Tissue engineering-based approaches are being developed to treat complex multi-structural wounds and defects of the face and skull in a way that restores both function and appearance. The school is at the forefront of research to develop relevant translational treatment solutions usable by practicing dentists.

Application

The School of Dental Medicine is identifying factors that lead to oral health disparities in children and families in Appalachia. Oral public health research leads to improved interventions, understanding, and advancements for the future of oral health education and treatment.

Demographics

For the 2016 -17 academic year, the School of Dental Medicine accepted 80 incoming first professional degree or doctor of dental medicine students from a pool of 2,003 applicants. Forty-four percent of the 315 students enrolled in the doctoral program are women. There are 63 students in the dental hygiene certificate program and 27 in the bachelor of science in dental hygiene program. The School of Dental Medicine has 97 full-time, 107 part-time, 115 adjunct, and 16 emeritus faculty members.

Mission

The mission of the University of Pittsburgh School of Dental Medicine is to improve oral health through Teaching, Research and Service:

- Teaching a new generation of clinicians to deliver oral health care with skill and compassion
- Research that expands the boundaries of our knowledge and builds on discoveries to enhance human life
- Service to the diverse community of patients who entrust themselves to our care

Vision

The University of Pittsburgh School of Dental Medicine will be a diverse, welcoming and supportive community widely recognized for excellence and leadership in the improvement of oral health.

- We will train our students to care for patients skillfully, professionally, and compassionately; to treat each patient with respect and kindness; and to be aware at all times of the privilege and responsibility of being entrusted with the care of another human being. We will model evidence-based treatment and the importance of life-long learning.
- We will actively contribute to the mission of the University of Pittsburgh to be a leading research institution, broadening the scientific foundations of dental and craniofacial medicine and translating new knowledge into life-enhancing treatments for people everywhere.
- We will be known for our clinical expertise and serve as a regional resource to which our neighbors will turn for comprehensive care. We will use the best techniques and current technologies to create optimal outcomes for our patients.

- We will maintain a strong and enduring connection with our alumni ^[1]_{SEP} to help ensure our School's success for generations to come. ^[1]_{SEP} Our alumni will carry on our mission through clinical excellence, service ^[1]_{SEP} to the dental profession, and generous outreach to people in need.

Values

- Service: Providing exemplary service to our students, faculty, patients, and society
- Passion for Excellence: Continuously striving to achieve the highest level of excellence in education, research, and service
- Professionalism and Integrity: Adhering to the highest ethical and professional standards of our profession
- Leadership: Serving as role models and mentors to students, faculty, and staff to shape the future of oral health care
- Collaboration: Embracing a team approach to accomplish shared goals
- Humanism: Respecting the contributions of each person within the School of Dental Medicine family to foster an environment of trust, safety, and fairness

School of Dental Medicine Faculty

School of Dental Medicine Full-time Faculty

Predoctoral (DMD) Program

Welcome to Pitt Dental Medicine

Students from Pennsylvania, across the country and around the world come to study at the University of Pittsburgh School of Dental Medicine. Among the best dental schools in the country, the School of Dental Medicine seeks only the most qualified students for admission to nationally recognized predoctoral and graduate academic programs. The central program at the school is the Doctor of Dental Medicine (DMD) program. Providing students with a solid evidence-based education in dental medicine, graduates of the program are well prepared to be practicing clinicians or researchers. The four-year predoctoral program begins at the White Coat Ceremony and leads to a Doctoral degree in Dental Medicine (DMD). Advanced dental education and residency programs are available to students, including the Oral Biology Graduate Program.

Competency-Based Educational Program

The four-year predoctoral program prepares students to provide basic health promotion and disease prevention, diagnose and develop treatment plans, analyze complex medical and dental cases, and achieve competency in all areas defined for general practitioners. The competency-based curriculum also reflects the school's commitment to supporting the development of professionalism, life-long learning, and synthesis of clinical and biomedical science concepts.

[View our four-year curriculum.](#)

Beyond the Classroom

Student learning continues far beyond the classroom. Community service is encouraged through the Student Community Outreach Program and Education (SCOPE) and the University of Pittsburgh WISER Center offers dental students hands-on medical experience in a world-class multidisciplinary simulation-based training facility. The Simulation Clinic gives students life-like experience with simulated patients in a classroom, clinical learning environment and the Fassinger Learning Resource Center lets students continue learning past the traditional hours and space of the classroom meetings.

Students are encouraged to participate in any of a number of the school's active student organizations to connect with others sharing and investigating the same interests. Student organizations focus on advancing knowledge and extend the frontiers of a particular segment of oral health. Personal, academic and career counseling are available through the school's Office of Student Affairs for all students. An extensive library system, learning skills center, housing resource center, student health care and recreational and fitness facilities are available through the University.

Research opportunities abound for students in good academic standing to study many different aspects of dental research, including craniofacial genetics, tissue regeneration, informatics, public health and other fields. With an extended history of profound dental research, the University of Pittsburgh School of Dental Medicine also fosters interactions between dental students and researchers in other disciplines. Academic rewards and contributions to the dental profession are just two reasons many students conduct research at the school. Students have opportunities to share their projects and results at national meetings and conferences and provide excellent learning and networking opportunities with colleagues. Student researchers also may compete for awards, scholarships, and other opportunities at the University.

About the School of Dental Medicine

Established in 1896, the University of Pittsburgh School of Dental Medicine has been educating students to take their places among the best dental practitioners, researchers and educators in our region, across the country, and even around the world. We are one of six Schools of Health Sciences at the University and are the only school to manage our own clinic. Our accomplishments reflect the dedication and success of each member of the School of Dental Medicine family.

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University Dental Health Services (UDHS) is a legally separate nonprofit practice plan that is closely affiliated with the School of Dental Medicine.

UDHS providers are full- or part-time faculty members, many of whom are board-certified specialists and nationally recognized experts in their respective fields.

Class of 2020

- Class Size: 80
- Male: 49 Female:31
- Average Age: 24
- Undergraduate Schools Represented: 54

Academics

- DAT AA: 21.4
- Average Total GPA: 3.64
- Average Science GPA: 3.55

Ethnicity/Race

- Caucasian: 60*
- Asian: 17*
- Hispanic: 5*
- African American: 4*
- American Indian: 4*
- Asian-Indian: 2*
- *Multiracial: 7

Important Information

- Type of degree granted: DMD
- Class size: 80
- Length of program: 4 years
- DAT: required
- Applications accepted through AADSAS
- Interview are granted by invitation in the fall and early spring
- Have questions? Email us at dentaladmissions@dental.pitt.edu

The program in dental education is accredited by the Commission on Dental Accreditation (CODA). The Commission is a specialized accrediting body recognized by the United States Department of Education. The Commission on Dental Accreditation can be contacted at 312-440-4653, or at 211 East Chicago Avenue, Chicago, IL, 60611. The Commission's web address is <http://www.ada.org/100.aspx>.

Doctoral

Advanced Standing (DMD) Program

The University of Pittsburgh School of Dental Medicine is committed to diversity within the dental profession. We have recruited students from more than 20 countries around the globe. Our Advanced Standing students are integrated seamlessly into the predoctoral DMD program and are provided with the same opportunities and incentives as our regular class. We believe in embracing and learning from each other's diverse backgrounds. Our program also provides numerous possibilities for research, community outreach and a personalized educational experience apart from the already rich, holistic and innovative clinical experience that we provide to our students.

Our Advanced Standing Program for dentists holding a dental degree from other countries employs a mandatory two-year curriculum. Qualified Advanced Standing Program students are placed in the First Professional Program (DMD) as third-year dental students following a mandatory summer program, and must complete the third- and fourth-year curriculum as prescribed. No waiver of classes is granted.

Education and Clinical Care

Our comprehensive clinical care model, coupled with evidence-based practice, allows for limitless student experiences. Utilizing advanced technologies, such as simulation patient labs, CBCT imaging, CAD/CAM, implants, 3D printing and more, provides unlimited opportunities which are student driven and faculty guided. With all eight specialty training programs, plus the country's flagship dental anesthesiology program, students are trained by experts in these specific fields while enjoying a low student to faculty ratio and a collaborative *Pitt Dental Family* atmosphere. Additionally, students gain valuable experience in our renowned Center for Patients with Special Needs and Multidisciplinary Implant Center. Students also may choose to pursue various certificates ranging from dental public health to academic dentistry. Being a part of one of the oldest programs in the country with a strong alumni base and support, students have the prerogative to participate in mentoring experiences, leadership possibilities, and many other social activities.

The University of Pittsburgh School of Dental Medicine participates in the Centralized Application for Advanced Placement for International Dentists (CAAPID) program. The deadline for application is **July 5** of the year prior to starting the program. Applications for the Advanced Standing Program that are sent directly to the University of Pittsburgh will not be accepted. Please visit the CAAPID website for specific information.

For detailed information about the program and application requirements and processes, please visit our website. If you have questions, please email us at kaa77@pitt.edu.

About the School

Established in 1896, the University of Pittsburgh School of Dental Medicine has been educating students to take their places among the best dental practitioners, researchers and educators in our region, across the country, and even around the world. We are one of six Schools of Health Sciences at the University and are the only school to manage our own clinic. Our accomplishments reflect the dedication and success of each member of the School of Dental Medicine family.

We are proud of our long tradition as innovators in dental medicine. Our first female student was admitted 117 years ago, and today more than half of our vibrant and diverse first-year pre-doctoral class are women. We nurture in our students a strong foundation in the biological, behavioral and clinical sciences ^[1] and a belief in the importance of professionalism and life-long learning.

Half a century ago we pioneered the specialty dental care that we now deliver in our fully equipped Center for Patients with Special Needs. The School's general dental clinics and 11 specialty clinics play an integral role in improving the oral health of the patient population of southwestern Pennsylvania and beyond. Some patients travel hundreds of miles to access the high-quality care our clinics provide every day.

Our researchers expand the horizons of knowledge and are internationally renowned for their groundbreaking developments in the areas of craniofacial genetics and craniofacial regeneration. We are identifying genes that contribute to complex human phenotypes, and are using tissue engineering to heal wounds and restore function and appearance to defects of the face and skull.

Every day, the positive contributions of our faculty, staff, residents and students-the Pitt Dental Medicine family-demonstrate their commitment to our mission of advancing the future of dental medicine through teaching, research and service.

Other Degree Programs

Along with several specialized degree programs, degrees offered at the School of Dental Medicine include the doctor of dental medicine (DMD); doctor of philosophy (PhD); master of science (MS); master of public health (MPH) offered in conjunction with the Graduate School of Public Health; and bachelor of science (BS).

The four-year Predoctoral (DMD) Program prepares students to provide comprehensive care to a diverse patient population. The competency-based curriculum emphasizes health promotion and disease prevention, and prepares students to provide individualized treatments using the best scientific evidence available. Graduates are equipped to practice as independent, entry-level general practitioners.

The Oral Biology Program (MS and PhD) encompasses the study of fundamental biological phenomena related to the development, structure, and function of the craniofacial region as well as the development of new therapies, biomaterials, and diagnostic tools for the treatment of diseases and disorders in the craniofacial area with the aim of improving health. Current research focuses involve craniofacial regeneration and genetics.

In collaboration with Pitt Public Health, the four-year DMD/MPH in dental public health offers customizable course selection with a special emphasis on oral health-specific public health issues.

The University of Pittsburgh School of Dental Medicine's Dental Hygiene Program provides students a unique academic environment where they can earn either an Associate of Science or a Bachelors Degree in Dental Hygiene. The interprofessional educational experiences within the school's specialty dental clinics and the University-based hospitals, in conjunction with didactic, community outreach, and research activities, affords the delivery of high-quality education.

Research Strengths

Pitt Dental Medicine is ranked 7th nationally for NIDCR research funding. Students have the opportunity to participate in innovative research involving craniofacial and dental genetics, craniofacial regeneration, informatics, caries research, the county's first DNA registry and repository obtained from saliva samples, and many clinical and translational projects.

Research efforts include dental and craniofacial genetics, craniofacial anomalies, caries, periodontal disease, pharmacology, pain control, tissue engineering, craniofacial regeneration, educational research, informatics, and implantology.

Identification

The School of Dental Medicine is undertaking investigations to identify genes that contribute to complex human phenotypes, primarily those involved in dental and craniofacial disorders, including behavioral and epidemiological factors. New territory is being charted to develop the first-known collection of DNA samples paired with anonymized dental records to support genetics research.

Treatment

Tissue engineering-based approaches are being developed to treat complex multi-structural wounds and defects of the face and skull in a way that restores both function and appearance. The school is at the forefront of research to develop relevant translational treatment solutions usable by practicing dentists.

Application

The School of Dental Medicine is identifying factors that lead to oral health disparities in children and families in Appalachia. Oral public health research leads to improved interventions, understanding, and advancements for the future of oral health education and treatment.

Advanced Standing Curriculum

Advanced Standing students are required to take a summer course before they join other DMD students in their third and fourth years. Learn more about the third- and fourth-year curriculum for Predoctoral DMD students.

Doctor of Dental Medicine, DMD

DMD Curriculum

Following is a listing of all DMD courses and a typical curriculum for each of the four years of the program:

First Year-Fall Term

- DENT 5118 - QUALITIES OF A GENERAL DENTIST I

- DMED 5110 - FOUNDATIONS OF PERSON-CENTERED CARE
- DMED 5112 - PRINCIPLES OF PROFESSIONAL PRACTICE
- ORBIOL 5115 - MICROBIAL PHYSIOLOGY AND IMMUNOLOGY
- ORBIOL 5116 - MOLECULAR AND CELL BIOLOGY 1
- ORBIOL 5117 - MOLECULAR AND CELL BIOLOGY 2
- ORBIOL 5118 - EMBRYOLOGY AND ORAL TISSUES
- ORBIOL 5120 - BODY TISSUES
- RESTD 5111 - DENTAL ANATOMY AND MORPHOLOGY
- RESTD 5118 - DENTAL ANATOMY AND MORPHOLOGY LAB

First Year-Spring Term

- DENT 5148 - QUALITIES OF A GENERAL DENTIST 2
- DIASCI 5141 - INTRODUCTION TO RADIOLOGY 1
- DMED 5140 - CARIOLOGY AND CARIES MANAGEMENT 1
- DMED 5141 - CARIOLOGY AND CARIES MANAGEMENT 1 LAB
- DMED 5142 - FOUNDATIONS OF PERSON-CENTERED CARE 2
- DMED 5143 - PRINCIPLES OF PROFESSIONAL PRACTICE 2
- ORBIOL 5140 - SYSTEMIC GROSS ANATOMY
- ORBIOL 5141 - SYSTEMIC HUMAN PHYSIOLOGY 1
- ORBIOL 5143 - HEAD AND NECK SOFT TISSUE ANATOMY
- ORBIOL 5144 - SYSTEMIC HUMAN PHYSIOLOGY 2
- PERIO 5141 - PERIODONTOLOGY 1
- PROSTH 5142 - DENTAL MATERIALS

First Year-Summer Term

- DENT 5178 - QUALITIES OF A GENERAL DENTIST 3
- DIASCI 5170 - GENERAL AND SYSTEMIC PATHOLOGY
- DIASCI 5171 - INTRODUCTION TO RADIOLOGY 2
- DMED 5170 - CARIOLOGY AND CARIES MANAGEMENT 2
- DMED 5171 - CARIOLOGY AND CARIES MANAGEMENT 2 LAB
- DMED 5172 - APPLICATIONS OF PERSON-CENTERED CARE
- ORBIOL 5176 - IMMUNOLOGY
- PERIO 5171 - PERIODONTAL INSTRUMENTATION 1
- PROSTH 5171 - PRINCIPLES OF DENTAL OCCLUSION

Second Year-Fall Term

- DENT 5211 - DIAGNOSIS AND TREATMENT PLANNING 1
- DENT 5218 - QUALITIES OF A GENERAL DENTIST 4
- DIASCI 5211 - INTRODUCTION TO RADIOLOGY PHYSICS AND BASIC INTERPRETATION
- DIASCI 5212 - ORAL AND MAXILLOFACIAL PATHOLOGY
- DMED 5212 - APPLICATIONS OF PROFESSIONAL PRACTICE 1
- ENDOD 5210 - ENDODONTICS 1
- ENDOD 5216 - ENDODONTICS 1 LAB
- PEDENT 5211 - PEDIATRIC DENTISTRY 1
- PERIO 5212 - PERIODONTOLOGY 2
- PHARM 3028 - PHARMACOLOGY AND THERAPEUTICS
- PROSTH 5211 - FIXED PARTIAL DENTURES 1

- PROSTH 5213 - COMPLETE DENTURES 1
- PROSTH 5215 - FIXED PARTIAL DENTURES 1 LAB
- PROSTH 5217 - COMPLETE DENTURES 1 LAB

Second Year-Spring Term

- DENT 5242 - DIAGNOSIS AND TREATMENT PLANNING 2
- DENT 5248 - QUALITIES OF A GENERAL DENTIST 5
- DIASCI 5241 - RADIOLOGY, IMAGING AND INTERPRETATION 1
- DSANE 5241 - ANESTHESIA 1: LOCAL ANESTHESIA
- DSANE 5245 - LOCAL ANESTHESIA TECHNIQUE LAB
- ENDOD 5247 - ENDODONTICS 2 LAB
- ENDOD 5252 - ENDODONTICS 2
- ODO 5242 - INTRODUCTION TO ORTHODONTICS
- ORBIOL 5244 - CRANIOFACIAL GENETICS
- ORSUR 5241 - ORAL SURGERY 1
- PEDENT 5242 - PEDIATRIC DENTISTRY 2 LAB
- PEDENT 5253 - PEDIATRIC DENTISTRY 2
- PERIO 5210 - PERIODONTAL INSTRUMENTATION 2
- PERIO 5243 - PERIODONTAL CLINIC
- PROSTH 5241 - REMOVABLE PARTIAL DENTURES
- PROSTH 5245 - REMOVABLE PARTIAL DENTURES LABORATORY
- PROSTH 5251 - FIXED PARTIAL DENTURES 2
- PROSTH 5256 - FIXED PARTIAL DENTURES 2 LAB
- RESTD 5244 - GERIATRICS

Second Year-Summer Term

- CDENT 5281 - SCOPE 1
- CDENT 5282 - CLINICAL APPLICATION OF PROBLEM-SOLVING SKILLS
- DENT 5278 - QUALITIES OF A GENERAL DENTIST 6
- DENT 5283 - DIAGNOSIS AND TREATMENT PLANNING 3
- DSANE 5272 - ANESTHESIA 2: MEDICAL EMERGENCIES
- ODO 5275 - INTRODUCTION TO ORTHODONTICS LAB
- ORSUR 5282 - ORAL SURGERY 2
- PROSTH 5271 - DIGITAL DENTISTRY 1
- PROSTH 5273 - FIXED PARTIAL DENTURES 3
- PROSTH 5276 - FIXED PARTIAL DENTURES 3 LABORATORY
- PROSTH 5282 - COMPLETE DENTURES 2
- RESTD 5282 - OPERATIVE TECHNIQUES REVIEW

Third Year-Fall Term

- DENT 5310 - SPECIAL NEEDS DENTISTRY
- DENT 5317 - SUCCESSFUL PRACTICE MANAGEMENT 1
- DENT 5318 - QUALITIES OF A GENERAL DENTIST 7
- DIASCI 5320 - MANAGEMENT OF DENTAL EMERGENCIES
- DSANE 5311 - PATIENT MANAGEMENT: ENTERAL SEDATION
- DSANE 5313 - ANESTHESIA 3: PAIN AND ANXIETY CONTROL
- DSANE 5315 - NITROUS OXIDE LAB

- DSANE 5317 - ADVANCED LOCAL ANESTHESIA TECH LAB
- ENDOD 5313 - ENDODONTICS 3
- ODO 5319 - CLINICAL ORTHODONTICS
- ORSUR 5313 - ORAL SURGERY 3
- ORSUR 5314 - PHYSICAL DIAGNOSIS AND EVALUATION
- PEDENT 5315 - PEDIATRIC DENTISTRY 3
- PROSTH 5311 - IMPLANTOLOGY 1

Third Year-Spring Term

- CDENT 5342 - INTRODUCTION TO BEHAVIORAL DENTISTRY
- DENT 5347 - SUCCESSFUL PRACTICE MANAGEMENT 2
- DENT 5348 - QUALITIES OF A GENERAL DENTIST 8
- DIASCI 5341 - SEMINARS IN ORAL PATHOLOGY AND ORAL MEDICINE
- DSANE 5342 - CLINICAL MEDICINE
- DSANE 5344 - MEDICAL EMERGENCIES - WISER CENTER
- ORBIOL 5340 - CURRENT TOPICS IN ORAL HEALTH RESEARCH
- ORSUR 5344 - ORAL SURGERY 4
- PERIO 5343 - PERIODONTOLOGY 3
- PROSTH 5346 - IMPLANTOLOGY 2
- PROSTH 5347 - CURRENT TRENDS IN DIGITAL DENTISTRY
- PROSTH 5348 - DIGITAL DENTISTRY 2
- RESTD 5342 - PRACTICE ADMINISTRATION

Third Year-Summer Term

- DENT 5377 - SUCCESSFUL PRACTICE MANAGEMENT 3
- DENT 5378 - QUALITIES OF A GENERAL DENTIST 9
- DENT 5383 - CLINICAL ORAL DIAGNOSIS AND TREATMENT PLANNING 1
- DENT 5388 - CLINICAL SPECIAL NEEDS DENTISTRY 1
- DIASCI 5373 - RADIOLOGY, IMAGING AND INTERPRETATION 2
- DIASCI 5389 - CLINICAL EMERGENCY 1
- ENDOD 5388 - CLINICAL ENDODONTICS 1
- ORSUR 5388 - CLINICAL ORAL SURGERY 1
- PERIO 5379 - CLINICAL PERIODONTICS 1
- PROSTH 5373 - SIMULATED PATIENT TREATMENT
- PROSTH 5375 - CLINICAL PROSTHODONTICS 1
- RESTD 5371 - PRACTICE MANAGEMENT
- RESTD 5375 - ESTHETIC RESTORATIVE DENTISTRY
- RESTD 5379 - CLINICAL RESTORATIVE DENTISTRY 1

Fourth Year-Fall Term

- DENT 5000 - FULL-TIME DENTAL MEDICINE STUDY
- DENT 5417 - SUCCESSFUL PRACTICE MANAGEMENT 4
- DENT 5418 - QUALITIES OF A GENERAL DENTIST 10

Fourth Year-Spring Term

- CDENT 5440 - SCOPE 2

- DENT 5440 - SENIOR CASE PRESENTATION
- DENT 5447 - SUCCESSFUL PRACTICE MANAGEMENT 5
- DENT 5448 - QUALITIES OF A GENERAL DENTIST 11
- DENT 5455 - CLINICAL ORAL DIAGNOSIS AND TREATMENT PLANNING 2
- DENT 5459 - CLINICAL SPECIAL NEEDS DENTISTRY 2
- DIASCI 5459 - CLINICAL RADIOLOGY
- DIASCI 5469 - CLINICAL EMERGENCY 2
- ENDOD 5448 - CLINICAL ENDODONTICS 2
- ORSUR 5449 - CLINICAL ORAL SURGERY 2
- PEDENT 5449 - CLINICAL PEDIATRIC DENTISTRY 2
- PROSTH 5448 - CLINICAL PROSTHODONTICS 2
- PERIO 5449 - CLINICAL PERIODONTICS 2
- PROSTH 5469 - CLINICAL IMPLANT DENTISTRY
- RESTD 5449 - CLINICAL RESTORATIVE DENTISTRY 2

Advanced Dental Education and Residency Programs

The School of Dental Medicine offers ten Advanced Dental Education and Residency Programs leading to a Certificate of Completion in the respective program. Programs of three-year duration offer an optional educational tract leading to a Master of Dental Science degree (MDS).

All residents in the various specialties begin their advanced education by studying a core curriculum. It includes, but is not limited to, an orientation program; Clinical Operations; BLS Certification; Infection Control Policies and Procedures; Chemical Dependency; Hospital Protocols and Procedures; Conferences / Classes; Advanced Oral Pathology; Applied Head and Neck Anatomy; Clinical Pharmacology; Intravenous and Inhalation Sedation; Management of Medical Emergencies; Mineralized Tissue Biology; Multidisciplinary Treatment Planning Grand Rounds; Oral and Maxillofacial Radiology and Imaging; Pathobiology and Immunology; and Research Design and Methodology

Details about the residency programs at Pitt Dental Medicine is available on our website at dental.pitt.edu/advanced-dental-education-residency-programs.

About the School

Established in 1896, the University of Pittsburgh School of Dental Medicine has been educating students to take their places among the best dental practitioners, researchers and educators in our region, across the country, and even around the world. We are one of six Schools of Health Sciences at the University and are the only school to manage our own clinic. Our accomplishments reflect the dedication and success of each member of the School of Dental Medicine family.

We are proud of our long tradition as innovators in dental medicine. Our first female student was admitted 117 years ago, and today more than half of our vibrant and diverse first-year pre-doctoral class are women. We nurture in our students a strong foundation in the biological, behavioral and clinical sciences^[1] and a belief in the importance of professionalism and life-long learning.

Half a century ago we pioneered the specialty dental care that we now deliver in our fully equipped Center for Patients with Special Needs. The School's general dental clinics and 11 specialty clinics play an integral role in improving the oral health of the patient population of southwestern Pennsylvania and beyond. Some patients travel hundreds of miles to access the high-quality care our clinics provide every day.

Our researchers expand the horizons of knowledge and are internationally renowned for their groundbreaking developments in the areas of craniofacial genetics and craniofacial regeneration. We are identifying genes that contribute to complex human phenotypes, and are using tissue engineering to heal wounds and restore function and appearance to defects of the face and skull. Every day, the positive contributions of our faculty, staff, residents and students-the Pitt Dental Medicine family-demonstrate their commitment to our mission of advancing the future of dental medicine through teaching, research and service.

General Dentistry and Specialty Clinics

The School of Dental Medicine provides clinical education and patient care through 15 dental clinics encompassing general dentistry, anesthesiology, special needs, emergency, endodontics, implants, oral and maxillofacial pathology, oral and maxillofacial surgery, orthodontics and dentofacial

orthopaedics, pediatric dentistry, periodontics and preventive dentistry, dental hygiene, endodontics, prosthodontics, radiology, and restorative dentistry/comprehensive care.

Clinical Centers

The Multidisciplinary Implant Center focuses on patient care, teaching, and research related to the treatment of tooth loss and the functional bone and soft tissue deficits that can follow tooth loss.

The Center for Patients with Special Needs was established by Dean Thomas W. Braun as a school priority to centralize and increase treatment capacity for patients with physical, developmental, neurological, and intellectual disabilities.

University Dental Health Services (UDHS) is a legally separate nonprofit practice plan that is closely affiliated with the School of Dental Medicine. UDHS providers are full- or part-time faculty members, many of whom are board-certified specialists and nationally recognized experts in their respective fields.

Research Strengths

Research efforts include dental and craniofacial genetics, craniofacial anomalies, caries, periodontal disease, pharmacology, pain control, tissue engineering, craniofacial regeneration, educational research, informatics, and implantology.

Identification

The School of Dental Medicine is undertaking investigations to identify genes that contribute to complex human phenotypes, primarily those involved in dental and craniofacial disorders, including behavioral and epidemiological factors. New territory is being charted to develop the first-known collection of DNA samples paired with anonymized dental records to support genetics research.

Treatment

Tissue engineering-based approaches are being developed to treat complex multi-structural wounds and defects of the face and skull in a way that restores both function and appearance. The school is at the forefront of research to develop relevant translational treatment solutions usable by practicing dentists.

Application

The School of Dental Medicine is identifying factors that lead to oral health disparities in children and families in Appalachia. Oral public health research leads to improved interventions, understanding, and advancements for the future of oral health education and treatment.

All Residency Programs Core Courses

Certificate

Dental Anesthesiology Certificate

The Department of Dental Anesthesiology directs and coordinates the three-year, CODA accredited, dental anesthesiology residency program. The goal of this program is to prepare dentists to manage pain and anxiety in adult, pediatric and special needs patients by using pharmacologic and non-pharmacologic techniques. A significant portion of the University of Pittsburgh School of Dental Medicine Residency Program in Dental Anesthesiology is a unit of the medical anesthesiology residency program, administered through the UPMC Medical Education Program (UPMC-MEP). At the conclusion of the program, the dentist will earn a certificate in dental anesthesiology and be proficient in providing all levels of anesthesia services for ambulatory patients undergoing a variety of medical and dental procedures.

A maximum of four dental anesthesiology residents are selected each year. They have the same responsibilities and are expected to meet the same competencies as medical residents. Residents in dental anesthesiology have standard postgraduate salaries and benefits.

Residents in the Dental Anesthesiology Residency Program may elect to pursue a master of dental science degree (MDS) alongside their certificate. Eligible residents who elect this option must pass the Master of Dental Science Entrance Examination and enroll in the tract with the Pitt Registrar's Office. Please talk with the dental residency program administrator for details.

Program Description by Year

The first year of the resident's clinical experience begins at the dental school with the resident attending all introductory courses and conferences in anesthesiology intended for post-graduate first-year residents. The dental resident becomes familiar with the anesthetic management of patients undergoing an array of dental procedures, including pediatric, special needs, oral surgery and implant surgery. Within this first year, one month, each, is devoted to training in Internal Medicine, Intensive Care Medicine, Emergency Medicine, and Cardiology.

The second and third years of the residency continue with rotations through UPMC Presbyterian and Montifiore Hospitals, UPMC St. Margaret's, Children's Hospital of Pittsburgh of UPMC, and Magee-Womens Hospital of UPMC. During this rotation cycle, residents will participate in the anesthetic management of patients undergoing general surgery, complex head and neck procedures, orthopedic surgery, and transplantation operations. Three months at UPMC St. Margaret's will provide experience in a high-paced operating room that prepares the resident for private practice. Regional anesthesia and advanced pain management techniques are also developed. Children's Hospital of Pittsburgh of UPMC offers a diversity of experiences in managing the anesthetic requirements of children of all physical sizes and ages who are undergoing a wide variety of surgical procedures. Magee-Womens Hospital of UPMC gives the resident an opportunity to learn about epidural and spinal anesthesia techniques intended for obstetric procedures along with general surgery experience in the hospital operating rooms. Magee-Womens Hospital of UPMC utilizes an after-hours call schedule. The resident serves at the University of Pittsburgh School of Dental Medicine one day per week in the winter months, providing clinical care and lectures in the management of medical emergencies in the dental setting to post-graduate dental specialty students.

During the final three months, residents devote time to completing research projects, providing clinical anesthesia care, and teaching concepts of outpatient anesthesia to pre-doctoral students.

A focus of the training includes developing skills in the management of special needs patients receiving dental care. The University of Pittsburgh School of Dental Medicine has an active Center for Patients with Special Needs that provides the resident with a unique opportunity to provide anesthesia services to this underserved population. Residents will take part in regular journal reviews of current literature and a structured lecture series in anesthesiology. In addition, residents are expected to attend at least one national conference per year and initiate work on a mentored clinical research project.

The applicant must submit the American Dental Education Association Postdoctoral Application Support Service (ADEA PASS) application and register for the Match Program.

Learn more about requirements and application to the program by visiting dental.pitt.edu/dental-anesthesiology

The advanced education in general dentistry program is accredited by the Commission on Dental Accreditation (CODA). The Commission is a specialized accrediting body recognized by the United States Department of Education. The Commission on Dental Accreditation can be contacted at 312-440-4653, or at 211 East Chicago Avenue, Chicago, IL, 60611. The Commission's web address is <http://www.ada.org/100.aspx>. The Commission on Dental Accreditation has accredited the postdoctoral program in advanced education in general dentistry. However, this education area is not one of the American Dental Association (ADA) recognized dental specialty areas. Therefore, dentists graduating from this program cannot announce that they are specialists, as recognized by the American Dental Association.

Endodontics Certificate

The University of Pittsburgh School of Dental Medicine's Endodontic Residency Program was initiated by Dr. Andrew Michanowicz in May, 1969. This fully accredited two-year program enrolls four students per year. Residents start their program on July 1 of each year.

Throughout the years, the Endodontic Residency Program has continuously incorporated the latest innovations in the field. The use of endodontic microscopy is the standard for each procedure. Residents are expected to have a working knowledge and experience with different file systems from various companies. Each resident has their own ultrasonic and advanced irrigation devices.

Research opportunities in several fields are available. The residents have the opportunity to work with National Institute of Health (NIH) funded researchers. Projects regarding microCT, bone biology, and craniofacial regeneration are available for resident participation.

The program helps the residents develop knowledge regarding every aspect of endodontics and prepares them to become members of the American Board of Endodontics.

On average, residents complete at least 350 cases prior to graduation. Cases include standard root canal therapy, retreatments, endodontic microsurgery, and pulpal regeneration.

Overall, the Endodontic Residency Program prides itself in helping residents develop and master endodontic skills while simultaneously identifying and pursuing avenues of interest in relevant basic science and endodontic technology.

Application

Applications are processed using ADEA Postdoctoral Application Support Service (PASS), or the self-managed application. A fee of \$50 is charged to those who chose to use the self-managed application. The application deadline is Sept. 2nd of the previous year. Interviews will be granted on a rolling basis.

For more information, please visit dental.pitt.edu/endodontics-residency

The advanced specialty education program in endodontics is accredited by the Commission on Dental Accreditation (CODA). The Commission is a specialized accrediting body recognized by the United States Department of Education. The Commission on Dental Accreditation can be contacted at 312-440-4653, or at 211 East Chicago Avenue, Chicago, IL, 60611. The Commission's web address is <http://www.ada.org/100.aspx>.

General Practice Residency

The General Practice Residency (GPR) Program, sponsored by the University of Pittsburgh Medical Center (UPMC), offers a one-year program that provides residents with postdoctoral clinical and didactic experiences. Based in the UPMC Montefiore Dental Center on the UPMC Presbyterian/Shadyside Campus, the program enrolls a combined total of three (3) residents each year. Residents completing the GPR earn a certificate of training.

Guided by the philosophy that oral health is an integral and interactive aspect of total health, residents engage in approximately nine months of comprehensive dental care. The remaining three months are spent on rotations in anesthesia, emergency medicine, head and neck radiology, and oral and maxillofacial surgery.

In addition to intensive exposure to hospital-based dentistry, the program provides clinical and didactic training across a range of dental specialties, including endodontics, periodontics, implant dentistry, prosthodontics, oral and maxillofacial surgery, oral pathology/oral medicine, orthodontics, pediatric dentistry and treating patients with special needs. Instruction is also provided in ancillary topics pertinent to dental practice, such as patient evaluation and physical examination, emergency medical care, inpatient care and hospital organization, and a multitude of other medical and dental subjects.

Throughout the program, residents focus on the attainment of several objectives, all of which are derived from the Commission on Dental Accreditation's Standards for Advanced Education Programs in General Practice Residency. Upon completion of the program, General Practice residents are prepared to:

- Act as primary care providers, delivering emergency and comprehensive oral health care which is patient-focused and coordinated across disciplines;
- Use advanced dental treatment modalities;
- Direct health promotion and disease prevention activities;
- Function effectively in hospital and non-hospital health care environments;
- Function effectively as members of multi-disciplinary teams;
- Apply scientific principles to learning and oral health care, which entails thinking critically, making evidence/outcomes-based clinical decisions, and utilizing technology-based information retrieval systems;
- Engage in research, scientific writing, and presentations in order to advance dental medicine;
- Adopt a system of values that emphasizes lifelong learning, patient-centered care, exercise of professional ethics, adaptability, and acceptance of cultural diversity among patients and colleagues;
- Understand public oral health needs and practice community service.

While in the program, residents receive UPMC Health System's postgraduate trainee stipend. Those interested in making application to the program may do so through the American Dental Education Association's Postdoctoral Application Support Service (PASS).

For additional information, please visit dental.pitt.edu/gpr

The advanced education in general dentistry program is accredited by the Commission on Dental Accreditation (CODA). The Commission is a specialized accrediting body recognized by the United States Department of Education. The Commission on Dental Accreditation can be contacted at 312-440-4653, or at 211 East Chicago Avenue, Chicago, IL, 60611. The Commission's web address is <http://www.ada.org/100.aspx>.

Oral and Maxillofacial Pathology

The School of Dental Medicine Department of Diagnostic Sciences Residency Program in Oral and Maxillofacial Pathology is a 3-year residency certificate program offered through the University of Pittsburgh Medical Center Medical Education (UPMCME). This program is fully accredited by the Commission on Dental Accreditation. The program will accept a maximum of two residents a year. Successful completion of the program will lead to a certificate in Oral and Maxillofacial Pathology and will qualify the graduate to sit for the specialty board examination in Oral and Maxillofacial Pathology.

Curriculum

Faculty members are certified by their specialty boards of Oral and Maxillofacial Pathology, Oral and Maxillofacial Radiology, Oral Medicine, or Anatomic Pathology, and possess a wide range of clinical, teaching, research, and surgical pathology experience. The residency program offers a mix of didactic courses, electives, microscopic general and oral pathology, clinical oral pathology, oral and maxillofacial radiology, head and neck pain, hospital rotations, and research. Clinical patients are seen at the University of Pittsburgh School of Dental Medicine and through the faculty practice plan at the University Dental Health Services, Inc., as well as during the rotation in dermatopathology.

Rotations

Most pathology rotations take place at UPMC-Presbyterian Hospital, in the Oakland section of Pittsburgh, across the street from the University of Pittsburgh School of Dental Medicine. UPMC is a major regional, tertiary care and transplant center that will expose the resident to a large volume and a wide variety of experiences. Rotations include three 4-week rotations in head and neck anatomic pathology, 6 weeks in dermatopathology, 4 weeks in hematopathology-lymph node, 2 weeks in immunopathology, and 2 weeks in autopsy, with additional opportunities in gastrointestinal pathology ("GI quicks"), thoracic pathology, bone and soft tissue pathology, pediatric pathology, and molecular pathology. The program allows some flexibility for the resident to concentrate on a particular area of oral and maxillofacial pathology.

More information including requirements and making an application to the program are available by visiting dental.pitt.edu/omp-residency

The program in dental education is accredited by the Commission on Dental Accreditation (CODA). The Commission is a specialized accrediting body recognized by the United States Department of Education. The Commission on Dental Accreditation can be contacted at 312-440-4653, or at 211 East Chicago Avenue, Chicago, IL, 60611. The Commission's web address is <http://www.ada.org/100.aspx>.

Oral and Maxillofacial Surgery

The Department of Oral and Maxillofacial Surgery (OMS) at the University of Pittsburgh School of Dental Medicine offers a **six-year, dual-degree program**, and a **four-year program**. Three residents are accepted each year (two six-year positions and one four year position), and they commence training as interns in the department. In the six-year, dual-degree program, two residents join their corresponding medical school class in the spring of the first year. These residents earn a medical degree and participate in advanced surgical training in oral and maxillofacial surgery, spending a total of 33 months on the oral and maxillofacial surgery service. The four-year program offers a total of 33 months on the oral and maxillofacial surgery service and rotating on medicine, surgery and anesthesia services the other 15 months. The department's graduates have accepted positions in both outstanding surgical practices and university attending positions at major medical centers throughout the United States.

Eight full-time oral and maxillofacial surgery faculty members, as well as part-time faculty and private practice oral and maxillofacial surgeons from the Pittsburgh area, provide surgical training and mentoring. The School of Dental Medicine has, on-site, a modern ambulatory surgical suite with full anesthesia support and facilities that enhance caseload and outpatient surgical management. The department provides instruction in anesthesia, dentoalveolar surgery, dental implants, head and neck pathology, cleft and craniofacial disorders, craniofacial trauma, and head and neck anatomy.

The program is designed to be truly "integrated" and allow for the maximal benefit of coordinated medical training, and progression of knowledge and skill in oral and maxillofacial surgery. Residents are exposed to the full scope of oral and maxillofacial surgery throughout their training—including interdisciplinary care. From day one, new residents work with first professional dental students in a training and supervisory role in the

undergraduate OMS clinic. They are involved in managing emergency cases at the UPMC Montefiore Dental Center and in assist the attending surgical faculty in the operating rooms of UPMC Presbyterian/Shadyside, Mercy Hospital, and Children's Hospital of Pittsburgh of UPMC. During the entire final year of the program, the chief residents devote a full 12 months to the OMS service, working with an enviable surgical caseload. Residents are also required to attend the Department of Oral and Maxillofacial Surgery Grand Rounds, Journal Club, treatment planning conferences in the Dentofacial Deformities Program (in conjunction with the Orthodontic Program), and the weekly Surgical Treatment Planning and Trauma Conference.

Application

The annual application deadline is September 1 of the preceding year. Late applications will not be accepted. Applicants must graduate from an ADA-accredited dental school, must apply through the ADEA Postdoctoral Application Support Service (PASS), and must participate in the Postdoctoral Dental Matching Program (MATCH).

Interview and Selection

Applicants are screened for interviews that occur in November and December of each year. In late January, through the MATCH Program, two applicants are selected to matriculate into the first year of residency, which commences in late June. Applicants matched to the University of Pittsburgh are enrolled in both the Department of Oral and Maxillofacial Surgery residency and the University of Pittsburgh School of Medicine.

For additional information, please visit dental.pitt.edu/oms-residency

The Department of Oral and Maxillofacial Surgery adheres to the University of Pittsburgh's non-discrimination policy.

The advanced specialty education program in oral and maxillofacial surgery is accredited by the Commission on Dental Accreditation (CODA). The Commission is a specialized accrediting body recognized by the United States Department of Education. The Commission on Dental Accreditation can be contacted at 312-440-4653, or at 211 East Chicago Avenue, Chicago, IL, 60611. The Commission's web address is <http://www.ada.org/100.aspx>.

Orthodontics and Dentofacial Orthopedics Certificate

The Orthodontics and Dentofacial Orthopedics Advanced Dental Education/Residency Program at the University of Pittsburgh School of Dental Medicine requires a three-year course of study. The goals of the program are to provide an excellent advanced education in the specialty of orthodontics and dentofacial orthopedics, to provide high quality clinical care, and to conduct research designed to advance the knowledge of the specialty. The curriculum reflects this mission and provides residents with the necessary knowledge and experience to enter the specialty well prepared for practice. The curriculum is based upon a solid foundation of scientific principles and methods that residents may use as a rational framework for understanding treatment and evaluating future changes in the specialty. The application of basic and clinical scientific knowledge to the practice of orthodontics is the fundamental tenet of the curriculum.

Successful completion of the program leads to a certificate in orthodontics and dentofacial orthopedics, and enables graduates to participate in the American Board of Orthodontics certifying examination. Students may also pursue a course of study leading to a Master of Dental Science degree in Orthodontics and Dentofacial Orthopedics.

Components of the program are:

- Clinical training which prepares the resident for specialty board certification
- Education from a broad curriculum, which provides residents with greater insight on the nature of orthodontics
- Research to enrich the profession and develop critical thinking skills

The curriculum for the Orthodontics and Dentofacial Orthopedics Residency Program is designed to be taught at the postdoctoral level. The path of study followed by the residents comprises a core curriculum of graduate level basic sciences, followed by a broad course of study in craniofacial biology, clinical sciences, and orthodontic techniques. A significant portion of the curriculum is devoted to clinical orthodontics, allowing the resident to develop proficiency through a broad, diverse experience in patient care.

Conferences provide an excellent foundation in the basic and clinical sciences and provide opportunity for study in growth and development, dental statistics, occlusion and malocclusion, development of the dentition, dentofacial abnormalities, biomechanical orthodontics, genetics, bone biology, cephalometrics, diagnosis and treatment planning, evidence-based care, surgical orthodontics, practice management, and orthodontic technique. Orthodontic conferences and literature review sessions provide opportunities for critical analysis of historical and current literature with application to contemporary orthodontic principles in case diagnosis and treatment planning.

Scholarly activity in the form of basic or clinical research is a fundamental component of the curriculum. Residents design, implement, and complete a research project that provides greater knowledge of the specialty and permit residents to develop the ability to apply the scientific method.

Applicants must apply through the Postdoctoral Application Support Service (PASS). Four residents are accepted each year, and all positions are awarded through the Postdoctoral Dental Matching Program in the Phase I (fall) match. The program is fully accredited by the Commission on Dental Accreditation.

Read more about the Orthodontics and Dentofacial Orthopedics Residency Program by visiting dental.pitt.edu/ortho-residency.

The advanced specialty education program in orthodontics and dentofacial orthopedics is accredited by the Commission on Dental Accreditation (CODA). The Commission is a specialized accrediting body recognized by the United States Department of Education. The Commission on Dental Accreditation can be contacted at 312-440-4653, or at 211 East Chicago Avenue, Chicago, IL, 60611. The Commission's web address is <http://www.ada.org/100.aspx>.

Pediatric Dentistry Certificate

The Department of Pediatric Dentistry offers a two-year residency program resulting in a Certificate in Pediatric Dentistry. Residents are trained in the advanced diagnostic and clinical techniques necessary to provide specialty care to children, adolescents, and individuals with disabilities. Residents are eligible to participate in the American Board of Pediatric Dentistry certification examinations, upon successful completion of the Program.

All facilities within the School of Dental Medicine are available for resident use, and there is a vast Health Science Center Library system housed in the medical school directly across the street from the School of Dental Medicine.

Rotations

Rotations are scheduled at Children's Hospital of Pittsburgh of UPMC and UPMC Presbyterian Hospital.

The following rotations are completed at Children's Hospital of Pittsburgh of UPMC:

- Pediatric Medicine
- Anesthesiology
 - Hospital Based Operating Room
 - Hospital Grand Rounds

Advanced Pediatric Dentistry residents also rotate through the Pre-doctoral Pediatric Dentistry Clinic and the Preclinical Simulation Clinic to provide instruction and clinical supervision to pre-doctoral dental students.

Applications to the Department of Pediatric Dentistry Residency Program must be filed through the Postdoctoral Application Support Service (PASS) and the Postdoctoral Dental Matching Program (MATCH).

Applications are due by **October 1** of the preceding year.

For additional information about the residency program in pediatric dentistry, including how to apply, please visit dental.pitt.edu/pediatric-dentistry-residency

The advanced specialty education program in pediatric dentistry is accredited by the Commission on Dental Accreditation (CODA). The Commission is a specialized accrediting body recognized by the United States Department of Education. The Commission on Dental Accreditation can be contacted at 312-440-4653, or at 211 East Chicago Avenue, Chicago, IL, 60611. The Commission's web address is <http://www.ada.org/100.aspx>.

Periodontics Certificate

The residency in periodontics is a three-year certificate program. Each resident is exposed to all periodontal diagnostics and therapies and is expected to be competent in all phases of clinical periodontal care. This includes competency in implant therapy and the provision of moderate parenteral sedation. All residents are encouraged to participate in the American Academy of Periodontology board certification process, and to graduate as board-certified periodontist. A master's degree option is available to residents in the Department of Periodontics. Three residents are accepted annually for the three-year program.

Residents in the Periodontics Residency Program may elect to pursue a master of dental science degree (MDS) alongside their certificate. Eligible residents who elect this option must pass the Master of Dental Science Entrance Examination and enroll in the tract with the Pitt Registrar's Office. Please talk with the dental residency program administrator for details.

All residents must be graduates of an accredited U.S. or Canadian dental school. U.S. citizenship is not a requirement.

Applications to the residency program are accepted through the ADEA Postdoctoral Application Support Service (PASS) or the self-managed application through the Office of Residency Education (**412-648-8406**). Applications are due before August 1 of each year.

Learn more about the Periodontics Residency Program by visiting dental.pitt.edu/periodontics-residency.

The advanced specialty education program in periodontics is accredited by the Commission on Dental Accreditation (CODA). The Commission is a specialized accrediting body recognized by the United States Department of Education. The Commission on Dental Accreditation can be contacted at 312-440-4653, or at 211 East Chicago Avenue, Chicago, IL, 60611. The Commission's web address is <http://www.ada.org/100.aspx>.

Prosthodontics Certificate

The Advanced Education Program in Prosthodontics is an American Dental Association-accredited three-year certificate program with the option to complete a master's degree. Students who pursue a master's degree will receive their MDS upon completion of the extra required didactic courses within the three year limit. The Program's didactic and clinical components are designed to train and equip the graduate to transfer new prosthodontic knowledge and approaches, to implement evidence-based prosthodontic decision-making in clinical practice, and to prepare for certification by the American Board of Prosthodontics.

Residents in the Prosthodontics Residency Program may elect to pursue a master of dental science degree (MDS) alongside their certificate. Eligible residents who elect this option must pass the Master of Dental Science Entrance Examination and enroll in the tract with the Pitt Registrar's Office. Please talk with the dental residency program administrator for details.

Objectives

The objectives of the residency program in the Department of Prosthodontics are to:

Provide clinical training in all aspects of prosthodontics including:

- clinical experiences to ensure proficiency in all aspects of prosthodontics;
- clinical experiences to ensure proficiency in diagnosis, treatment planning, and management of multi-disciplinary cases;
- to recruit and retain faculty with broad and varying backgrounds in clinical prosthodontics, who espouse diverse philosophies in patient care and prosthodontic procedures, and effectively communicate their knowledge and skills to residents.

Provide biologically and scientifically based education in order to:

- develop, monitor, and update all prosthodontic seminars and conferences to present contemporary, technologically, and biologically-oriented information;
- provide opportunities for scholarly activities, applied research, scientific articles, and clinical and/or research presentations.

Prepare and train residents for a career in prosthodontic practice and/or academics to:

- require all residents to complete annual comprehensive examinations (ACP Annual Board Review Examinations);
- provide opportunities for completion of a treatment case suitable for presentation to the American Board of Prosthodontics;

- provide residents with opportunities to pursue academic degree(s) in related disciplines.

Provide quality and professional care to all patients to:

- ensure ethical and professional conduct by all individuals involved in patient care;
- ensure proper care of all patients in the prosthodontic residency program;
- ensure patient satisfaction with the care they receive.

Program Requirements

The program's clinical components focus on diagnosis, treatment planning, and treatment of edentulous, partially edentulous, and completely edentulous patients. Fixed, removable, and implant prosthodontics constitute the major portion of the clinical training, with occlusion, temporomandibular disorder, and geriatrics as integral components of all phases of care. Residents are required to manage and treat patients requiring complete dentures, removable partial dentures, fixed partial dentures, and implant restorations. Clinical training for residents in implant dentistry emphasizes all aspects of implant treatment including implant placement. Additionally, the program requires the resident's involvement in the treatment of patients with congenital and acquired defects.

To learn more about the Residency Program in Prosthodontics, please visit dental.pitt.edu/prosthodontics-residency

The advanced specialty education program in prosthodontics is accredited by the Commission on Dental Accreditation (CODA). The Commission is a specialized accrediting body recognized by the United States Department of Education. The Commission on Dental Accreditation can be contacted at 312-440-4653, or at 211 East Chicago Avenue, Chicago, IL, 60611. The Commission's web address is <http://www.ada.org/100.aspx>.

Oral Biology Program (MS and PhD)

The School of Dental Medicine Department of Oral Biology Graduate Program offers basic, translational, and clinical studies in oral biology, biomedical research and health that span spatial scales from the molecular and cellular levels to the whole organism level. Studies include fundamental biological phenomena related to the development, structure, and function of the craniofacial region and the development of new therapies, biomaterials, and diagnostic tools for the treatment of diseases and disorders in the craniofacial area. The Graduate Program provides a stimulating and collegial environment to prepare motivated and qualified students for careers in academia, industry, and government.

Students may earn Doctor of Philosophy (PhD) and Master of Science (MS) degrees in Oral Biology within one of two research concentrations:

- Craniofacial and Dental Genetics
- Craniofacial Tissue Regeneration

Students will work with faculty in the Department of Oral Biology on research in these concentrations.

The program is open to post-baccalaureate students, pre-doctoral dental students, and dental residents. School of Dental Medicine pre-doctoral students and residents may apply for a dual degree option with the PhD or MS Graduate Programs in Oral Biology. Pre-doctoral dental medicine students may also pursue dual degrees while enrolled in the School of Dental Medicine through collaborative programs with the Graduate School of Public Health, the School of Law, and the School of Education.

Admissions will only be considered for the fall term. However, early applications are encouraged, and offers may be extended to suitably qualified candidates before the application deadline.

To read detailed information about the program options as well as how to apply, please visit dental.pitt.edu/oral-biology-academic-programs.

About the School

Established in 1896, the University of Pittsburgh School of Dental Medicine has been educating students to take their places among the best dental practitioners, researchers and educators in our region, across the country, and even around the world. We are one of six Schools of Health Sciences at the University and are the only school to manage our own clinic. Our accomplishments reflect the dedication and success of each member of the School of Dental Medicine family.

We are proud of our long tradition as innovators in dental medicine. Our first female student was admitted 117 years ago, and today more than half of our vibrant and diverse first-year pre-doctoral class are women. We nurture in our students a strong foundation in the biological, behavioral and clinical sciences^{1,2,3} and a belief in the importance of professionalism and life-long learning.

Half a century ago we pioneered the specialty dental care that we now deliver in our fully equipped Center for Patients with Special Needs. The School's general dental clinics and 11 specialty clinics play an integral role in improving the oral health of the patient population of southwestern Pennsylvania and beyond. Some patients travel hundreds of miles to access the high-quality care our clinics provide every day.

Our researchers expand the horizons of knowledge and are internationally renowned for their groundbreaking developments in the areas of craniofacial genetics and craniofacial regeneration. We are identifying genes that contribute to complex human phenotypes, and are using tissue engineering to heal wounds and restore function and appearance to defects of the face and skull.

Every day, the positive contributions of our faculty, staff, residents and students-the Pitt Dental Medicine family-demonstrate their commitment to our mission of advancing the future of dental medicine through teaching, research and service.

Degree Programs

Along with several specialized degree programs, degrees offered at the School of Dental Medicine include the doctor of dental medicine (DMD); doctor of philosophy (PhD); master of science (MS); master of public health (MPH) offered in conjunction with the Graduate School of Public Health; and bachelor of science (BS).

The four-year doctor of Predoctoral (DMD) Program prepares students to provide comprehensive care to a diverse patient population. The competency-based curriculum emphasizes health promotion and disease prevention, and prepares students to provide individualized treatments using the best scientific evidence available. Graduates are equipped to practice as independent, entry-level general practitioners.

The Advanced Standing (DMD) Program places qualified graduates of foreign dental schools as third-year dental students. These students are integrated into the program and complete the third- and fourth-years of the pre doctoral curriculum with the rest of the class.

In collaboration with Pitt Public Health, the four-year DMD/MPH in dental public health offers customizable course selection with a special emphasis on oral health-specific public health issues.

The University of Pittsburgh School of Dental Medicine's Dental Hygiene Program provides students a unique academic environment where they can earn either an Associate of Science or a Bachelors Degree in Dental Hygiene. The intreprofessional educational experiences within the school's specialty dental clinics and the University-based hospitals, in conjunction with didactic, community outreach, and research activities, affords the delivery of high-quality education.

Research Strengths

Research efforts include dental and craniofacial genetics, craniofacial anomalies, caries, periodontal disease, pharmacology, pain control, tissue engineering, craniofacial regeneration, educational research, informatics, and implantology.

Identification

The School of Dental Medicine is undertaking investigations to identify genes that contribute to complex human phenotypes, primarily those involved in dental and craniofacial disorders, including behavioral and epidemiological factors. New territory is being charted to develop the first-known collection of DNA samples paired with anonymized dental records to support genetics research.

Treatment

Tissue engineering-based approaches are being developed to treat complex multi-structural wounds and defects of the face and skull in a way that restores both function and appearance. The school is at the forefront of research to develop relevant translational treatment solutions usable by practicing dentists.

Application

The School of Dental Medicine is identifying factors that lead to oral health disparities in children and families in Appalachia. Oral public health research leads to improved interventions, understanding, and advancements for the future of oral health education and treatment.

Master's

Oral Biology, MS Program

The MS Program requires about two years, but no longer than four, to complete. It is distinct from the PhD Program. MS students may apply to be accepted for the PhD Program once they are accepted into the MS program. If the student is accepted into the PhD program at a later date, courses taken toward the MS will satisfy doctoral degree credit and residency requirements.

Requirements for the MS Degree

- Total of 30 credits (28 didactic and 2 in research);
- Successful completion of core curriculum
- Scientific Ethics/Fundamentals of Research course;
- Quantitative methods and design course(s);
- A one-year research project leading to a master's thesis;
- Defense of the master's thesis before a thesis committee research; and,
- A master's thesis.

Students must successfully complete the first-year required curriculum and receive a **grade of B, or better**, in all required courses.

A student who earned a master of science degree from another institution may petition the Graduate Studies Committee to waive the preliminary examination.

Fall Term First Semester

- ORBIOL 3503 - ORAL, TISSUES AND EMBRYOLOGY
- ORBIOL 3504 - JOURNAL CLUB
- ORBIOL 3516 - FOUNDATIONS OF SUCCESSFUL CAREER PLANNING AND DEVELOPMENT PART 1
- ORBIOL 3551 - FOUNDATIONS IN DEVELOPMENT, GENETICS AND BIOCHEMISTRY
- ORBIOL 3552 - FOUNDATIONS IN STATISTICS, RESEARCH DESIGN, AND CRITICAL THINKING
- ORBIOL 3555 - GENERAL EMBRYOLOGY & CRANIOFACIAL ORGANOGENESIS
- ORBIOL 3505 - DIRECTED RESEARCH

Spring Term Second Semester

- ORBIOL 3504 - JOURNAL CLUB
- ORBIOL 3546 - FOUNDATIONS OF SUCCESSFUL CAREER PLANNING AND DEVELOPMENT PART 2
- ORBIOL 3553 - FOUNDATIONS IN GENETIC EPIDEMIOLOGY
- ORBIOL 3554 - FOUNDATIONS OF CRANIOFACIAL ANATOMY
- ORBIOL 3555 - GENERAL EMBRYOLOGY & CRANIOFACIAL ORGANOGENESIS
- ORBIOL 3505 - DIRECTED RESEARCH

Summer Term Third Semester

- INTBP 2290 - SCIENTIFIC ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH
- ORBIOL 3504 - JOURNAL CLUB
- ORBIOL 3505 - DIRECTED RESEARCH

Fall Term Fourth Semester

- ORBIOL 3505 - DIRECTED RESEARCH

Spring Term Fifth Semester

- ORBIOL 3508 - CURRENT TOPICS IN ORAL HEALTH RESEARCH
- ORBIOL 3505 - DIRECTED RESEARCH

Summer Term Sixth Semester

- ORBIOL 3511 - THESIS RESEARCH

PhD

Oral Biology, PhD Program

The PhD Program requires approximately four to five years to complete and employs a curriculum which is separate from the MS Program . Students may enter the PhD program directly following their undergraduate degree and do not necessarily have to earn a master's degree first. Earning a master's degree can be incorporated into the PhD program without increasing the total length of time in studies.

Requirements for the PhD degree (a total of 72 credits of coursework; 50 didactic and 22 research)

- Scientific ethics/fundamentals of research course;
- Quantitative methods and design course(s) (two for students in the Craniofacial Genetics Tract);
- Written comprehensive examination after the sixth semester (for advancement to PhD candidacy);
- Dissertation proposal defense;
- Approval of a Dissertation Committee and dissertation research; and
- Dissertation defense.

Students must maintain a **minimum cumulative GPA of 3.0** in required courses to be eligible to take the comprehensive examinations, as well as to graduate.

Fall Term First Semester

- ORBIOL 3503 - ORAL, TISSUES AND EMBRYOLOGY
- ORBIOL 3504 - JOURNAL CLUB
- ORBIOL 3516 - FOUNDATIONS OF SUCCESSFUL CAREER PLANNING AND DEVELOPMENT PART 1
- ORBIOL 3551 - FOUNDATIONS IN DEVELOPMENT, GENETICS AND BIOCHEMISTRY
- ORBIOL 3552 - FOUNDATIONS IN STATISTICS, RESEARCH DESIGN, AND CRITICAL THINKING
- ORBIOL 3555 - GENERAL EMBRYOLOGY & CRANIOFACIAL ORGANOGENESIS
- ORBIOL 3505 - DIRECTED RESEARCH

Spring Term Second Semester

- ORBIOL 3504 - JOURNAL CLUB
- ORBIOL 3546 - FOUNDATIONS OF SUCCESSFUL CAREER PLANNING AND DEVELOPMENT PART 2
- ORBIOL 3553 - FOUNDATIONS IN GENETIC EPIDEMIOLOGY
- ORBIOL 3554 - FOUNDATIONS OF CRANIOFACIAL ANATOMY
- ORBIOL 3555 - GENERAL EMBRYOLOGY & CRANIOFACIAL ORGANOGENESIS
- ORBIOL 3505 - DIRECTED RESEARCH

Summer Term Third Semester

- INTBP 2290 - SCIENTIFIC ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH
- ORBIOL 3504 - JOURNAL CLUB
- ORBIOL 3505 - DIRECTED RESEARCH

Fall Term Fourth Semester

- ORBIOL 3603 - HUMAN GROWTH AND DEVELOPMENT
- ORBIOL 3505 - DIRECTED RESEARCH

Spring Term Fifth Semester

- ORBIOL 3508 - CURRENT TOPICS IN ORAL HEALTH RESEARCH
- ORBIOL 3505 - DIRECTED RESEARCH
- ORBIOL 3602 - TMJ REGENERATION AND MECHANICS
- ORBIOL 3509 - COMPOSITION, STRUCTURE, AND FUNCTION OF MINERALIZED TISSUES
- ORBIOL 3512 - CRANIOFACIAL GENETICS

Summer Term Sixth Semester

- ORBIOL 3505 - DIRECTED RESEARCH

Fall Term Seventh Semester

- ORBIOL 2110 - TEACHING PRACTICUM
- ORBIOL 3505 - DIRECTED RESEARCH

Spring Term Eighth Semester

- ORBIOL 3505 - DIRECTED RESEARCH

Summer Term Ninth Semester

- ORBIOL 3505 - DIRECTED RESEARCH

Following Terms Tenth through Twelfth

- ORBIOL 3510 - DISSERTATION RESEARCH

School of Dental Medicine Full-time Faculty

Last Name	First Name	Degree	Rank	Academic Department
Braun	Thomas	DMD, PhD	Professor, Dean	Oral And Maxillofacial Surgery
Adlesic	Edward	DMD	Assistant Professor	Oral And Maxillofacial Surgery
Almarza	Alejandro	PhD	Associate Professor	Oral Biology
Ambrosino	Joseph	DMD	Instructor, Director,	Continuing Education Center Dental Public Health

Azarbal	Atousa	DDS	Assistant Professor	Prosthodontics
Azarbal	Mohsen	DMD	Associate Professor	Prosthodontics
Ball	Gayle	MA	Assistant Professor	Dental Hygiene
Barbaric	Filip	DMD	Assistant Professor	Restorative Dentistry/Comprehensive Care
Bauer	Richard	DMD, MD	Assistant Professor	Oral And Maxillofacial Surgery
Beniash	Elia	PhD	Associate Professor	Oral Biology
Bilodeau	Elizabeth	DMD, MD	Associate Professor	Diagnostic Sciences
Burnheimer	John	DMD	Assistant Professor	Orthodontics & Dentofacial Orthopedics
Chung	William	DDS, MD	Professor	Oral And Maxillofacial Surgery
Cooke	Matthew	DDS, MD	Associate Professor	Dental Anesthesiology
Cooper	Danielle	DMD	Assistant Professor	Pediatric Dentistry
Cornelius	Bryant	DMD, MD	Assistant Professor	Dental Anesthesiology
Costello	Bernard	DMD, MD	Professor, Associate Dean, Faculty Affairs	Oral And Maxillofacial Surgery
Cuddy	Michael	DMD	Associate Professor	Dental Anesthesiology
DeAngelis	Ronald	DMD	Assistant Professor	Restorative Dentistry/Comprehensive Care
Demas	Peter	DMD, MD	Associate Professor	Oral And Maxillofacial Surgery
Dobos	Michael	DMD	Assistant Professor, Chair	Restorative Dentistry/Comprehensive Care
Eddens	Katie	DMD	Assistant Professor	Restorative Dentistry/Comprehensive Care
Engelmeier	Robert	DMD	Professor, Chair	Prosthodontics
Famili	Pouran	DMD, PhD	Professor	Periodontics/Preventive Dentistry
Farah	Sally	DMD	Assistant Professor	Prosthodontics
Ference	John	DMD	Assistant Professor	Prosthodontics
Folino Gallo	Victoria	MBA	Instructor	Dental Hygiene
Frediani	Maryanne	MPH	Instructor	Periodontics/Preventive Dentistry
Giovannitti	Joseph	DMD	Professor, Chair	Dental Anesthesiology
Grafton	Sarah	DMD	Assistant Professor	Restorative Dentistry/Comprehensive Care
Guggenheimer	James	DDS	Professor	Diagnostic Sciences

Hoffman	R. Donald	DMD, PhD	Associate Professor	Restorative Dentistry/Comprehensive Care
Horvath	Zsuzsa	PhD	Assistant Professor	Dental Public Health
Huber	Heidi	DMD	Assistant Professor	Prosthodontics
Jayaraman	Thottala	PhD	Assistant Professor	Oral Biology
Kumar	Satish	DMD	Assistant Professor	Periodontics/Preventive Dentistry
Kunkel	Thomas	DMD	Assistant Professor	Prosthodontics
Leslie	Elizabeth	PhD	Assistant Professor	Oral Biology
Mahan	Faith	BS	Instructor	Dental Hygiene
Malik	Anchal	MHA	Assistant Professor	Dental Public Health
Malinic	Jean	DMD	Assistant Professor	Restorative Dentistry/Comprehensive Care
Mandradjieff	Marin	DMD	Assistant Professor	Endodontics
Marazita	Mary	PhD	Professor, Vice Chair	Oral Biology
Markovic	Nina	PhD	Associate Professor	Dental Public Health
Marvit	Joshua	PhD	Assistant Professor	Oral Biology
McClain	Hillary	BS	Instructor	Periodontics/Preventive Dentistry
Mooney	Mark	PhD	Professor, Chair	Oral Biology
Moore	Paul	DMD, PhD	Professor	Dental Public Health
Napierala	Dobrawa	PhD	Associate Professor	Oral Biology
Neiswanger	Katherine	PhD	Research Associate Professor	Oral Biology
Noonan	Sean	DDS	Assistant Professor	Restorative Dentistry/Comprehensive Care
Oakley	Marnie	DMD	Associate Professor, Associate Dean, Clinical Affairs	Restorative Dentistry/Comprehensive Care
Ochs	Mark	DMD, MD	Professor, Associate Dean Hospital Affairs, Chair	Oral And Maxillofacial Surgery
O'Donnell	Jean	DMD	Associate Professor, Associate Dean, Academic Affairs	Restorative Dentistry/Comprehensive Care
Ouyang	Hongjiao	DMD, PhD	Associate Professor	Endodontics
Pancoska	Petr	PhD	Research Associate Professor	Oral Biology
Petrone	Joseph	DDS	Assistant Professor, Associate Dean, Residency Education, Chair	Orthodontics & Dentofacial Orthopedics
Platt	Louise	MHPE	Instructor	Dental Public Health

Polk	Deborah	PhD	Assistant Professor	Dental Public Health
Potluri	Anitha	DMD	Associate Professor	Diagnostic Sciences
Prasad	Joanne	DDS	Assistant Professor	Oral Biology
Ray	Herbert	DMD	Assistant Professor, Chair	Endodontics
Riccelli	Angelina	MS	Associate Professor, Director, Dental Hygiene Program	Dental Hygiene
Richmond	Keith	DMD	Assistant Professor	Restorative Dentistry/Comprehensive Care
Rodriguez	Arthur	DMD	Assistant Professor	Prosthodontics
Rubin	Richard	DDS	Assistant Professor	Dental Public Health
Schneider	Lawrence	DDS	Associate Professor, Chair	Diagnostic Sciences
Seyedain	Ali	DMD	Assistant Professor	Periodontics/Preventive Dentistry
Sfeir	Charles	DDS, PhD	Associate Professor, Associate Dean Research, Chair	Periodontics/Preventive Dentistry
Shah	Nilesh	PhD	Assistant Professor	Dental Public Health
Mitchell	Jacey	MBA	Instructor	Dental Hygiene
Smith	Sayuri	DMD, PhD	Assistant Professor	Periodontics/Preventive Dentistry
Sosovicka	Mark	DMD	Assistant Professor	Oral And Maxillofacial Surgery
Studen-Pavlovich	Deborah	DMD	Professor, Chair	Pediatric Dentistry
Sullivan	David	DMD	Assistant Professor	Restorative Dentistry/Comprehensive Care
Summersgill	Kurt	DDS, PhD	Associate Professor	Diagnostic Sciences
Syed-Picard	Fatima	PhD	Assistant Professor	Oral Biology
Szabo Rogers	Heather	PhD	Assistant Professor	Oral Biology
Taboas	Juan	PhD	Assistant Professor	Oral Biology
Taiclet	Lynne	DMD	Assistant Professor	Restorative Dentistry/Comprehensive Care
Teruel Castelon	Antonia	DDS	Assistant Professor	Diagnostic Sciences
Verdelis	Konstantinos	DDS, PhD	Assistant Professor	Endodontics
Vieira	Alexandre	DMD, PhD	Professor	Oral Biology
Vieira	Adriana	DDS, PhD	Professor	Pediatric Dentistry
Wankiiri-Hale	Christine	DMD	Assistant Professor, Associate Dean, Student Affairs	Restorative Dentistry/Comprehensive Care
Weinberg	Seth	PhD	Associate Professor	Oral Biology

Weyant	Robert	DMD, DrPh	Professor, Associate Dean, Dental Public Health and Community Outreach, Chair	Dental Public Health
Williams	Kelly	DMD	Assistant Professor	Periodontics/Preventive Dentistry
Wrigley	Mark	DMD	Instructor	Diagnostic Sciences
Zaky	Samer	DMD, PhD	Assistant Professor	Restorative Dentistry/Comprehensive Care

To view a complete faculty directory, please visit dental.pitt.edu/people.

School of Education

Mission/Vision

The following statement is the Mission/Vision of the School Education, adopted January 2019. It encapsulates what we do, what we believe, and who we continually seek to become as members of the School community.

We ignite learning. We strive for well-being for all. We teach. We commit to student, family, and community success. We commit to educational equity. We advocate. We work for justice. We cultivate relationships. We forge engaged partnerships. We collaborate. We learn with and from communities. We innovate and agitate. We pursue and produce knowledge. We research. We disrupt and transform inequitable educational structures. We approach learning as intertwined with health, wellness, and human development. We address how national, global, social, and technological change impacts learning. We shape practice and policy. We teach with and for dignity. We think. We dream. We lead with integrity. We are the School of Education at the University of Pittsburgh.

Contact Information

Office of Admissions and Enrollment Services
School of Education
5500 Wesley W. Posvar Hall
412-648-2230
Fax: 412-648-1899
E-mail: soeinfo@pitt.edu
www.education.pitt.edu

Admission

Admission Procedure

Faculty members in the program to which the student applies evaluate the applicant's credentials and recommend admission for those applicants meeting the criteria set by the program.

Approved applicants will be notified of their admission for a specific term and asked to indicate whether or not they accept the offer of admission. Should they be unable to register for courses for the term specified in their admission letter, they should notify the Office of Admissions and Enrollment Services. Approved applicants may defer admission for up to one year from the term specified in their admission letter. Approved applicants unable to register for courses within one year of the term specified in their admission letter must reapply for admission.

Changing Programs for Graduate Study

A student wishing to change programs for graduate study must file a new application for admission, noting the request for the change, in the Office of Admissions and Enrollment Services. All work taken both in undergraduate and graduate study will be reviewed by the program to which the student is applying before a decision will be made about admission to the new program. Any change from one program to another in the School of Education while the student is on active status will not alter that status. Thus, the student must register within the dates set for continuing active students.

Financial Assistance

Financial assistance is available to graduate students through graduate student assistantships (GSA), teaching assistantships (TA), teaching fellowships (TF), graduate student researchers (GSR), a variety of scholarships and fellowships, and loan programs. GSA, TA, TF, and tuition scholarship awards are primarily merit-based. GSA, TA, and TF awards provide a stipend and tuition in return for carrying out assigned duties. (*See*

Teaching and Research Appointments under Financial Aid for further detail.) Other merit-based scholarships and fellowships established through gifts or grants both within and outside the University are also available to students.

Advising

Each student is assigned an academic advisor at the time of admission to a program. All course work scheduled must be approved by the academic advisor, who assists in the preparation of a student's plan of studies and who regularly meets with the student to review the student's academic progress. Most School of Education faculty members are not in residence from May until late August. Thus, students should consult with their academic advisors prior to the end of the Spring term to complete registration forms for the upcoming Summer and Fall terms.

Each graduate student who is completing a master's thesis or doctoral dissertation selects a research advisor to provide guidance during the conduct of the thesis or dissertation research. The research advisor may be the same faculty member as the academic advisor or another faculty member. Whatever the case, the faculty member's consent to serve as the research advisor must be formally obtained. A student continuing from a master's program involving a thesis to a doctoral program may select a different research advisor to provide guidance for the doctoral dissertation.

The student, the advisor, the program, or the department may initiate a change of the academic advisor or the research advisor. Any such change must be made according to applicable departmental policy. Notification of such a change must be sent to the student, to the new and former advisors, and to the Office of Admissions and Enrollment Services.

Commonwealth Teacher Education Certification Programs

Teacher education certification programs are offered in both general and special education.

Option 1. Initial Certification-Available for Primary Plus PreK-4, Teacher of Students with Visual Impairments (TVI) PreK-12, secondary content areas - Math, English, Science and English Education 7-12 and Foreign Language (K-12). These programs result in eligibility for a teaching certification without a graduate degree.

Option 2. Certification Plus a Graduate Degree-for students seeking initial general or special education teacher certification along with a master's degree (e.g., Master of Arts in Teaching [MAT] or Master of Education [MEd]).

Option 3. Dual certification (MOSAIC/CASE) e.g. Secondary Certification and 7-12 special education; PreK-4 and preK-8 special education.

Option 4. Additional Field Certification-for students already certified in one or more teaching fields who are seeking teacher certification in an additional specialty area but who are not pursuing a graduate degree.

Advanced certification programs include:

- Supervisory Certification (e.g., Curriculum and Supervision, Special Education)
- Endorsement (e.g. Autism Endorsement)
- Educational Specialist Certification (e.g., as a reading specialist, TVI, Special Ed Teacher Prep.)
- Administrative Certification (e.g., as a principal, superintendent)

University certificates are awarded to non-degree students who complete commonwealth teacher education certification programs offered in instruction and learning (certificates in teaching or reading specialist) and in administrative and policy studies (certificates in educational administration or educational supervision). Students in these programs must apply for graduation at the beginning of the term in which they expect to complete their programs. Eligibility for the University certificate is verified at the same time that a student's application for commonwealth certification is endorsed by the School of Education and sent to the Pennsylvania Department of Education in Harrisburg.

In addition, a University certificate in orientation and mobility is awarded from the Department of Instruction and Learning to non-degree students receiving vision study certification through the Academy for Certification of Vision Rehabilitation and Education Professionals.

Teacher education certification programs and advanced certification programs are described further in the sections for the departments that offer those programs.

Option 5. Joint Program - Available for students in the MSW/CAST program are eligible for an initial teaching certificate secondary content areas - Math, English, Science and English Education 7-12 and Foreign Language (K-12) paired with and a Masters Degree in Social Work (MSW).

Commonwealth Teacher Education Certification Regulations

The following section details regulations pertaining to the school's teacher education certification programs.

Instructional I and II Certification

The **Instructional I**, or provisional, certificate is issued by the Pennsylvania Department of Education (PDE) to applicants who:

- possess a baccalaureate degree with a 3.0 grade point average;
- have successfully completed a PDE-approved teacher certification program;
- pass all required PRAXIS, PECT and/or PAPA Examinations; and
- are recommended for certification by the college or university offering the PDE-approved teacher certification program.

An Instructional I certificate is valid for six years.

The **Instructional II**, or permanent, certificate is issued by PDE to applicants who have completed all of the following:

- A PDE-approved induction program for beginning teachers.
- Three years of satisfactory teaching in the field specified on an Instructional I certificate, attested to by the chief school administrator of the approved public or non-public school in Pennsylvania in which the most recent service of the applicant was performed.
- Twenty-four credit hours of post-baccalaureate study or in-service courses approved by PDE. (Some credits earned beyond the baccalaureate degree in teacher education study at the University of Pittsburgh may be used to satisfy this requirement.)

Applicants already holding the Instructional I certificate who are seeking admission to the School of Education in pursuit of Instructional II certification may be admitted under special graduate status. Applicants desiring to combine Instructional II certification with a master's or doctoral degree must apply for admission to an academic program offering the desired degree.

Additional Field Certification

The School of Education offers additional field certification study opportunities to students already holding a Pennsylvania Instructional I or Instructional II certificate. Students must complete major field prerequisites, course work in the subject area pedagogy, and an advanced teaching practicum (modified student teaching) and pass the PRAXIS or PECT Examination specialization test in the additional area. They must also successfully complete a PDE 430 in the additional area. Individuals who possess an Instructional II certificate and who complete requirements for an additional certification area will receive Instructional II certification in the additional certification area.

Grade Point Average/Academic Probation

All students enrolled for teacher education study are required to maintain a grade point average (GPA) of at least 3.00. The cumulative GPA is based on all course work taken after enrollment for teacher education study. A student is automatically placed on academic probation when the cumulative GPA, exclusive of transfer credits, falls below 3.00. No student on academic probation is permitted to participate in student teaching, a teaching internship, or an advanced teaching practicum. Although the credits allowed for acceptable work completed elsewhere by transfer students count toward the total number of credits required for teacher education study, the grades earned in such courses are not included in GPA computations, except in determining GPA's required for admission to the School of Education.

Credit Requirements

Teacher education study in the Instructional I certification program requires the satisfactory completion of a minimum of 30 credits of course work approved by the department and the school. The Master of Arts in Teaching option requires 36 credits. Credit requirements for other certification options vary. Certification by the Pennsylvania Department of Education is recommended only for those students who have satisfactorily completed all courses required for certification with at least a 3.00 GPA.

Teacher Certification Testing Program

The PAPA battery of tests, required for some students seeking their first Instructional I certificate, consists of a series of examinations to assess basic communication skills, general knowledge, professional knowledge, and specialized area knowledge. Persons with an undergraduate degree already holding a Pennsylvania Instructional I or II certificate are exempt from the PAPA series. Individuals seeking Instructional I certification in more than one area must take and pass specialization area tests in all areas in which certification is sought. Individuals seeking additional field certification must pass the PRAXIS Examination in the specialization area.

Students completing an Instructional I certificate in preK-4 education, a certificate in preK-4/preK-8 special education or a secondary/7-12 special education certificate must pass the appropriate PECT tests.

Students may take the PRAXIS Examinations at any point during or after attendance at a post-secondary institution. The tests are administered four times each year at the University of Pittsburgh. Some tests are offered every day (when the testing sites are open) while others are administered during a "testing window" which is usually a two week period, usually occurring monthly. Go to the PRAXIS website for information on registering to take the exams.

Student Teaching

In most programs, field experience in local public schools is required throughout the academic year (August to June). When a student accepts their offer of admission, they are required to complete information about student teaching. Applicants must also submit results from a tuberculin test, child abuse clearance, and criminal history check, as required by Pennsylvania Acts 33 and 34. Students must also submit results from a Federal Criminal History Record check by obtaining fingerprint results through the FBI. Lastly, students must successfully pass an online training, Protecting Children from Abuse and also read the PA Mandated Reporter law and sign to indicate understanding.

Student teaching usually begins in late August and sometimes sooner than the opening day of University classes. Specific procedures and regulations governing student teaching practicum can be found in the student teaching handbook.

Teaching Internship

Students in the Master of Arts in Teaching option must complete an academic year (August to June) teaching internship in lieu of student teaching. The internship requires a minimum of 20 hours per week in the Fall term and 30 hours per week in the Spring and Summer terms. To qualify for the internship and the Pennsylvania Teacher Intern certificate, applicants must:

- As required by Pennsylvania Acts 33 and 34 submit the following clearances: Federal Criminal History Record; Pennsylvania State Criminal Record Check; Pennsylvania Child Abuse History Clearance. If there is a criminal infraction on any of these clearances, school placement for the school is unlikely, which will require the student to withdraw from the class. The University cannot guarantee that a person with entries in their criminal record will be permitted to do assignments in a school. While State law bars certain offenders from schools, districts often impose more extreme requirements. Students who have entries in their records should consult the Coordinator of Clinical Practice on whether a placement will be likely
- pass the Content Knowledge test (Praxis II) during the first semester of their program in order to obtain their Intern Certificate
- satisfy the requirements for a Pennsylvania Instructional I Certificate (pending passing scores on the national PRAXIS II Exam, successful completion of the PA Statewide Evaluation Form for Student Professional Knowledge and Practice (PDE 430), and satisfactory performance in courses and in the internship)

Students must also submit results from a Federal Criminal History Record check by obtaining fingerprint results through the FBI. Lastly, students must successfully pass an online training, Protecting Children from Abuse and also read the PA Mandated Reporter law and sign to indicate understanding

Advanced Teaching Practicum

Students in the additional field certification option must complete an advanced teaching practicum, (modified student teaching experience) which vary based on the program requirements. Students must file an application for advanced teaching practicum in the Office of Teacher Education, 5300 Wesley W. Posvar Hall, during the term prior to the practicum. Specific guidelines governing advanced teaching practicum are available in the Office of Teacher Education, 5300 Wesley W. Posvar Hall.

Master's Degree Requirements

The requirements presented in this section are school-wide requirements that have been established in addition to the University-wide requirements detailed under general academic regulations. Students should review the general academic regulations section in addition to the specific school information detailed below. .

Common Requirements

All master's degrees awarded by the School of Education require the completion of an approved plan of studies consisting of a minimum of 30 credits (including 9 credits in Basic Areas of Education) and the passing of a comprehensive examination.

Acceptance of Transfer Credits

For University-wide rules, see Acceptance of Transfer Credits under General Academic Regulations . School-specific detail follows.

A maximum of 6 transfer credits may be counted toward an MA or MS degree. A maximum of 12 transfer credits may be counted toward an MAT or MEd degree. Only graduate courses taken as a graduate student may be transferred and applied toward a master's degree. The only exception are courses taken while an undergraduate student at the University of Pittsburgh during undergraduate study that meet the requirements in the Academic Regulations .

Grade Point Average/Academic Probation

All students enrolled in master's degree programs are required to maintain a grade point average (GPA) of at least 3.000. The cumulative GPA is based on all course work taken after enrollment in the appropriate graduate program. A student is automatically placed on academic probation when the cumulative GPA after 6 credits or more, exclusive of transfer credits, falls below 3.00. Although the credits allowed for acceptable work completed elsewhere by students enrolled in the School of Education count toward the total number of credits required for the graduate degree, the grades earned in such courses are not included in GPA computations.

While on probation students are limited to registering only for courses in which a letter grade is given. To be removed from probation status, a student must achieve a 3.500 GPA in the next term (of at least 6 credits) or raise the cumulative grade point average above 3.000. A student can only be placed on academic probation status once during their program of study. Students placed on academic probation status will receive notification in the form of a letter from the School of Education, and they will be recommended to seek guidance from their academic advisor.

Ordinarily, students are required to terminate graduate study after one term on probation. A student who does not meet the GPA or credit requirements will be dismissed from the School of Education, unless serious extenuating circumstances exist. The request for continuation must include a recommendation made by the Department Chair (or designated faculty member) and the academic advisor, with the recommendation approved by the Dean of the school.

Statute of Limitations

All requirements for a master's degree must be completed within a period of 4 consecutive calendar years from the student's initial registration for master's study in an MA or MS degree program or within 5 years in an MAT or MEd program.

Under certain conditions, the dean/associate dean may grant an extension of a student's statute of limitations. The request for extension must include a recommendation made by the academic advisor, with the recommendation approved by the Dean of the school. The statute of limitations can only be extended once.

Leave of Absence

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

Academic Integrity Policy

Students have the right to be treated by faculty in a fair and conscientious manner in accordance with the ethical standards generally recognized within the academic community (as well as those recognized within the profession). Students have the responsibility to be honest and to conduct themselves in an ethical manner while pursuing academic studies. Should a student be accused of a breach of academic integrity or have questions regarding faculty responsibilities, procedural safeguards including provisions of due process have been designed to protect student rights. These general procedures may be found in Guidelines on Academic Integrity: Student and Faculty Obligations and Hearing Procedures at www.provost.pitt.edu. The School of Education has its own academic integrity policies, posted on the School of Education website. Students are encouraged to review these school-specific guidelines as well.

Plan of Studies

Before completion of 15 credits, students, in consultation with their academic advisor, should complete a Plan of Studies that conforms to program requirements. The plan of studies, approved by the academic advisor and the program coordinator, is filed in the Office of Admissions and Enrollment Services.

Any changes in the Plan of Studies must be approved by the academic advisor and the program coordinator, conform to program requirements, and be filed in the Office of Admissions and Enrollment Services. At the time of graduation, completed courses must comply with the approved Plan of Studies.

Basic Areas of Education Requirement

All master's degrees conferred by the School of Education require a minimum of 9 credits of study from the Basic Areas of Education (BAE), 3 credits each from courses offered in the content areas of psychological perspectives on education, social and cultural perspectives on education, and research methods. Individual programs achieve the distribution requirements in various ways, including integrating the content across multiple courses. See individual program curricula. For programs that require students to fulfill this requirement with elective courses, the courses in each area that may be used to meet this requirement are listed below.

Psychological Perspectives on Education

EDUC 2000 Psychology of Learning and Development for Educators

EDUC 2007 Human Learning

EDUC 2008 Conception to Early Childhood in Social Context

EDUC 2009 Development: Middle Childhood/Adolescence

Social and Cultural Perspectives on Education

EDUC 2100 Education and Society

EDUC 2102 History of Education

EDUC 2103 Race and Racism in Education and Society

EDUC 2104 Leadership for Service-Learning

EDUC 2105 Sociology of Education

EDUC 2106 Education and Culture

EDUC 2107 Evidence Based Health Program Planning

EDUC 2108 State/National Politics of Education

EDUC 2109 Anthropology of Education

EDUC 2110 Gender and Education

EDUC 2111 Contemporary Philosophy of Education

EDUC 2112 Politics and History of Higher Education

Research Methods

EDUC 2200 Disciplined Inquiry*

EDUC 2201 Introduction to Research Methodology

EDUC 2202 Educational and Psychological Measurement

EDUC 2205 Field Methods

*Enrollment limited to MAT students

Master's Comprehensive Examination

The School of Education requires a comprehensive examination for all master's degrees. The comprehensive examination is designed to assess the student's mastery of the general field of graduate study. The comprehensive examination is constructed, administered, and scored by the program or department to which the student has been admitted. Procedures and schedules of administration are available from the program or department. *The student must be enrolled to take the comprehensive examination.

**See also "Master of Arts and Master of Science Degrees" - "Comprehensive Examination" under Regulations Pertaining to Master's Degrees . The University-wide regulations on comprehensive examinations detailed there apply to all School of Education master's programs.*

Thesis, Thesis Equivalent, and Research Paper Requirements

Some MA and MS degree programs within the School of Education are offered with a thesis requirement while others are offered with the option of completing either a thesis or a thesis equivalent. All MAT degree programs and some MEd programs require the completion of a research paper.

Master's Degree with Thesis

The master's degree with thesis is intended for graduate students who have pursued advanced graduate study in at least one field of education specialization and have demonstrated through the master's thesis the capability to plan and carry through a project of original research. The plan of studies should include at least 6 credits in thesis work.

Thesis Overview

The thesis overview is a written proposal for the thesis. The overview is presented to the master's committee, which consists of a minimum of three faculty members (at least one from another program or department) selected in consultation with the student by the research advisor and approved by the department. The student must submit a form for approval of the thesis committee. A student must be registered in the term during which the thesis overview meeting is scheduled. A unanimous vote of the master's committee is required for approval of the overview. The outcome of the overview meeting is submitted on the appropriate form along with a corrected copy of the overview to the Office of Admissions and Enrollment Services.

Approval of Research with Human Subjects

If the research proposed in the overview involves human subjects, the proposed research must be approved by the University Institutional Review Board (IRB) for the Protection of Human Subjects before it may be carried out. Information on materials that must be submitted and the procedures that must be followed for an IRB review are available in departmental offices and the Office of Admissions and Enrollment Services.

Advancement to Master's Candidacy

To be advanced to candidacy for the master's degree with thesis a student must:

- be admitted to full graduate status;
- have a minimum grade point average of 3.00 (transfer credits not considered);
- have an approved plan of studies on file in the Office of Admissions and Enrollment Services;
- have passed the comprehensive examination;
- have an approved overview on file in the Office of Admissions and Enrollment Services; and
- if the proposed research involves human subjects, have a letter on file in the Office of Admissions and Enrollment Services from the IRB approving the proposed research.

Thesis Preparation

The thesis research is completed and the thesis is prepared under the direction of the research advisor according to the approved overview. In preparing the thesis, the student must follow the University's ETD Format Guidelines, and specific departmental or program requirements.

Final Oral Examination

The completed thesis is submitted to the master's committee for the final oral examination. The student must be registered in the term during which the final oral examination is scheduled. The final oral examination is devoted primarily to the thesis, and an affirmative vote by a majority of the committee members is required to pass the examination. One corrected copy of the thesis as approved by the master's committee must be filed, along with one copy of a research advisor approved abstract and the form showing a passed final oral examination, no later than one week before the end of the term during which the student expects to graduate. The dean/associate dean must approve any exception to this requirement.

Master's Degree with Thesis Equivalent Option/Research Paper

Master's degrees with the thesis equivalent option or research paper requirement are intended for graduate students who have pursued advanced study in at least one field of educational specialization and have demonstrated capability of presenting information relevant to an issue or problem in education. The plan of studies should include at least 3 credits in a research seminar, supervised research, or directed study involving research in the student's focus area.

Research Paper Requirements

Each candidate for the master's degree with the thesis equivalent option or research paper requirement must complete, in acceptable form, a research paper that demonstrates the ability to locate, organize, and summarize information bearing on an issue or problem in education. This project is usually initiated and completed in the research seminar of the student's major. For certain majors, this requirement may be met by other means, such as successful exhibits or demonstrations.

Doctoral Degree General Requirements (EdD and PhD)

The requirements presented in this section are school-wide requirements that have been established in addition to the University-wide requirements detailed under general academic regulations. Students should review the general academic regulations section in addition to the specific school information detailed below.

Doctoral Programs

Doctor of Education (EdD) and Doctor of Philosophy (PhD) degree programs are offered by the School of Education to provide advanced graduate study and professional specialization in education. Each recipient must show evidence of superior scholarship, mastery of a special field of knowledge, and ability to do significant and relevant research. In doctoral study in the School of Education, a distinction is made between the preparation of education professionals resulting in the EdD degree and the preparation of education professionals resulting in the PhD degree. While EdD and PhD degrees produce experts in critical inquiry, the School of Education distinguishes the degrees according to, among other factors, the focus of the area of inquiry, the type of knowledge advanced, and the career path chosen by the individual student.

PhD research focuses on the study of basic problems arising primarily from behavioral and social science theory with the goal of advancing such theory and knowledge. Individuals pursuing this degree often seek academic positions in universities or research institutes. EdD research focuses on the study of applied, practical problems with the goal of contributing to solutions. Careers for these individuals often center on professional positions as administrators, curriculum developers, or specialists in schools and clinical settings.

Credit Requirements

Doctoral degrees require a minimum of 90 credits in a degree program beyond the baccalaureate, distributed as follows: a minimum of 72 course credits (including transfer credits) and a minimum of 18 dissertation credits. Doctoral-level courses are numbered in the 3000 series, but courses numbered in the 2000 series may also be appropriate for doctoral study. Generally, courses numbered below 2000 do not meet the minimum requirements for doctoral study. Exceptions require the approval of the program or department. No lower-level undergraduate course (numbered 0001-0999) may be applied toward a doctoral degree.

Grade Point Average/Academic Probation

All students enrolled in doctoral degree programs are required to maintain a grade point average (GPA) of at least 3.300. The cumulative GPA is based on all course work taken after enrollment in the appropriate doctoral program. A student is automatically placed on academic probation when the cumulative GPA after 9 credits or more, exclusive of transfer credits, falls below 3.300. Although the credits allowed for acceptable work completed elsewhere by students enrolled in the School of Education count toward the total number of credits required for the graduate degree, the grades earned in such courses are not included in GPA computations.

While on probation students are limited to registering only for courses in which a letter grade is given. To be removed from probation status, a student must achieve a 3.500 GPA in 6 credits or more. A student can only be placed on academic probation status once during their program of study. Students placed on academic probation status will receive notification in the form of a letter from the School of Education, and they will be recommended to seek guidance from their academic advisor.

Ordinarily, students are required to terminate graduate study after one term on probation. A student who does not meet the GPA or credit requirements will be dismissed from the School of Education, unless serious extenuating circumstances exist. The request for continuation must

include a recommendation made by the Department Chair (or designated faculty member) and the academic advisor, with the recommendation approved by the Dean of the school.

Leave of Absence

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

Academic Integrity Policy

Students have the right to be treated by faculty in a fair and conscientious manner in accordance with the ethical standards generally recognized within the academic community (as well as those recognized within the profession). Students have the responsibility to be honest and to conduct themselves in an ethical manner while pursuing academic studies. Should a student be accused of a breach of academic integrity or have questions regarding faculty responsibilities, procedural safeguards including provisions of due process have been designed to protect student rights. These general procedures may be found in Guidelines on Academic Integrity: Student and Faculty Obligations and Hearing Procedures at www.provost.pitt.edu. The School of Education has its own academic integrity policies, posted on the School of Education website. Students are encouraged to review these school-specific guidelines as well.

Doctor of Education Specific Requirements

The three-year structured EdD program is built on a cohort model and is goal driven. The cohort of students admitted complete a three-year 90-credit program, which includes 30 credits transferred from a relevant master's degree.

While a vast majority of EdD experiences are shared (common coursework, internship experiences, and common outcome metrics) students pick one of the following areas of concentration:

1. Education Leadership
2. Health & Physical Activity
3. Higher Education Management
4. Language, Literacy & Culture
5. Out of School Learning
6. Science, Technology, Engineering & Math
7. Social and Comparative Analysis in Education
8. Special Education
9. Urban Education

EdD students take eight core courses (24 credits). This includes four courses (12 credits) focused on building foundational knowledge and four courses (12 credits) specifically focused on research and methodology. Candidates will also develop specialized knowledge in their area of concentration through course projects, relevant internships, and four 3000 level courses (12 credits). Students take six credits each term, making them part time students throughout the duration of the program.

Coursework will be offered by alternative delivery models. Week-long intensive on-ramp experiences, hybrid seminars, week-long intensive institutes, cross-disciplinary research seminars, and aspirant internships are available. Integrating diverse learning environments offers a range of structures and opportunities for doctoral students and faculty to form and access "communities of practice" face-to-face in a classroom or via CourseWeb (discussion boards, wikis, blogs, Skype, FaceTime, Google Hangouts, etc.). Communities of practice are intentionally created collaborative learning environments that extend and enrich intellectual discourse within a socially constructed space. This flexible structure is especially important for part time doctoral students to thrive as scholarly practitioners.

A school-wide EdD admissions Committee reviews all applications for the EdD degree program. The prospective concentration advisor also reviews the application to affirm the match between student and faculty interests. A 3.5 master's GPA is recommended and GRE scores are not required. For international students a TOEFL score of 100 on the internet-based test with a minimum of 21 on each subtest, 240 on the computer-based test, or 600 on the paper-based test. Interviews will be conducted.

Plan of Studies

Prior to advancement to the formal stage called Doctoral Study, the student, in consultation with the academic advisor, must complete a plan of studies that conforms to program requirements. The plan of studies, approved by the academic advisor, the program coordinator, and department is filed in the Office of Admissions and Enrollment Services.

The EdD program requires that students file a Plan of Studies during the fall semester of their first year in the program. In formulating the doctoral Plan of Studies, both the student and the academic advisor must pay close attention to these School of Education requirements as well as requirements specific to the particular program or department in which the degree specialization is taken. It is the responsibility of the student to learn particular requirements from the academic advisor. The completion of requirements for the doctorate must be satisfied through registration at the University of Pittsburgh.

Course Requirements

A doctoral Plan of Studies should include the following degree requirements:

- EdD Foundations Courses (12 credits)
- EdD Practitioner Inquiry Courses (12 credits)
- Area of Concentration Courses (12 credits)
- Additional Area of Concentration Courses (21 transfer credits)
- Supporting Field (9 transfer credits)
- Supervised Practitioner Inquiry and Internship (6 credits)
- Dissertation in Practice (18 credits)

All EdD students will complete eight common core courses: four EdD Foundations Courses (12 credits) and four EdD Practitioner Inquiry Courses (12 credits) designed specifically for EdD students and aligned with the milestones and requirements of the program. In addition to the eight common courses, students take four courses in their area of concentration. Each area of concentration has specified the courses which fulfill this requirement.

Courses approved for transfer credit must be listed individually on the plan of studies. Any changes in the plan of studies must be approved by the academic advisor and the program coordinator, conform to program requirements, and be filed with the Office of Admissions and Enrollment Services. At the time of graduation, completed courses must comply with the approved plan of studies.

Supervised Practitioner Inquiry and Internship

EdD students are required to complete 3 credits of Supervised Practitioner Inquiry and 3 credits of Supervised Internship.

Students enroll in Supervised Practitioner Inquiry in order to prepare a critical review of literature related to a problem of practice that students identify in consultation with their advisors. Successful completion of this course constitutes completion of the comprehensive examination (as explained below). Supervised Practitioner Inquiry is designed to evaluate students' strengths, weaknesses, motivations, and potential for acquiring in-depth knowledge of education issues in the declared area of study and to assess students' ability to write clearly. The Supervised Inquiry requirement is designed to assure that each doctoral student successfully completes a review of literature on a problem of practice that builds on the content in the foundations and area of concentration courses. Students work directly with their advisors to complete the review of literature.

There are three types of Supervised Internship experiences that students may complete:

1. **Job-embedded internship.** Students already working in their field of choice may elect to have their current responsibilities reviewed for eligibility for a "full-time job-embedded internship." If the advisor and student agree that the students' current responsibilities represent a relevant and meaningful internship experience, then a plan will be developed that will engage the student in analysis of practice and leadership activities.
2. **Aspirant internship.** Students will have an apprenticeship experience in which they shadow and collaborate with a trained mentor in their discipline.
3. **Global studies experience:** Students will have the opportunity to design an international experience that provides direct observation or experience with practice or policy in another country.

The Supervised Internship experience allows students to integrate learning that has occurred across multiple experiences and courses throughout the program as well as previous professional expertise.

Acceptance of Transfer Credits

EdD students apply a maximum of 30 post-baccalaureate credits for transfer from other institutions in keeping with University-wide requirements (*see Acceptance of Transfer Credits*). Both applicants for admission and continuing University of Pittsburgh doctoral students seeking acceptance of transfer credits toward a doctoral degree must submit their transcripts with a completed "Course Credits Accepted" form, available on the School of

Education website. When approved, transfer credits must appear on the student's Plan of Studies. The registrar, after notification of acceptance of transfer credits, will enter the individual transfer credits on the student's transcript. Grades (and quality points) are not recorded for credits accepted by transfer.

Each course transferred must meet the following conditions:

- The course grade must be at least B (GPA=3.0) or its equivalent.
- The course must be judged relevant to a student's doctoral Plan of Studies by the program or department.
- The course must be approved for equivalent graduate degrees at the accredited institution, extension, or off-campus center of other institutions at which the course was taken.

Residency

The EdD program has no residency requirement.

Statute of Limitations

From the student's initial registration for doctoral study at the University of Pittsburgh, all requirements for the EdD must be completed within a period of 12 years (or 10 years if the student has received credit for a master's degree appropriate to the field of study).

Under certain conditions, the dean/associate dean may grant an extension of a student's statute of limitations. The request for extension must include a recommendation made by the academic advisor, with the recommendation approved by the Dean of the school. The statute of limitations can only be extended once.

Doctoral Preliminary Evaluation

Each doctoral student is required to take a preliminary evaluation designed to assess the breadth of the student's knowledge of the discipline, the student's achievement during the initial phase of graduate study, and the student's potential to apply research methods independently. The EdD preliminary examination is designed to assess and support the student's continued success in doctoral study. The exam consists of a written statement of a defensible problem of practice. The statement articulates the proposed topic, the significance of the problem, scope of inquiry, and questions that will be asked of the literature. This initial assessment is structured to achieve two purposes: (a) to evaluate the student's strengths, weakness, motivation, and potential for acquiring in-depth knowledge of education issues in the student's declared area of study and (b) to assess the student's ability to write clearly.

Advancement to Doctoral Study

To advance to doctoral study, a student must:

- be admitted to full graduate status;
- have completed at least 15 post-master's graduate credits at the University of Pittsburgh;
- have earned a GPA of at least 3.30 (transfer credits not considered) in post-master's graduate study at the University of Pittsburgh;
- have a Plan of Studies approved by the academic advisor and the program coordinator on file in the Office of Admissions and Enrollment Services; and
- have passed the doctoral preliminary evaluation.

Comprehensive Examination

The EdD Comprehensive Exam is a review of supporting scholarship and professional knowledge related to the problem of practice. The review of supporting scholarship and professional knowledge related to the problem of practice is an integrated conceptual synthesis across sources that addresses these questions: What has been done to address the problem? What has been learned about this problem? What theories, practices, policies, and contested ideas have emerged?

The review of supporting scholarship and professional knowledge is the final project for EDUC 3009 Supervised Practitioner Inquiry in the fall term of the second year of the EdD program. The advisor approves the review of supporting scholarship and professional knowledge. Evidence of advisor approval is a passing grade in EDUC 3009.

A student must be registered in the term during which the comprehensive examination is taken. In no case may the student be graduated in the same term in which the comprehensive examination is taken. After the comprehensive examination is passed, the student has the remaining time specified by the statute of limitations to complete all remaining doctoral degree requirements.

Ordinarily, students do not register for dissertation credits until they have passed the comprehensive examination.

Doctoral Competency

Each doctoral student is required to demonstrate doctoral competency by satisfactorily completing the supervised inquiry and internship and doctoral comprehensive examination. The form certifying that a student has demonstrated doctoral competency is initiated by the student's academic advisor, signed by the academic advisor, the program coordinator, and the department chairperson, and then sent to the Office of Admissions and Enrollment Services. The dean/associate dean notifies the student that doctoral competency has been demonstrated.

Dissertation in Practice

The EdD program requires a Dissertation in Practice that contributes to the improvement of practice in the student's area of specialization and reflects the application of relevant theory and knowledge.

Doctoral Committee

The EdD doctoral committee will consist of the research advisor and at least two other members, including one member from an area of concentration other than the student's primary area. This member may be from another department in the School of Education, from another department in the University of Pittsburgh, or from an appropriate graduate program at another academic institution. At least two committee members shall be full-time faculty of the School of Education (tenured, tenure stream, or non-tenure-stream), and at least one member shall be an experienced practitioner or former practitioner possessing a doctorate and having significant experience in the area of the proposed project. In general, it is expected that all committee members will have earned a doctoral degree (PhD or EdD).

The doctoral committee will decide on the acceptability of the final dissertation project submission, with each committee member signing an appropriate form and indicating whether he/she deems the project to be a pass or a failure. Students can appeal that decision only with respect to issues of academic integrity, as is the case for all course grades. Appeals shall be done informally first, through the associate dean for student affairs, with the current School policy on such appeals being followed for any further steps.

The program faculty, the department chairperson, and the dean/associate dean must approve membership on and subsequent changes in the doctoral committee. After the program has approved the doctoral committee, the research advisor initiates the "Proposed Doctoral Committee" form to obtain the signatures of the program coordinator, the department chairperson, and the dean/associate dean. The dean/associate dean must give final approval of the doctoral committee before the overview examination may be scheduled.

Dissertation Overview

The dissertation overview is a written proposal and must be presented to the doctoral committee for approval after doctoral competency has been demonstrated. The dissertation overview includes three components: the final version of the statement of problem of practice, review of supporting scholarship and professional knowledge, and applied inquiry plan. The Applied Inquiry Plan guides the development of the Dissertation in Practice. Students develop a potential solution to their problem of practice, such as an intervention or policy change and a plan to study the implementation and predicted outcomes OR collect and analyze data to identify underlying causes and associated factors related to their problem of practice.

The Overview Examination

The overview examination is conducted by the doctoral committee in September of the third year of the EdD program, is chaired by the research advisor, and is open to any faculty member of the graduate faculty of the University wishing to attend. Although any faculty member may participate in the examination, only members of the doctoral committee may be present during the final deliberation and vote on approving the overview. Each member of the doctoral committee must sign the overview form and vote on approving the overview. The committee must unanimously approve the overview in order for the student to be advanced to doctoral candidacy.

Dissertation in Practice

The Dissertation in Practice has two sections. The first section is a report that includes the following parts:

1. Statement of Problem of Practice
2. Review of Supporting Scholarship and Professional Knowledge
3. Applied Inquiry Plan
4. Summary of major findings from the enactment of the applied inquiry plan.
5. Summary of conclusions and recommendations.
6. Dissemination Plan - How will student's research impact practice?The dissemination plan frames the Demonstration of Scholarly Practice
7. References

The second section of the Dissertation in Practice is a Demonstration of Scholarly Practice, a public product that supports the advancement of students' profession, including but not limited to, publishable article in a practitioner journal, white paper, book chapter, presentation to a Board of an organization or agency, policy analysis report, policy brief, video, performance, curriculum resources, professional development plan, professional development resources, program guide, intervention manual, evaluation report, research report, and other products that further students' professional goals.

Students should review the information detailed under Dissertation and Abstract and Final Oral Examination for University-wide Regulations Pertaining to Doctoral Degrees regarding dissertations and dissertation defenses.

The Dissertation Defense

The same rules apply here as detailed under The Overview Examination above.

Vote on the Dissertation Defense

Each member of the doctoral committee must sign the dissertation defense form and vote to pass or fail the student on the dissertation defense. If the decision of the committee is not unanimous, the case is referred to the dean/associate dean for resolution.

Submission Requirements and Fees

For general information concerning preparation of the dissertation, refer to the ETD website.

At least one week prior to the end of the term, the dissertation is submitted in final form to the Office of Admissions and Enrollment Services along with the following materials:

- Signed dissertation defense form
- Signed ETD approval form
- Two copies of the dissertation abstract initialed by the research advisor
- Completed Proquest Agreement forms
- Completed Survey of Earned Doctorate form
- Receipt from the Student Payment Center for payment of the dissertation processing fee
- Two copies of the title page

Information concerning requirements for preparing the abstract, the forms to be completed, and the amount of the fees to be paid is available in the Office of Admissions and Enrollment Services. The dissertation and abstract will be examined there to see that they are prepared in an acceptable form and style. For dissertation preparation style information refer to the ETD Format Guidelines. Questions not answered in these documents regarding form and/or style will be referred to the dean/associate dean for review and final decision.

Doctor of Philosophy Specific Requirements

The Doctor of Philosophy degree in the School of Education is a research-intensive training model that prepares students to be nationally competitive for research careers in both academic and non-academic institutions

Admissions requirements include the GRE for both national and international applicants. International students require a minimum of 100 or higher TOEFL composite score with sub-scores of 21 or higher or 7.0 IELTS with sub-scores of 6.0 or higher. After screening, a small group of applicants will be interviewed prior to a final decision. Only applicants committed to full-time study will be considered (except in unusual circumstances where the applicant works in a setting where research opportunities are available such as a research assistant on a funded project at a research institute).

The students are admitted into one of the following areas of concentration:

- Applied Developmental Psychology
- Education Leadership
- Health and Physical Activity
- Higher Education Management
- Language, Literacy & Culture
- Learning Sciences and Policy
- Mathematics Education
- Research Methodology

- Science Education
- Social and Comparative Analysis in Education
- Special Education - Early Intervention
- Special Education - Education of Students with Mental & Physical Disabilities
- Vision Studies

Plan of Studies

Prior to advancement to the formal stage called Doctoral Study, the student, in consultation with the academic advisor, must complete a plan of studies that conforms to program requirements. The plan of studies, approved by the academic advisor, the program coordinator, and department is filed in the Office of Admissions and Enrollment Services.

PhD students are required to file a Plan of Studies during the first year in the program. In formulating the doctoral Plan of Studies, both the student and the academic advisor must pay close attention to these School of Education requirements as well as requirements specific to the particular program or department in which the degree specialization is taken. It is the responsibility of the student to learn particular requirements from the academic advisor. The completion of requirements for the doctorate must be satisfied through registration at the University of Pittsburgh.

Courses approved for transfer credit must be listed individually on the plan of studies. Also, when a student plan of studies lists directed study credits, a directed study agreement form must be completed, signed by both the student and faculty supervisor, and submitted for each directed study at the time of registration. Forms are available from the department.

Any changes in the plan of studies must be approved by the academic advisor and the program coordinator, conform to program requirements, and be filed with the Office of Admissions and Enrollment Services. At the time of graduation, completed courses must comply with the approved plan of studies.

Credit Requirements

The PhD degree requires a minimum of 90 credits in a degree program beyond the baccalaureate, distributed as follows: a minimum of 72 course credits (including transfer credits) and a minimum of 18 dissertation credits. Doctoral-level courses are numbered in the 3000 series, but courses numbered in the 2000 series may also be appropriate for doctoral study if approved on a plan of studies. Generally, courses numbered below 2000 do not meet the minimum requirements for doctoral study. Exceptions require the approval of the program or department. No lower-level undergraduate course (numbered 0001-0999) may be applied toward a doctoral degree. Department and program websites list specific degree requirements.

Acceptance of Transfer Credits

PhD students apply a maximum of 30 post-baccalaureate credits for transfer from other institutions in keeping with University-wide requirements (*see Acceptance of Transfer Credits*). Both applicants for admission and continuing University of Pittsburgh doctoral students seeking acceptance of transfer credits toward a doctoral degree must submit their transcripts with a completed "Course Credits Accepted" form, available on the School of Education website. When approved, transfer credits must appear on the student's Plan of Studies. The registrar, after notification of acceptance of transfer credits, will enter the individual transfer credits on the student's transcript. Grades (and quality points) are not recorded for credits accepted by transfer.

Each course transferred must meet the following conditions:

- The course grade must be at least B (GPA = 3.00) or its equivalent.
- The course must be judged relevant to a student's doctoral Plan of Studies by the program or department.
- The course must be approved for equivalent graduate degrees at the accredited institution, extension, or off-campus center of other institutions at which the course was taken.

The completion of requirements for the doctorate must be satisfied through registration at the University of Pittsburgh. However, under certain circumstances, a student may earn in an accredited graduate institution other than the University of Pittsburgh a limited number of credits toward a doctoral degree.

Doctoral students desiring to take courses at another institution following admission to the University of Pittsburgh should review the course descriptions and receive approval from their academic advisors and program or department prior to registering for those courses if they wish to ensure that these credits will be acceptable for transfer.

Residency

PhD students are required to be enrolled for full-time study, including involvement in research activities.

Supporting Field

PhD students are required to complete a minimum of nine credits in an academic discipline outside of education. This requirement may be met in one of three ways:

1. For a student who does not have a bachelor's degree or an equivalent number of credits to that for a bachelor's degree in an appropriate academic discipline, a minimum of 18 credits must be taken outside the School of Education in one field or in an interdisciplinary concentration (e.g., Latin American Studies or psycholinguistics) as approved by the program or department. No more than 6 of these credits may be used to satisfy research methodology requirements.
2. For a student who has a bachelor's degree or an equivalent number of credits for a bachelor's degree in an academic discipline, a minimum of 9 credits must be taken outside the School of Education in one field or in an interdisciplinary concentration as approved by the program or department. None of the 9 credits may be used to satisfy research methodology requirements.
3. For a student who has a master's degree or an equivalent number of credits toward a master's degree in a relevant academic discipline outside of education, no additional credits outside the School of Education need to be taken.

Supervised Research

PhD students are required to complete a supervised research experience that results in a written report of the experience. Enrollment for six credits of supervised research, internship, practicum, or directed study is required.

Statute of Limitations

From the student's initial registration for doctoral study at the University of Pittsburgh, all requirements for the PhD must be completed within a period of 10 years (or 8 years if the student has received credit for a master's degree appropriate to the field of study).

Under certain conditions, the dean/associate dean may grant an extension of a student's statute of limitations. The request for extension must include a recommendation made by the academic advisor, with the recommendation approved by the Dean of the school. The statute of limitations can only be extended once.

Doctoral Preliminary Evaluation

Each doctoral student is required to take a preliminary evaluation designed to assess the breadth of the student's knowledge of the discipline, the student's achievement during the initial phase of graduate study, and the student's potential to apply research methods independently. The preliminary evaluation is administered by the program or department to which the student has been admitted. Procedures of administration are available from the program or department.

Advancement to Doctoral Study

To advance to doctoral study, a student must:

- be admitted to full graduate status;
- have completed at least 15 post-master's graduate credits at the University of Pittsburgh;
- have earned a GPA of at least 3.30 (transfer credits not considered) in post-master's graduate study at the University of Pittsburgh;
- have a Plan of Studies approved by the academic advisor and the program coordinator on file in the Office of Admissions and Enrollment Services; and
- have passed the doctoral preliminary evaluation.

Comprehensive Examination

After advancement to doctoral study, each doctoral student is required to take a comprehensive examination. The comprehensive examination is constructed, administered, and scored by the department or program to which the student has been admitted. Procedures and schedules of administration are available from the department or program.

A student must be registered in the term during which the comprehensive examination is taken. In no case may the student be graduated in the same term in which the comprehensive examination is taken. After the comprehensive examination is passed, the student has the remaining time specified by the statute of limitations to complete all remaining doctoral degree requirements. Satisfactory completion of the doctoral comprehensive examination requirement is part of the demonstration of doctoral competency.

Ordinarily, students do not register for dissertation credits until they have passed the comprehensive examination.

Doctoral Competency

Each doctoral student is required to demonstrate doctoral competency by satisfactorily completing the supervised research requirement and doctoral comprehensive examination. The form certifying that a student has demonstrated doctoral competency is initiated by the student's academic advisor,

signed by the academic advisor, the program coordinator, and the department chairperson, and then sent to the Office of Admissions and Enrollment Services. The dean/associate dean notifies the student that doctoral competency has been demonstrated.

Doctoral Committee

For the PhD student, the doctoral committee consists of the research advisor and at least three other members, including one member from another department outside the School of Education at the University of Pittsburgh or from an appropriate graduate program outside education at another academic institution. The research advisor and a majority of the total committee must be full or adjunct members of the graduate faculty of the University of Pittsburgh. Current graduate faculty membership may be found on the University's Institutional Research website.

The program faculty, the department chairperson, and the dean/associate dean must approve membership on and subsequent changes in the doctoral committee. After the program has approved the doctoral committee, the research advisor initiates the "Proposed Doctoral Committee" form to obtain the signatures of the program coordinator, the department chairperson, and the dean/associate dean. The dean/associate dean must give final approval of the doctoral committee before the overview examination may be scheduled.

Dissertation Overview

The dissertation overview is a written proposal and must be presented to the doctoral committee for approval after doctoral competency has been demonstrated.

The Overview Examination

The overview examination is conducted by the doctoral committee, is chaired by the research advisor, and is open to any faculty member of the graduate faculty of the University wishing to attend. Although any faculty member may participate in the examination, only members of the doctoral committee may be present during the final deliberation and vote on approving the overview. Each member of the doctoral committee must sign the overview form and vote on approving the overview. The committee must unanimously approve the overview in order for the student to be advanced to doctoral candidacy.

Dissertation

Students should review the information detailed under Dissertation and Abstract and Final Oral Examination for University-wide regulations regarding dissertations and dissertation defenses. School of Education-specific rules follow:

The Dissertation Defense

The same rules apply here as detailed under The Overview Examination above.

Vote on the Dissertation Defense

Each member of the doctoral committee must sign the dissertation defense form and vote to pass or fail the student on the dissertation defense. If the decision of the committee is not unanimous, the case is referred to the dean/associate dean for resolution.

Submission Requirements and Fees

For general information concerning preparation of the dissertation, refer to the ETD website.

At least one week prior to the end of the term, the dissertation is submitted in final form to the Office of Admissions and Enrollment Services along with the following materials:

- Signed dissertation defense form
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Faculty

Akiva,Thomas Matthew Schweinh - PhD, University of Michigan
Ansell,Ellen Sue - PhD, University of Wisconsin-Madison
Arlotta-Guerrero,Anna M - PhD, University of Pittsburgh
Bachman,Heather J - PhD, Loyola University of Chicago
Bagnato,Stephen J - EdD, Pennsylvania State University
Bradfield,Shanna M - Master's, Chestnut Hill College
Bray,Laura E - Master's, University of Pittsburgh
Brown,Adam Robert - Master's, University of Pittsburgh
Brown,Meagan Martyniak - Master's, Simmons College
Brydon,Melissa Marie - PhD, University of Pittsburgh
Calderone,Lugene - Master's, West Virginia University
Caprini,Erica Lynn - Master's, California University of Pennsylvania
Carlson,Margaret M - Master's, University of Pittsburgh
Cho,Byeong-Young - PhD, University of Maryland University College
Connolly,Patricia Walker - Master's, University of Pittsburgh
Conway,Sheila J - PhD, Temple University
Correnti,Richard James - PhD, University of Michigan
Crawford,Patricia A - PhD, Pennsylvania State University
Crowley,Kevin J - PhD, Carnegie Mellon University
Cunningham,Heather Bossert - PhD, University of Pittsburgh
Dancy,Elon - PhD, Louisiana State University
D'Andrea,Frances Mary - Master's, Slippery Rock University of Pennsylvania
Davis,Kelliann K. - PhD, University of Pittsburgh
DeAngelo,Linda Theresa - PhD, University of California, Los Angeles
Delale,Lori A - PhD, Northwestern University
Donato,Richard - PhD, University of Delaware
Erven-Victoria,Andrea L - Master's, University of Pittsburgh
Evering,Wanda Lea Calvert - PhD, University of South Carolina
Ferketish,B Jean - PhD, University of Pittsburgh
Fertman,Carl - PhD, University of Pittsburgh
Fonzi,Laura A - Master's, University of Pittsburgh
Forman,Ellice A - EdD, Harvard University
Galla,Brian Matthew - Master's, University of Pennsylvania
Gallen,Robert Timothy - PhD, University of California, Los Angeles
Garcia,Gina Ann - PhD, University of California, Los Angeles
Gibbs,Bethany Barone - PhD, Johns Hopkins University
Gillis Kruman,Susan - Master's, University of Pittsburgh
Godley,Amanda Joan - PhD, University of California, Berkeley
Goss,Fredric L - PhD, Virginia Polytechnic Institute and State University
Greeno,James G - PhD, University of Minnesota Twin Cities
Groark,Christina J - PhD, University of Pittsburgh
Gunzenhauser,Michael G - PhD, University of North Carolina at Chapel Hill
Hays,Anne Elizabeth - PhD, University of Pittsburgh
Hendry,Heather Jean - PhD, University of Pittsburgh
Jacobs,Katharine E B - PhD, University of Pennsylvania
Jakicic,John M - PhD, University of Pittsburgh
Kelly,Sean Patrick - PhD, University of Wisconsin-Madison
Kerr,Mary - EdD, Duke University
Kirk,Diane L - PhD, University of Pittsburgh
Klein,Roger D - PhD, State University of New York at Buffalo
Knoll,Diana M - PhD, University of Pittsburgh
Kokina,Anastasiya - PhD, Lehigh University
Kokka,Kari - EdD, Harvard University
Kostewicz,Douglas E - PhD, Pennsylvania State University
Kucan,Linda L. - PhD, University of Pittsburgh

Lane,Suzanne - PhD, University of Arizona
 Lee, Bridget K. - PhD, University of Texas, Austin
 Liguori,Carli A. - Masters, University of Illinois, Urbana-Champaign
 Longo,Ralph G - PhD, University of Pittsburgh
 Matsumura,Lindsay Clare - PhD, University of California, Los Angeles
 McCarthy,Tessa Shannon - PhD, Vanderbilt University
 McClure,Maureen W - PhD, University of Rochester
 Mendez,Jason C. - PhD., University of Pittsburgh
 Moore,Debra W. - PhD, University of Pittsburgh
 Nagle,Elizabeth - PhD, University of Pittsburgh
 Osai, Esohe R. - PhD, University of Michigan
 Page,Lindsay Coleman - EdD, Harvard University
 Patel, Leigh - PhD, University of Nevada, Las Vegas
 Pearman, Alvin - PhD, Vanderbilt University
 Perry,Jill Alexa - PhD, University of Maryland, College Park
 Petrosky,Anthony R - EdD, State University of New York at Buffalo
 Popovich,Cynthia June - PhD, University of Pittsburgh
 Porter,Maureen K - PhD, Stanford University
 Quigley, Cassie Fay - PhD, Indiana University
 Qin, Xu - PhD, University of Chicago
 Rainey, Emily C. - PhD, University of Michigan
 Robertson,Rachel E - PhD, Vanderbilt University
 Rogers,Renee J - PhD, University of Pittsburgh
 Roop,Laura Jane - PhD, University of Michigan
 Ross,Sharon Elizabeth - PhD, Pennsylvania State University
 Russell,Jennifer Lin - PhD, University of California, Berkeley
 Schuster,Maximilian Thomas - Master's, University of Pittsburgh
 Shafiq,Mohammad Najeeb - PhD, Columbia University
 Sherman,Sally Anne - PhD, University of Pittsburgh
 Skerbetz,Mandi Davis - PhD, University of Pittsburgh
 Sobolak,Michelle J - PhD, University of Pittsburgh
 Sprowls-Repcheck,Carma R - PhD, University of Pittsburgh
 Srsic,Amy - PhD, Georgetown University
 Stein,Mary Kay - PhD, University of Pittsburgh
 Suzik,Jeffrey R - PhD, Carnegie Mellon University
 Tananis,Cynthia A - EdD, University of Pittsburgh
 Tanner,Susan Leigh - EdD, University of Pittsburgh
 Trovato,Charlene - PhD, University of Pittsburgh
 Wallace,N Tanner LeBaron - PhD, University of California, Los Angeles
 Wang,Ming-Te - PhD, Harvard University
 Wanless,Shannon Beth - PhD, Oregon State University

Program and Course Offerings

The School of Education is organized into four academic departments and one interdisciplinary degree:

Center for Urban Education

The Center for Urban Education's vision is to be a space of learning and sharing with communities to positively transform educational opportunities and experiences. CUE structures its research, service, and knowledge dissemination into three areas:

Community Partnership & Engagement

CUE is a research center, but the success of its findings, projects, and progress in influencing practice is dependent on community partnership and engagement, which it facilitates through its Community Partnership & Engagement (CPE) affinity group. CUE is grateful for its partners and collaborators, ranging from school districts and administrators to community councils and foundations, and from government contacts and offices to local and regional parent/teacher organizations.

Educator Development & Practice

The Educator Preparation & Development (EDP) affinity group works to devise, document, and deliver the tools and processes teachers and administrators need for improving urban school systems. CUE strives to be an educator training and professional development facility of the highest order for educators in the region, while developing, delivering, and documenting processes and tools that can yield major improvement in urban school systems.

Student Academic & Social Development

The Student Academic and Social Development (SASD) affinity group focuses on experiences and support of students at all levels. Through research, practice, and school and community partnerships, SASD works to study and enhance student-learned, academic, and social development.

EdD in Urban Education

Both research and the current social climate point to a need for highly effective professionals trained with a focus in particular on urban school, their broader communities, and the social and political factors shaping their organization and function. To this end, the Center for Urban Education is offering an EdD ARCO focused on supporting professionals in gaining a systematic understanding of urban schooling. In particular, the Urban Education ARCO is designed to support the development of leaders in urban education spheres. This program will also support professionals in connecting this work to improvement science to better understand and work with urban communities. Students in the Urban Education ARCO will develop a foundational understanding of the dynamics of urban education, including the history of urban life, communities, and schools in the U.S., as well as policy and practices in the field of urban education. This understanding will ultimately support students in establishing a basis for lifelong learning through normative and critical reflection on urban education within its historical, philosophical, cultural and social contexts.

University of Pittsburgh
School of Education
Center for Urban Education
4303 Wesley W. Posvar Hall
230 South Bouquet Street
Pittsburgh, PA 15260
cue@pitt.edu
412-383-4487

PhD

Urban Education, PhD

Curriculum

Core Courses

- U ED Introduction of Urban Education (new)
- U ED Critical Theories and Perspectives on Urban Education (new)
- U ED The Social Context of Urban Education (new)

- U ED Urban Schools and Social Policy (new)
- U ED Education Law, Policy, and School Reform (new)
- EDUC 3011 - CULTURALLY RESPONSIVE PEDAGOGY

Research Methodology

- EDUC 3100 - INTRODUCTION TO QUAN METHODS: DESCRIPTIVE AND INFERENTIAL STATISTICS (required)
- PSYED 3410 - REGRESSION ANALYSIS (required)
- EDUC 3104 - INTRODUCTION TO QUALITATIVE METHODS (required)

Advanced Quantitative Seminars (select 2 during years 1-3):

- PSYED 3417 - STRUCTURAL EQUATION MODELING
- PSYED 3416 - MULTIVARIATE STATISTICS
- PSYED 3412 - GENERAL LINEAR MODELS
- PSYED 3408 - HIERARCHICAL LINEAR MODELING
- IL 3536 - SINGLE SUBJECT RESEARCH
- Nonparametric Statistics (course number unavailable)
- Quasi-Experimental Design (course number unavailable)
- Meta-Analysis in Education (course number unavailable)
- Seminar in Causal Inference in Education Policy (course number unavailable)

Advanced Qualitative Seminars

- ADMPS 3208 - CASE STUDY METHODS IN EDUCATION
- ADMPS 3012 - QUALITATIVE DATA MANAGEMENT ANALYSIS AND PRESENTATION
- IL 3003 - RESEARCH INTERVIEWING
- ADMPS 3311 - WAYS OF KNOWING
- ADMPS 2355 - ADVANCED QUALITATIVE RESEARCH
- IL 3002 - CLASSROOM DISCOURSE
- Qualitative Data Analysis (course number unavailable)
- Disciplined Inquiry (course number unavailable)

Additional advanced courses and seminars from other Schools at the University of Pittsburgh or Carnegie Mellon University could also count for this methods requirement.

Supervised Research

Students will be required to take 2 semester courses (a minimum of 6 credits) of supervised research. This requirement will be tied to students' work on their pre-dissertation projects to promote timely and highly quality completion of this milestone.

- ADMPS 3097 - SUPERVISED RESEARCH

Professional Seminar

UED Contemporary Issues in Education (Year 1, fall and spring semester; one-credit per semester) This first seminar series introduces students to SOE faculty who will lead discussions on contemporary topics in education. In addition, it will include professional issues germane to doctoral skills and competencies (e.g., guidelines for conducting literatures searches, constructing a literature review, IRB requirements, preparing professional presentations, etc.).

Writing Workshops

Writing Workshops (EDUC 3087) (Year 2 through completion; 1 credit semester for 6-8 credits) The Writing Workshops provide students with an opportunity to get feedback on manuscripts and milestone documents. The group commits to reading drafts in advance of bi-weekly meetings and provides constructive feedback.

Field Placement/Teaching Practicum (course number unavailable) (2 courses, 6 credits)

Two semesters spent in supervised field placement in areas relevant to the Urban Education PhD Program. Potential sites for field placement include local non-profit institutions, RAND Corporation, (through application through their summer internship program), and the Center for Urban Education. Students may also fulfill one semester in a field placement and one spent developing instructional skills for teaching at the university level (as an instructor or co-instructor with a faculty member) or developing a course under the supervision of a faculty member (e.g., an on-line course in an area relevant to Urban Education).

Cognate Courses (up to 18 credits)

For students who do not have bachelor degrees in appropriate academic disciplines, 18 credits must be taken outside of the SOE in the appropriate academic disciplines. Students with a masters degree in an appropriate academic discipline do not have to take any courses outside of the SOE and 18 credits from their masters will count here for cognate courses. Students with a bachelors degree in an appropriate academic discipline are only required to take 9 credits outside of the SOE in appropriate academic disciplines.

Dissertation

Up to six semester courses of preparation for the doctoral dissertation. Students register for dissertation credits during the term in which they are preparing the overview document as well as during the term in which they carry out and defend their research. Students must register for at least one credit during the 12-month period preceding their graduation.

- ADMPS 3090 - DISSERTATION RESEARCH SEMINAR

Department of Administrative and Policy Studies

Programs within the Department of Administrative and Policy Studies prepare graduates for educational leadership careers in K-12 schools, school districts, and higher education institutions, for research and teaching careers in colleges and universities, and for research and policy study careers in local, state, national, and international agencies.

Students specialize within three areas of concentration: (1) educational leadership (EdD degree) (2) higher education management, and (3) social and comparative analysis in education. The department offers programs leading to the MEd, MA, EdD, and PhD in administrative and policy studies, as well as certification programs. It also provides service courses for students from other departments and schools at the master's and doctoral levels in education and society, history and sociology of education, education and culture, educational anthropology, supervision, administration, education law, qualitative and quantitative inquiry, interpretive research, and evaluation.

Detailed program information appears below.

General Contact Information

Department Administrator, Mary Mollo
Department of Administrative and Policy Studies
412-624-7881
E-mail: mmollo@pitt.edu

Program Information

Higher Education Management Program

The Higher Education Management Program serves graduate students who wish to pursue advanced study in student affairs, academic affairs, and institutional management and policy, and who demonstrate a superior level of expertise and capacity for leadership in the field of higher education.

The following degrees in administrative and policy studies are offered with a concentration in higher education management:

- Master of Education (MEd)
The Master of Education (MEd) in Higher Education Management prepares scholar practitioners for positions working within institutions of higher education. Designed for domestic and international students seeking positions as early career professionals and those already working in the field, students pursue one of two tracks, either management or student services, depending on their professional focus.
- Doctor of Education (EdD)
In the higher education management ARCO, students examine measures that reflect institutional effectiveness, data-based planning, and decision making in higher education environments that demand accountability and transparency. The skills and proficiencies developed are required to succeed at institutions of higher learning. Graduates of our program have worked as directors of institutional development, admissions, and residence life; deans of student affairs; registrars; and college presidents and vice presidents.

- Doctor of Philosophy (PhD)
The PhD degree program in higher education includes a core set of courses designed for students to gain an understanding of historical, political, philosophical, and social elements that shape and continue to reshape higher education. These courses include Higher Education Administration, the Politics and History of Higher Education, Higher Education Research Frameworks and Theory, and Higher Education Policy and Issues. These courses are complemented by core courses within the department of Administrative and Policy Studies designed to ground students in the study education as a discipline. Students develop an area of research specialization within the field of higher education and take other courses at the School of Education as well as courses outside of the school that complement their specialization. In addition, through a strong focus within the program on rigorous methodological training, students gain competency in both quantitative and qualitative research methods and take advanced courses in the methodological approaches they plan to utilize in their research.

Education Leadership Program

The mission of the program is to deliver a preeminent preparation program for aspiring school leaders that provides a relevant and balanced course of studies, which includes rigorous field experience. The goal of the Education Leadership Program is to ensure that all graduates acquire competence through the integration of the knowledge and skills necessary for formulating and implementing a clear vision of educational processes and outcomes associated with responsible data orientation, pertinent to organizational and professional development of staff, and related to effective and responsive management.

Degree and Certification Requirements:

The following degrees in administrative and policy studies are offered with a concentration in school leadership:

- Master of Education (MEd)
- Certification programs: K-12 Principal, Supervisor of Curriculum and Instruction and the Superintendent's Letter of Eligibility. The certification programs meet Pennsylvania Standards for Commonwealth Certification.
- Doctor of Education (EdD)
The EdD in education leadership is suited for principals and school administrators who desire to become superintendents while earning their doctoral degree. You can earn your doctorate while also completing the requirements for your Superintendent's Letter of Eligibility through the Executive Cohort for Educational Leaders (ExCEL) program. ExCEL's purpose is to prepare leaders who champion publicly supported schools and who are committed advocates for children and youths.
- Doctor of Philosophy (PhD)

Social and Comparative Analysis in Education Program

Social and Comparative Analysis in Education (SCAE) is the scholarly study of fundamental problems and questions in education in the United States and around the world from a critical, global perspective. SCAE looks at education holistically, including formal and non-formal settings across the lifespan. SCAE analyzes the relationship between education and social justice in the complementary fields of social foundations, comparative, international, and development education.

Degree and Certification Requirements:

The following degrees in administrative and policy studies are offered with a concentration in social and comparative analysis in education:

- Master of Arts (MA)
- Master of Education (MEd)
- Doctor of Education (EdD)
The social and comparative analysis in education ARCO prepares creative and innovative professionals to take leadership of their chosen professional fields. As scholars, practitioners, and citizens, EdD students in this ARCO conduct research related to their professional

practice while expanding the support of students in pre-K-16 education and nonformal educational settings. This is in addition to creating structures, practices, and policies that reflect a commitment to equity and social justice, critical deliberation, and collaborative links between educational institutions and local and national communities.

- **Doctor of Philosophy (PhD)**
The Doctor of Philosophy (PhD) degree in SCAE trains scholars to apply disciplinary theories and methods from economics, sociology, and anthropology to the study of educational productivity and inequality. In addition to classic theories of how organizations and actors interact within educational systems, we also focus on understanding the effects of contemporary educational policies, trends, and reforms. An emphasis on theories and methods in the social sciences and humanities is coupled with an empirical focus on real-world studies of instructional and organizational processes. The PhD program considers education holistically, including formal and non-formal settings across the lifespan, and has a special strength in comparative, international, and development education.

Certificate

K-12 Principal Certificate - School Leadership

The School of Education at the University of Pittsburgh K-12 Principal certificate program is a 15-month cohort-based program. Presented in an executive format, the Leadership Initiative for Transforming Schools (LIFTS) program collaborates with units in the School of Education and across the University.

The purpose of our principal certificate program is to develop educational leaders of character and integrity who are inspired by a sense of justice to improve the achievement of all students. Drawing from the fields of education and management, the program equips leaders with expertise in instructional, institutional and public leadership grounded in ethics, inquiry, and integrity. The program encourages the shift from teacher leadership to administrative leadership through academic rigor in the classroom, authentic experiences in schools and reflective opportunities for integrating personal and professional growth.

Curriculum

Leader As Learner

- Team Learning (8 hours fieldwork)
- Networking with practicing principals (8 hours fieldwork)
- ADMPS 2123 - SUMMER LEADERSHIP INSTITUTE
- ADMPS 2402 - HEALTH, MENTAL HEALTH AND SAFETY

Public & Instructional Leadership

- ADMPS 2404 - INSTRUCTIONAL LEADERSHIP
- ADMPS 2405 - PUBLIC LEADERSHIP: SCHOOL LAW
- ADMPS 2406 - PUBLIC LEADERSHIP: ASSESSMENT AND ACCOUNTABILITY
- ADMPS 2407 - POLITICS OF EDUCATION: SCHOOL COMMUNITY PARTNERSHIP
- ADMPS 2408 - POSITIVE BEHAVIOR SUPPORT

Institutional and Instructional Leadership

- ADMPS 2410 - INSTITUTIONAL LEADERSHIP
- ADMPS 2412 - LEADERSHIP FOR INCLUSIVE SCHOOLS

Superintendent's Letter of Eligibility Certificate - School Leadership

- 24 Credits over twenty months or 5 terms
- All courses approved for Act 45 Credit
- Blended Delivery System (Online + Monthly Campus Class)
- Three 1 credit internship experiences

Curriculum

- EDUC 3003 - FOUNDATIONS 2: LEADERSHIP IN GROUPS AND ORGANIZATIONS
- EDUC 3004 - FOUNDATIONS 3: CONTEXTS OF EDUCATION
- EDUC 3005 - FOUNDATIONS 4: POLICY AS A LEVER FOR CHANGE
- ADMPS 3088 - COMPETENT KNOWLEDGE MANAGEMENT AND UTILIZATION
- ADMPS 3116 - COMPETENT MANAGEMENT OF HUMAN RESOURCES
- ADMPS 3093 - INTERNSHIP IN CENTRAL OFFICE ADMINISTRATION
This course is taken in three (3) separate terms for one (1) credit each
- ADMPS 3114 - COMPETENT MANAGEMENT OF STUDENT PERSONNEL SERVICES
- ADMPS 3101 - COMPETENT MANAGEMENT OF FISCAL RESOURCES

Supervisor of Curriculum and Instruction Certificate - School Leadership

This is a 24-credit, 15 month program completed with a cohort in 4 consecutive terms (summer, fall, spring, summer).

Program Courses

- ADMPS 2123 - SUMMER LEADERSHIP INSTITUTE
- ADMPS 2412 - LEADERSHIP FOR INCLUSIVE SCHOOLS
- ADMPS 2093 - SUPERVISOR CURRICULUM AND INSTRUCTION INTERNSHIP
- ADMPS 2404 - INSTRUCTIONAL LEADERSHIP
- ADMPS 2403 - TEACHER SUPERVISION AND EFFECTIVENESS
- ADMPS 2406 - PUBLIC LEADERSHIP: ASSESSMENT AND ACCOUNTABILITY
- ADMPS 2407 - POLITICS OF EDUCATION: SCHOOL COMMUNITY PARTNERSHIP
- ADMPS 2086 - CURRICULUM IN SCHOOLS

Doctoral

Education Leadership, EdD

EdD Curriculum

The EdD program is a three-year 90-credit program, including 30 credits transferred from relevant graduate work. Students are required to transfer 30 credits of graduate work into the EdD program.

The EdD curriculum is delivered in several stages, through a variety methods:

- **Orientation:** The EdD cohort participates in a full-day, on campus, orientation in the spring before the summer start of the program. The day includes a welcome from the Dean of the School of Education, EdD program information, and cohort-building activities as well as an introductory session with other students in your Area of Concentration. Orientation typically takes place in April.
- **One-week intensive on ramp:** The EdD cohort will participate in a full-week, on campus, experience that includes intense work focused on understanding enduring problems of practice in education, health, and human development. This one-week experience, known as the "on-ramp", will be your first foundations course on framing, identifying, and investigating problems of practice. The on-ramp typically takes place in June.
- **Hybrid seminars:** You will experience a hybrid model of education through online course experiences and in-person, once per month (typically on Saturdays) sessions on the Pittsburgh campus. Attendance at in-person, on campus sessions is *required*.

SCHEDULE

Year 1: Summer	Year 1: Fall	Year 1: Spring	Year 1: Summer
EDUC 3002 Foundation 1: Becoming a Leader Scholar Practitioner (3 credits) <i>ON-RAMP</i>	EDUC 3003 Foundation 2: Leadership in Groups and Organizations (3 credits)	EDUC 3004 Foundation 3: Education Contexts (3 credits)	EDUC 3005 Foundation 4: Investigating Policy as a Lever for Change (3 credits)
EDUC 3001 Practitioner Inquiry 1 (3 credits)	ARCO: Course 1 (3 credits)	ARCO: Course 2 (3 credits)	Practitioner Inquiry 2 (3 credits)
Year 2: Fall	Year 2: Spring	Year 2: Summer	
EDUC 3009 Supervised Practitioner Inquiry (3 credits)	EDUC 3007 Practitioner Inquiry 3 (3 credits)	EDUC 3008 Practitioner Inquiry 4 (3 credits)	
ARCO: Course 3 (3 credits)	ARCO: Course 4 (3 credits)	EDUC 3012 Laboratory of Practice (3 credits)	
Year 3: Fall	Year 3: Spring	Year 3: Summer	
EDUC 3099 Guidance in Scholarly Practice (6 credits)	EDUC 3099 Guidance in Scholarly Practice (6 credits)	EDUC 3099 Guidance in Scholarly Practice (6 credits)	

CORE COURSES Credits / Units: 24 Total

Foundation Courses

- EDUC 3002 - FOUNDATIONS 1:
- EDUC 3003 - FOUNDATIONS 2: LEADERSHIP IN GROUPS AND ORGANIZATIONS
- EDUC 3004 - FOUNDATIONS 3: CONTEXTS OF EDUCATION
- EDUC 3005 - FOUNDATIONS 4: POLICY AS A LEVER FOR CHANGE

Practitioner Inquiry Courses

- EDUC 3001 - PRACTITIONER INQUIRY 1
- EDUC 3006 - PRACTITIONER INQUIRY 2
- EDUC 3007 - PRACTITIONER INQUIRY 3
- EDUC 3008 - PRACTITIONER INQUIRY 4: APPLYING DISCIPLINED INQUIRY

SUPERVISED PRACTITIONER INQUIRY

Students will identify, review and synthesize relevant scholarship that supports as inquiry into a problem of practice.

- EDUC 3009 - SUPERVISED PRACTITIONER INQUIRY

LABORATORY OF PRACTICE

Students will complete a Laboratory of Practice, a setting where theory and practice inform and enrich each other and facilitate transformative and generative learning that is measured by the development of scholarly expertise and implementation of practice (Carnegie Project on the Education Doctorate, 2010). Students choose from three types of experiences: job embedded, aspirant, or global.

- EDUC 3012 - SUPERVISED INTERNSHIP

GUIDANCE IN SCHOLARLY PRACTICE

Guidance in Scholarly Practice: Based on research interests, the students will be required to write a manuscript that reports on the improvement science process.

Portfolio of Scholarly Practice: The portfolio of scholarly practice will provide evidence of learning and success in foundations, inquiry, and ARCO experiences.

- EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE

Education Leadership ARCO Curriculum

Education Leadership ARCO Courses

- ADMPS 3088 - COMPETENT KNOWLEDGE MANAGEMENT AND UTILIZATION
- ADMPS 3101 - COMPETENT MANAGEMENT OF FISCAL RESOURCES
- ADMPS 3114 - COMPETENT MANAGEMENT OF STUDENT PERSONNEL SERVICES
- ADMPS 3116 - COMPETENT MANAGEMENT OF HUMAN RESOURCES

Higher Education Management, EdD

EdD Curriculum

The EdD program is a three-year 90-credit program, including 30 credits transferred from relevant graduate work. Students are required to transfer 30 credits of graduate work into the EdD program.

The EdD curriculum is delivered in several stages, through a variety methods:

- **Orientation:** The EdD cohort participates in a full-day, on campus, orientation in the spring before the summer start of the program. The day includes a welcome from the Dean of the School of Education, EdD program information, and cohort-building activities as well as an introductory session with other students in your Area of Concentration. Orientation typically takes place in April.
- **One-week intensive on ramp:** The EdD cohort will participate in a full-week, on campus, experience that includes intense work focused on understanding enduring problems of practice in education, health, and human development. This one-week experience, known as the "on-ramp", will be your first foundations course on framing, identifying, and investigating problems of practice. The on-ramp typically takes place in June.
- **Hybrid seminars:** You will experience a hybrid model of education through online course experiences and in-person, once per month (typically on Saturdays) sessions on the Pittsburgh campus. Attendance at in-person, on campus sessions is *required*.

SCHEDULE

Year 1: Summer	Year 1: Fall	Year 1: Spring	Year 1: Summer
EDUC 3002 Foundation 1: Becoming a Leader Scholar Practitioner (3 credits) <i>ON-RAMP</i>	EDUC 3003 Foundation 2: Leadership in Groups and Organizations (3 credits)	EDUC 3004 Foundation 3: Education Contexts (3 credits)	EDUC 3005 Foundation 4: Investigating Policy as a Lever for Change (3 credits)
EDUC 3001 Practitioner Inquiry 1 (3 credits)	ARCO: Course 1 (3 credits)	ARCO: Course 2 (3 credits)	Practitioner Inquiry 2 (3 credits)
Year 2: Fall	Year 2: Spring	Year 2: Summer	
EDUC 3009 Supervised Practitioner Inquiry (3 credits)	EDUC 3007 Practitioner Inquiry 3 (3 credits)	EDUC 3008 Practitioner Inquiry 4 (3 credits)	
ARCO: Course 3 (3 credits)	ARCO: Course 4 (3 credits)	EDUC 3012 Laboratory of Practice (3 credits)	

Year 3: Fall	Year 3: Spring	Year 3: Summer
EDUC 3099 Guidance in Scholarly Practice (6 credits)	EDUC 3099 Guidance in Scholarly Practice (6 credits)	EDUC 3099 Guidance in Scholarly Practice (6 credits)

CORE COURSES Credits / Units: 24 Total

Foundation Courses

- EDUC 3002 - FOUNDATIONS 1:
- EDUC 3003 - FOUNDATIONS 2: LEADERSHIP IN GROUPS AND ORGANIZATIONS
- EDUC 3004 - FOUNDATIONS 3: CONTEXTS OF EDUCATION
- EDUC 3005 - FOUNDATIONS 4: POLICY AS A LEVER FOR CHANGE

Practitioner Inquiry Courses

- EDUC 3001 - PRACTITIONER INQUIRY 1
- EDUC 3006 - PRACTITIONER INQUIRY 2
- EDUC 3007 - PRACTITIONER INQUIRY 3
- EDUC 3008 - PRACTITIONER INQUIRY 4: APPLYING DISCIPLINED INQUIRY

SUPERVISED PRACTITIONER INQUIRY

Students will identify, review and synthesize relevant scholarship that supports as inquiry into a problem of practice.

- EDUC 3009 - SUPERVISED PRACTITIONER INQUIRY

LABORATORY OF PRACTICE

Students will complete a Laboratory of Practice, a setting where theory and practice inform and enrich each other and facilitate transformative and generative learning that is measured by the development of scholarly expertise and implementation of practice (Carnegie Project on the Education Doctorate, 2010). Students choose from three types of experiences: job embedded, aspirant, or global.

- EDUC 3012 - SUPERVISED INTERNSHIP

GUIDANCE IN SCHOLARLY PRACTICE

Guidance in Scholarly Practice: Based on research interests, the students will be required to write a manuscript that reports on the improvement science process.

Portfolio of Scholarly Practice: The portfolio of scholarly practice will provide evidence of learning and success in foundations, inquiry, and ARCO experiences.

- EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE

Higher Education Management ARCO Curriculum

Higher Education Management ARCO Courses

- ADMPS 3104 - HIGHER EDUCATION INSTITUTIONAL STRATEGIC PLANNING
- ADMPS 3129 - HIGHER EDUCATION HUMAN RESOURCE MANAGEMENT
- ADMPS 3209 - HIGHER EDUCATION INSTITUTIONAL ASSESSMENT & ACCREDITATION
- ADMPS 3128 - HIGHER EDUCATION BUDGET MANAGEMENT

Higher Education Management, PhD

The University of Pittsburgh School of Education's Doctor of Philosophy (PhD) programs prepare students to be **nationally competitive** and highly qualified for **research careers** in both academic and non-academic institutions. Our **full-time, research-intensive PhDs** produce scholars who demonstrate excellent writing and research skills, independent scholarship and productivity, and proficiency in teaching. Under the guidance of our **distinguished graduate faculty**, students will have the opportunity to produce peer-reviewed publications, present at professional conferences, and collaborate on grant-writing and review, positioning them to **excel in their careers as researchers and faculty**. Because the PhDs are full-time, students can be fully immersed in their coursework and research in preparation for an **impactful scholarly career**.

The Higher Education Management program is committed to advancing scholarship, research, and practice in the field of higher education. Designed for domestic and international students who aspire to careers as scholar-researchers, the Doctor of Philosophy (PhD) degree prepares students for positions as university faculty, researchers at educational think tanks and major policy institutes, and as leaders of administrative units with teaching and research responsibilities. Students pursuing a PhD in higher education have research interests ranging from student access to student outcomes, diversity and equity, international and comparative education, administration and management, and policy studies.

Students pursuing the PhD degree have widespread opportunities to engage closely with and learn from faculty who conduct cutting-edge research in the field and who have a strong commitment to high-quality teaching. Students are afforded the opportunity to work with faculty members to conduct research, present at professional conferences, and publish prior to the completion of their degrees. The faculty have expertise in both quantitative and qualitative methodologies, and do both applied and basic research, all with a focus on improving educational outcomes.

The PhD degree program in higher education includes a core set of courses designed for students to gain an understanding of historical, political, philosophical, and social elements that shape and continue to reshape higher education. These courses include Higher Education Administration, the Politics and History of Higher Education, Higher Education Research Frameworks and Theory, and Higher Education Policy and Issues. These courses are complemented by core courses within the department of Administrative and Policy Studies designed to ground students in the study of education as a discipline. Students develop an area of research specialization within the field of higher education and take other courses at the School of Education as well as courses outside of the school that complement their specialization. In addition, through a strong focus within the program on rigorous methodological training, students gain competency in both quantitative and qualitative research methods and take advanced courses in the methodological approaches they plan to utilize in their research.

Curriculum

All students admitted into the ADMPS PhD Program are required to complete a minimum of 90 credits of coursework to fulfill their degree requirements. This coursework is broken into the following six categories: Department Core Courses, Specialization Courses, Research Methods Courses, Supporting Field Courses, Supervised Research Credits, and Dissertation Credits.

Several Courses should be taken in the first year: ADMPS 3003 (Theories of Educational Inequality), ADMPS 3001 (Research Methods), as well as the two first-year seminars that all PhD students school-wide take. Students may elect to take some combination of the required research methods courses in the first year or substantive courses. However, EDUC 3100 (Introduction to Quantitative Methods) and EDUC 3101 (Intermediate Quantitative Methods) are offered in the fall and spring and would ideally be taken in back-to-back semesters.

The two first-year seminars meet every other week (1 credit in Fall and 2 credits in Spring taken over and above the typical 9-credit course load) and focus on familiarizing students with practical and ethical issues in research (e.g., resolving questions of authorship and authorship order, human subjects guidelines), and supporting students' work on their pre-dissertation proposal (Milestone 1) (e.g., developing innovative research questions, conducting a literature review). As part of the fall first-year seminar, students will complete the Collaborative Institutional Training Initiative (CITI) training courses. CITI courses are an online system required to access the Institutional Review Board (IRB) system, where study protocols are submitted in order to receive permission to collect data on human subjects. This is mandatory for all researchers and students.

Writing Seminar. In years 2-4, all students take the 1-credit writing seminar (EDUC 3087). This course is taken each fall and spring to support milestone work and other writing projects. Note: EDUC 3087 credits do not count towards 90 required credits.

Research Methods. The PhD program places a special emphasis on research methods. Preparing students to tackle policy problems, and create innovative research agendas, requires intentionality in the methods coursework that supports students' development of independent projects, meaningful contributions to advisors' research, and critical analysis of past research. To help ensure that students develop the necessary analytic competencies, students are required to complete a minimum of 6 methods courses: Introduction to Quantitative Methods (EDUC 3100) and

Intermediate Quantitative Methods (EDUC 3103); Introduction to Qualitative methods (EDUC 3104); and 3 seminars in advanced quantitative or qualitative methods.

Supporting Field. All PhD students are required to have 9-18 credits in a disciplinary area outside of the School of Education in order to meet the University cognate requirement. For a student who does not have a bachelor's degree in an academic discipline/field other than education, a minimum of 18 credits must be taken outside the School of Education in one discipline (e.g., sociology, political science, economics, mathematics or biology) or in an interdisciplinary concentration (e.g., Latin American studies, psycholinguistics, business, public and international affairs, etc.).

For a student who has a bachelor's degree in an academic discipline, or an equivalent number of credits to that for a bachelor's degree in an academic discipline, a minimum of 9 credits must be taken outside the School of Education in one field or in an interdisciplinary concentration. None of the 9 credits may be used to satisfy research methodology requirements. For a student who has a master's degree or an equivalent number of credits toward a master's degree in a relevant academic discipline, no additional credits outside the School of Education need to be taken but a Transfer of Credit Form must be submitted with the Plan of Study.

Supervised Research. A minimum of 6 credits of ADMPS 3097: Supervised Research is required for PhD students. The School-wide requirement of 6 credits is tied to students' work on their pre- dissertation research projects (Milestone 2) and the Doctoral Comprehensive exam (Milestone 3). Supervised research credits are taken with individual faculty (typically the advisor

Dissertation Research Credits. All students are required to register for 18 credits of ADMPS 3099 Guidance in the Doctoral Degree (3090 or other credits can be used in some cases). Once students have completed all credit requirements, including 18 credits of dissertation research, they can register for full-time dissertation study at a reduced rate of tuition in order to maintain access to university resources.

Specialization courses specifically for HEM include ADMPS 2307 (Politics and History of Higher Education), which students must transfer in or take in their first year of PhD study, along with more than a dozen HEM concentration courses (see plan of studies). In particular, the HEM faculty recommend taking, as primary HEM courses: Foundations in Higher Education; Theory and Frameworks in Higher Education; Policy Studies in Higher Education; Economics and Finance of Higher Education.

Department Core

- ADMPS 3001 - RESEARCH METHODS IN EDUCATION POLICY AND PRACTICE
- ADMPS 3003 - THEORIES OF EDUCATIONAL INEQUALITY

Research Methodology

- EDUC 3100 - INTRODUCTION TO QUAN METHODS: DESCRIPTIVE AND INFERENTIAL STATISTICS
- EDUC 3103 - QUANTITATIVE METHODS 2
- EDUC 3104 - INTRODUCTION TO QUALITATIVE METHODS

Supporting Field

Students taking 12 or more supporting field credits will meet the 90 credit minimum. Students eligible to take only 9 supporting field credits will need additional specialization or research methods credits to meet the 90 credit minimum.

Supervised Research

- ADMPS 3097 - SUPERVISED RESEARCH
- EDUC 3102 - FIRST YEAR SEMINAR 1
- EDUC 3105 - FIRST YEAR SEMINAR 2

Specialization (including 21 HEM Area of Concentration Credits)

- ADMPS 2307 - POLITICS AND HISTORY OF HIGHER EDUCATION (required)
- ADMPS 3131 - STUDENT, CAMPUS, AND SOCIETY
- ADMPS 3135 - SEMINAR IN COLLEGE TEACHING
- ADMPS 3136 - COMPARATIVE HIGHER EDUCATION
- ADMPS 3139 - LEGAL ASPECTS OF HIGHER EDUCATION
- ADMPS 3142 - ADVANCED SEMINAR IN HIGHER EDUCATION
- ADMPS 3301 - SOCIAL THEORIES AND EDUCATION GLOBAL CONTEXT
- ADMPS 3343 - COMPARATIVE EDUCATION
- ADMPS 2131 - HIGHER EDUCATION ADMINISTRATION

- ADMPS 2055 - STUDENT DEVELOPMENT THEORY
- ADMPS 3015 - ETHICAL ISSUES IN HIGHER EDUCATION
- ADMPS 3141 - POLICY STUDIES IN HIGHER EDUCATION
- ADMPS 3089 - SPECIAL TOPICS
- ADMPS 3XXX Foundations in Higher Education
- ADMPS 3XXX Theory and Frameworks in Higher Education
- ADMPS 3XXX Economics and Finance of Higher Education
- ADMPS 2XXX Social Justice in Higher Education Settings
- ADMPS 3XXX Diversity in Higher Education

Note: courses without a number (I. e. 3XXX) are currently being taught as special topics courses (ADMPS 3089)

Dissertation

18 units of dissertation coursework must be completed. Students may take any combination of ADMPS 3090 Dissertation Research Seminar, ADMPS 3300 Pro Seminar in ADMPS/SCAE, ADMPS 3XXX Study Group (TBD), or ADMPS 3099 Guidance in the Doctoral Degree.

- ADMPS 3090 - DISSERTATION RESEARCH SEMINAR
- ADMPS 3099 - GUIDANCE IN THE DOCTORAL DEGREE

School Leadership, PhD

Doctor of Philosophy Degree

The University of Pittsburgh School of Education's Doctor of Philosophy (PhD) programs prepare students to be nationally competitive and highly qualified for research careers in both academic and non-academic institutions. Our full-time, research-intensive PhDs produce scholars who demonstrate excellent writing and research skills, independent scholarship and productivity, and proficiency in teaching. Under the guidance of our distinguished graduate faculty, students will have the opportunity to produce peer-reviewed publications, present at professional conferences, and collaborate on grant-writing and review, positioning them to excel in their careers as researchers and faculty. Because the PhDs are full-time, students can be fully immersed in their coursework and research in preparation for an impactful scholarly career.

Degree Requirements: This degree requires a minimum of 90 credits.

For additional degree requirement information, refer to the School of Education section on Doctoral Degree Requirements and to the Education Leadership webpage.

- ADMPS 3003 - THEORIES OF EDUCATIONAL INEQUALITY
- ADMPS 3001 - RESEARCH METHODS IN EDUCATION POLICY AND PRACTICE
- ADMPS 3314 - EDUCATIONAL REFORM
- ADMPS 3301 - SOCIAL THEORIES AND EDUCATION GLOBAL CONTEXT
- ADMPS 3097 - SUPERVISED RESEARCH
- ADMPS 2050 - RACE AND RACISM IN EDUCATION AND SOCIETY
- ADMPS 2106 - INTERNATIONAL AND GLOBAL EDUCATION
- ADMPS 2133 - GENDER AND EDUCATION
- ADMPS 2302 - STATE/NATIONAL POLITICS OF EDUCATION
- ADMPS 2305 - SOCIOLOGY OF EDUCATION
- ADMPS 2306 - HISTORY OF EDUCATION
- ADMPS 2307 - POLITICS AND HISTORY OF HIGHER EDUCATION
- ADMPS 2310 - CONTEMPORARY PHILOSOPHY OF EDUCATION
- ADMPS 2342 - EDUCATION AND CULTURE
- ADMPS 2344 - LEADERSHIP IN SERVICE LEARNING
- ADMPS 2352 - ANTHROPOLOGY OF EDUCATION
- ADMPS 2353 - APPLIED ANTHROPOLOGY OF EDUCATION

- ADMPS 2359 - GENDER IN EDUCATION
- ADMPS 2398 - ECONOMICS OF EDUCATION
- ADMPS 2399 - POLITICAL ECONOMY OF EDUCATION
- ADMPS 3015 - ETHICAL ISSUES IN HIGHER EDUCATION
- ADMPS 3127 - CURRICULUM: PERSPECTIVES AND ISSUES (K-12)
- ADMPS 3131 - STUDENT, CAMPUS, AND SOCIETY
- ADMPS 3135 - SEMINAR IN COLLEGE TEACHING
- ADMPS 3136 - COMPARATIVE HIGHER EDUCATION
- ADMPS 3201 - INTRODUCTION TO EDUCATIONAL EVALUATION
- ADMPS 3207 - SECTOR ANALYSIS AND PROJECT DESIGN
- ADMPS 3311 - WAYS OF KNOWING
- ADMPS 3347 - INTERNATIONAL ORGANIZATION DEVELOPMENT EDUCATION
- EDUC 2100 - EDUCATION AND SOCIETY
- EDUC 3011 - CULTURALLY RESPONSIVE PEDAGOGY
- EDUC 3100 - INTRODUCTION TO QUAN METHODS: DESCRIPTIVE AND INFERENTIAL STATISTICS
- EDUC 3103 - QUANTITATIVE METHODS 2
- EDUC 3104 - INTRODUCTION TO QUALITATIVE METHODS

Social and Comparative Analysis in Education, EdD

EdD Curriculum

The EdD program is a three-year 90-credit program, including 30 credits transferred from relevant graduate work. Students are required to transfer 30 credits of graduate work into the EdD program.

The EdD curriculum is delivered in several stages, through a variety methods:

- **Orientation:** The EdD cohort participates in a full-day, on campus, orientation in the spring before the summer start of the program. The day includes a welcome from the Dean of the School of Education, EdD program information, and cohort-building activities as well as an introductory session with other students in your Area of Concentration. Orientation typically takes place in April.
- **One-week intensive on ramp:** The EdD cohort will participate in a full-week, on campus, experience that includes intense work focused on understanding enduring problems of practice in education, health, and human development. This one-week experience, known as the "on-ramp", will be your first foundations course on framing, identifying, and investigating problems of practice. The on-ramp typically takes place in June.
- **Hybrid seminars:** You will experience a hybrid model of education through online course experiences and in-person, once per month (typically on Saturdays) sessions on the Pittsburgh campus. Attendance at in-person, on campus sessions is *required*.

SCHEDULE

Year 1: Summer	Year 1: Fall	Year 1: Spring	Year 1: Summer
EDUC 3002 Foundation 1: Becoming a Leader Scholar Practitioner (3 credits) <i>ON-RAMP</i>	EDUC 3003 Foundation 2: Leadership in Groups and Organizations (3 credits)	EDUC 3004 Foundation 3: Education Contexts (3 credits)	EDUC 3005 Foundation 4: Investigating Policy as a Lever for Change (3 credits)
EDUC 3001 Practitioner Inquiry 1 (3 credits)	ARCO: Course 1 (3 credits)	ARCO: Course 2 (3 credits)	Practitioner Inquiry 2 (3 credits)
Year 2: Fall		Year 2: Spring	Year 2: Summer

EDUC 3009 Supervised Practitioner Inquiry (3 credits) ARCO: Course 3 (3 credits)	EDUC 3007 Practitioner Inquiry 3 (3 credits) ARCO: Course 4 (3 credits)	EDUC 3008 Practitioner Inquiry 4 (3 credits) EDUC 3012 Laboratory of Practice (3 credits)
Year 3: Fall	Year 3: Spring	Year 3: Summer
EDUC 3099 Guidance in Scholarly Practice (6 credits)	EDUC 3099 Guidance in Scholarly Practice (6 credits)	EDUC 3099 Guidance in Scholarly Practice (6 credits)

CORE COURSES Credits / Units: 24 Total

Foundation Courses

- EDUC 3002 - FOUNDATIONS 1:
- EDUC 3003 - FOUNDATIONS 2: LEADERSHIP IN GROUPS AND ORGANIZATIONS
- EDUC 3004 - FOUNDATIONS 3: CONTEXTS OF EDUCATION
- EDUC 3005 - FOUNDATIONS 4: POLICY AS A LEVER FOR CHANGE

Practitioner Inquiry Courses

- EDUC 3001 - PRACTITIONER INQUIRY 1
- EDUC 3006 - PRACTITIONER INQUIRY 2
- EDUC 3007 - PRACTITIONER INQUIRY 3
- EDUC 3008 - PRACTITIONER INQUIRY 4: APPLYING DISCIPLINED INQUIRY

SUPERVISED PRACTITIONER INQUIRY

Students will identify, review and synthesize relevant scholarship that supports as inquiry into a problem of practice.

- EDUC 3009 - SUPERVISED PRACTITIONER INQUIRY

LABORATORY OF PRACTICE

Students will complete a Laboratory of Practice, a setting where theory and practice inform and enrich each other and facilitate transformative and generative learning that is measured by the development of scholarly expertise and implementation of practice (Carnegie Project on the Education Doctorate, 2010). Students choose from three types of experiences: job embedded, aspirant, or global.

- EDUC 3012 - SUPERVISED INTERNSHIP

GUIDANCE IN SCHOLARLY PRACTICE

Guidance in Scholarly Practice: Based on research interests, the students will be required to write a manuscript that reports on the improvement science process.

Portfolio of Scholarly Practice: The portfolio of scholarly practice will provide evidence of learning and success in foundations, inquiry, and ARCO experiences.

- EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE

Social and Comparative Analysis in Education ARCO Curriculum

Social and Comparative Analysis in Education ARCO Courses

- ADMPS 3006 - SOCIAL THEORIES & EDUCATION IN GLOBAL CONTEXT
- ADMPS 3007 - EDUCATION AND INTERNATIONAL DEVELOPMENT
- ADMPS 3008 - COMMUNITY ENGAGEMENT IN EDUCATION

- ADMPS 3014 - DOCTORAL SEMINAR IN EDUCATION AND SOCIETY

Social and Comparative Analysis in Education, PhD

Doctor of Philosophy Degree

The University of Pittsburgh School of Education's Doctor of Philosophy (PhD) programs prepare students to be nationally competitive and highly qualified for research careers in both academic and non-academic institutions. Our full-time, research-intensive PhDs produce scholars who demonstrate excellent writing and research skills, independent scholarship and productivity, and proficiency in teaching. Under the guidance of our distinguished graduate faculty, students will have the opportunity to produce peer-reviewed publications, present at professional conferences, and collaborate on grant-writing and review, positioning them to excel in their careers as researchers and faculty. Because the PhDs are full-time, students can be fully immersed in their coursework and research in preparation for an impactful scholarly career.

The Doctor of Philosophy degree in SCAE prepares creative and innovative professionals to take leadership in inquiry about critical problems and questions in education. As scholar/practitioner/citizens, Doctor of Philosophy students conduct original research and extend the boundaries of study in education, creating methods for educational practice and inquiry that promote praxis and critical agency. SCAE at Pitt spans educational systems from pre-kindergarten to higher education and includes non-formal educational settings.

Degree Requirements: The Doctor of Philosophy degree requires a minimum of 90 credits in the following areas: Department Core (6 credits), Program Core (9 credits), Specialization (24 credits), Research Methodology (18 credits), Supporting Field (9-18 credits), Electives (9 credits), Supervised Research (6 credits), and Dissertation (18 credits).

For additional degree requirement information, refer to the School of Education section on Doctoral Degree Requirements and to the Social and Comparative Analysis in Education webpage.

- ADMPS 3001 - RESEARCH METHODS IN EDUCATION POLICY AND PRACTICE
- ADMPS 3003 - THEORIES OF EDUCATIONAL INEQUALITY
- ADMPS 3097 - SUPERVISED RESEARCH
- ADMPS 3301 - SOCIAL THEORIES AND EDUCATION GLOBAL CONTEXT
- ADMPS 3314 - EDUCATIONAL REFORM
- ADMPS 3343 - COMPARATIVE EDUCATION
- ADMPS 2050 - RACE AND RACISM IN EDUCATION AND SOCIETY
- ADMPS 2106 - INTERNATIONAL AND GLOBAL EDUCATION
- ADMPS 2133 - GENDER AND EDUCATION
- ADMPS 2302 - STATE/NATIONAL POLITICS OF EDUCATION
- ADMPS 2305 - SOCIOLOGY OF EDUCATION
- ADMPS 2306 - HISTORY OF EDUCATION
- ADMPS 2307 - POLITICS AND HISTORY OF HIGHER EDUCATION
- ADMPS 2310 - CONTEMPORARY PHILOSOPHY OF EDUCATION
- ADMPS 2342 - EDUCATION AND CULTURE
- ADMPS 2344 - LEADERSHIP IN SERVICE LEARNING
- ADMPS 2352 - ANTHROPOLOGY OF EDUCATION
- ADMPS 2353 - APPLIED ANTHROPOLOGY OF EDUCATION
- ADMPS 2359 - GENDER IN EDUCATION
- ADMPS 2398 - ECONOMICS OF EDUCATION
- ADMPS 2399 - POLITICAL ECONOMY OF EDUCATION
- ADMPS 3015 - ETHICAL ISSUES IN HIGHER EDUCATION
- ADMPS 3127 - CURRICULUM: PERSPECTIVES AND ISSUES (K-12)
- ADMPS 3131 - STUDENT, CAMPUS, AND SOCIETY
- ADMPS 3135 - SEMINAR IN COLLEGE TEACHING
- ADMPS 3136 - COMPARATIVE HIGHER EDUCATION
- ADMPS 3201 - INTRODUCTION TO EDUCATIONAL EVALUATION

- ADMPS 3207 - SECTOR ANALYSIS AND PROJECT DESIGN
- ADMPS 3311 - WAYS OF KNOWING
- ADMPS 3347 - INTERNATIONAL ORGANIZATION DEVELOPMENT EDUCATION
- ADMPS 3302 - EDUCATION AND DEVELOPMENT DEBATES
- EDUC 2100 - EDUCATION AND SOCIETY
- EDUC 3011 - CULTURALLY RESPONSIVE PEDAGOGY
- EDUC 3045 - CRITICAL RACE THEORY IN EDUCATION
- EDUC 3100 - INTRODUCTION TO QUAN METHODS: DESCRIPTIVE AND INFERENTIAL STATISTICS
- EDUC 3103 - QUANTITATIVE METHODS 2
- EDUC 3104 - INTRODUCTION TO QUALITATIVE METHODS

PhD Core Curriculum

Methods Courses

Preparing students to tackle problems of practice and policy, and create innovative research agendas, requires intentionality in the methods coursework that supports students' development of independent projects, meaningful contributions to advisors' research, and critical analysis of past research. To help ensure that students develop the necessary analytic competencies, students across the areas of concentration (ARCOs) for the PhD in the School of Education are required to complete **a minimum of 5 methods courses**: Quantitative 1 (EDUC 2100) and 2 (EDUC 3100); Qualitative 1 (EDUC 3104); and 2 seminars in advanced quantitative or qualitative methods, determined by the student and their advisor.

- EDUC 3100 - INTRODUCTION TO QUAN METHODS: DESCRIPTIVE AND INFERENTIAL STATISTICS
- EDUC 3103 - QUANTITATIVE METHODS 2
- EDUC 3104 - INTRODUCTION TO QUALITATIVE METHODS

First Year Seminar

To further support students' research competencies, PhD students also participate in a school wide first year seminar (EDUC 3102) and EDUC 3105). This seminar meets every other week (1 credit in fall and 2 credits in spring, taken over and above the typical 9 credit course load) and focuses on familiarizing students with practical and ethical issues in research (e.g., necessary clearances for working in schools, resolving questions of authorship and authorship order, human subjects guidelines), and supporting students work on their pre-dissertation proposal (e.g., developing innovative research questions, conducting a literature review).

- EDUC 3102 - FIRST YEAR SEMINAR 1
- EDUC 3105 - FIRST YEAR SEMINAR 2

Additionally, PhD students enroll in writing seminar courses taken over and above the typical 9-credit course load beginning in the second year of study. These credits are above and beyond the 90 credits required for graduation.

Urban Education, EdD

Required Courses for Urban Education ARCO Curriculum

- Introduction to the History and Social Contexts of Urban Education
- Forwarding Critical Perspectives on Urban Education
- Practices in Urban Education
- Urban Schools, Law, and Social Policy

Urban Education ARCO Curriculum

Urban Education ARCO Courses

- Introduction to the History and Social Contexts of Urban Education
- Forwarding Critical Perspectives on Urban Education
- Practices in Urban Education
- Urban Schools, Law, and Social Policy

EdD Curriculum

The EdD program is a three-year 90-credit program, including 30 credits transferred from relevant graduate work. Students are required to transfer 30 credits of graduate work into the EdD program.

The EdD curriculum is delivered in several stages, through a variety methods:

- **Orientation:** The EdD cohort participates in a full-day, on campus, orientation in the spring before the summer start of the program. The day includes a welcome from the Dean of the School of Education, EdD program information, and cohort-building activities as well as an introductory session with other students in your Area of Concentration. Orientation typically takes place in April.
- **One-week intensive on ramp:** The EdD cohort will participate in a full-week, on campus, experience that includes intense work focused on understanding enduring problems of practice in education, health, and human development. This one-week experience, known as the "on-ramp", will be your first foundations course on framing, identifying, and investigating problems of practice. The on-ramp typically takes place in June.
- **Hybrid seminars:** You will experience a hybrid model of education through online course experiences and in-person, once per month (typically on Saturdays) sessions on the Pittsburgh campus. Attendance at in-person, on campus sessions is *required*.

SCHEDULE

Year 1: Summer	Year 1: Fall	Year 1: Spring	Year 1: Summer
EDUC 3002 Foundation 1: Becoming a Leader Scholar Practitioner (3 credits) <i>ON-RAMP</i>	EDUC 3003 Foundation 2: Leadership in Groups and Organizations (3 credits)	EDUC 3004 Foundation 3: Education Contexts (3 credits)	EDUC 3005 Foundation 4: Investigating Policy as a Lever for Change (3 credits)
EDUC 3001 Practitioner Inquiry 1 (3 credits)	ARCO: Course 1 (3 credits)	ARCO: Course 2 (3 credits)	Practitioner Inquiry 2 (3 credits)
Year 2: Fall	Year 2: Spring	Year 2: Summer	
EDUC 3009 Supervised Practitioner Inquiry (3 credits)	EDUC 3007 Practitioner Inquiry 3 (3 credits)	EDUC 3008 Practitioner Inquiry 4 (3 credits)	
ARCO: Course 3 (3 credits)	ARCO: Course 4 (3 credits)	EDUC 3012 Laboratory of Practice (3 credits)	
Year 3: Fall	Year 3: Spring	Year 3: Summer	
EDUC 3099 Guidance in Scholarly Practice (6 credits)	EDUC 3099 Guidance in Scholarly Practice (6 credits)	EDUC 3099 Guidance in Scholarly Practice (6 credits)	

CORE COURSES Credits / Units: 24 Total

Foundation Courses

- EDUC 3002 - FOUNDATIONS 1:
- EDUC 3003 - FOUNDATIONS 2: LEADERSHIP IN GROUPS AND ORGANIZATIONS
- EDUC 3004 - FOUNDATIONS 3: CONTEXTS OF EDUCATION
- EDUC 3005 - FOUNDATIONS 4: POLICY AS A LEVER FOR CHANGE

Practitioner Inquiry Courses

- EDUC 3001 - PRACTITIONER INQUIRY 1
- EDUC 3006 - PRACTITIONER INQUIRY 2
- EDUC 3007 - PRACTITIONER INQUIRY 3
- EDUC 3008 - PRACTITIONER INQUIRY 4: APPLYING DISCIPLINED INQUIRY

SUPERVISED PRACTITIONER INQUIRY

Students will identify, review and synthesize relevant scholarship that supports as inquiry into a problem of practice.

- EDUC 3009 - SUPERVISED PRACTITIONER INQUIRY

LABORATORY OF PRACTICE

Students will complete a Laboratory of Practice, a setting where theory and practice inform and enrich each other and facilitate transformative and generative learning that is measured by the development of scholarly expertise and implementation of practice (Carnegie Project on the Education Doctorate, 2010). Students choose from three types of experiences: job embedded, aspirant, or global.

- EDUC 3012 - SUPERVISED INTERNSHIP

GUIDANCE IN SCHOLARLY PRACTICE

Guidance in Scholarly Practice: Based on research interests, the students will be required to write a manuscript that reports on the improvement science process.

Portfolio of Scholarly Practice: The portfolio of scholarly practice will provide evidence of learning and success in foundations, inquiry, and ARCO experiences.

- EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE

Master's

Higher Education Management, MEd

Master of Education Degree

The Master of Education (MEd) in Higher Education Management prepares scholar practitioners for positions working within institutions of higher education. Designed for domestic and international students seeking positions as early career professionals and those already working in the field, students pursue one of two tracks, either management or student services, depending on their professional focus.

- ADMPS 2050 - RACE AND RACISM IN EDUCATION AND SOCIETY
- ADMPS 2052 - M. ED INTERNSHIP IN HIGHER EDUCATION
- ADMPS 2053 - MANAGEMENT & ORGANIZATION EFFECTIVENESS
- ADMPS 2054 - ORGANIZATION DEVELOPMENT & LEADING CHANGE
- ADMPS 2055 - STUDENT DEVELOPMENT THEORY
- ADMPS 2056 - STUDENT SERVICES PROGRAM ASSESSMENT
- ADMPS 2089 - SPECIAL TOPICS
- ADMPS 2090 - RESEARCH SEMINAR
- ADMPS 2120 - CAPSTONE SEMINAR IN STUDENT SERVICES
- ADMPS 2128 - LEADERSHIP

- ADMPS 2181 - DECONSTRUCTING THE UNIVERSITY
- ADMPS 2131 - HIGHER EDUCATION ADMINISTRATION
- ADMPS 2307 - POLITICS AND HISTORY OF HIGHER EDUCATION
- ADMPS 3015 - ETHICAL ISSUES IN HIGHER EDUCATION
- ADMPS 3131 - STUDENT, CAMPUS, AND SOCIETY
- ADMPS 3136 - COMPARATIVE HIGHER EDUCATION
- ADMPS 3137 - CULTURE, INNOVATION & ORGANIZATION PERFORMANCE
- ADMPS 3139 - LEGAL ASPECTS OF HIGHER EDUCATION
- EDUC 2201 - INTRODUCTION TO RESEARCH METHODOLOGY

School Leadership, MEd

Curriculum

Social and Comparative Analysis in Education, MA

SCAE Specialization Courses in Social Context of Education

Required course:

- EDUC 2100 - EDUCATION AND SOCIETY
Select at least 9 credits from these foundational courses:
- ADMPS 2302 - STATE/NATIONAL POLITICS OF EDUCATION
- ADMPS 2305 - SOCIOLOGY OF EDUCATION
- ADMPS 2306 - HISTORY OF EDUCATION
- ADMPS 2310 - CONTEMPORARY PHILOSOPHY OF EDUCATION
- ADMPS 2342 - EDUCATION AND CULTURE
- ADMPS 2352 - ANTHROPOLOGY OF EDUCATION
- ADMPS 2398 - ECONOMICS OF EDUCATION
- ADMPS 3127 - CURRICULUM: PERSPECTIVES AND ISSUES (K-12)
- ADMPS 3343 - COMPARATIVE EDUCATION
Select at least 3 additional credits from courses for the Social Context of Education (see list here).

SCAE Specialization Courses in Comparative and International Education Policy

Required courses:

- EDUC 2100 - EDUCATION AND SOCIETY
- ADMPS 3343 - COMPARATIVE EDUCATION
- ADMPS 3347 - INTERNATIONAL ORGANIZATION DEVELOPMENT EDUCATION
Select at least 3 credits from these foundational courses:
- ADMPS 2305 - SOCIOLOGY OF EDUCATION
- ADMPS 2306 - HISTORY OF EDUCATION
- ADMPS 2310 - CONTEMPORARY PHILOSOPHY OF EDUCATION
- ADMPS 2352 - ANTHROPOLOGY OF EDUCATION
- ADMPS 2398 - ECONOMICS OF EDUCATION
Select at least 3 additional credits from courses for Comparative and International Education Policy (see list here).

Supporting Field

Select at least 6 credits of coursework inside and outside the School of Education that deepen disciplinary knowledge and skill.

Psychological Perspectives on Education

Select 3 credits for developing competency in psychological perspectives on education.

- EDUC 2000 - PSYCHOLOGY OF LEARNING AND DEVELOPMENT FOR EDUCATION
- PSYED 2127 - HUMAN LEARNING
- PSYED 2503 - DEVELOPMENT: CONCEPTION THROUGH EARLY CHILDHOOD
- PSYED 2504 - DVLP: MIDDLE CHLHD/ADOLESCENCE

Research Methods

Select at least 6 credits; see list here for recommended courses.

- PSYED 2001 - INTRODUCTION TO RESEARCH METHODOLOGY

Master's Thesis

A 6-credit master's thesis is completed under the direction of the faculty advisor.

- ADMPS 2090 - RESEARCH SEMINAR
- ADMPS 2099 - GUIDANCE IN THE MASTER'S DEGREE

Social and Comparative Analysis in Education, MEd

Student can chose between two specialization tracks; Comparative and International Education Policy or Social Context of Education.

SCAE Specialization Courses in Comparative and International Education Policy

Required courses:

- EDUC 2100 - EDUCATION AND SOCIETY
- ADMPS 3343 - COMPARATIVE EDUCATION
- ADMPS 3347 - INTERNATIONAL ORGANIZATION DEVELOPMENT EDUCATION

Select at least 3 credits from these foundational courses:

- ADMPS 2305 - SOCIOLOGY OF EDUCATION
- ADMPS 2306 - HISTORY OF EDUCATION
- ADMPS 2310 - CONTEMPORARY PHILOSOPHY OF EDUCATION
- ADMPS 2352 - ANTHROPOLOGY OF EDUCATION
- ADMPS 2398 - ECONOMICS OF EDUCATION

Select at least 12 additional credits from courses for Comparative and International Education Policy (see list here).

SCAE Specialization Courses in Social Context of Education

Required course:

- EDUC 2100 - EDUCATION AND SOCIETY

Select at least 9 credits from these foundational courses:

- ADMPS 2302 - STATE/NATIONAL POLITICS OF EDUCATION
- ADMPS 2305 - SOCIOLOGY OF EDUCATION
- ADMPS 2306 - HISTORY OF EDUCATION
- ADMPS 2310 - CONTEMPORARY PHILOSOPHY OF EDUCATION

- ADMPS 2342 - EDUCATION AND CULTURE
 - ADMPS 2352 - ANTHROPOLOGY OF EDUCATION
 - ADMPS 2398 - ECONOMICS OF EDUCATION
 - ADMPS 3127 - CURRICULUM: PERSPECTIVES AND ISSUES (K-12)
 - ADMPS 3343 - COMPARATIVE EDUCATION
- Select at least 12 additional credits from above or other courses for the Social Context of Education (see list here).

Psychological Perspectives on Education

Select 3 credits from these courses to develop competency in psychological perspectives on education:

- EDUC 2000 - PSYCHOLOGY OF LEARNING AND DEVELOPMENT FOR EDUCATION
- PSYED 2127 - HUMAN LEARNING
- PSYED 2503 - DEVELOPMENT: CONCEPTION THROUGH EARLY CHILDHOOD
- PSYED 2504 - DVLP: MIDDLE CHLHD/ADOLESCENCE

Research Methods

Select at least 6 credits; see additional courses here.

Required:

- PSYED 2001 - INTRODUCTION TO RESEARCH METHODOLOGY

Master's Research Paper

A 3-credit master's research paper is completed under the direction of the faculty advisor.

- ADMPS 2090 - RESEARCH SEMINAR

Department of Health and Physical Activity

The Department of Health and Physical Activity (HPA) focuses its academic, research, and service efforts on promoting physically active lifestyles and other health-related behaviors to prevent disease and enhance quality of life across the lifespan. HPA's expertise has attracted research funding in the areas of physical activity behavior and epidemiology, obesity prevention and treatment, cardiovascular disease, diabetes, fitness training, and health promotion.

The faculty expertise combined with collaboration with other entities with the University of Pittsburgh such as the School of Nursing, the School of Medicine, the Graduate School of Public Health, School of Health and Rehabilitative Sciences, and the University of Pittsburgh Medical Center (UPMC) Hospital network provides for a state-of-the-art and innovative academic, research and clinical experience.

Contact Information

Graduate Coordinator
 Department of Health and Physical Activity
 140 Trees Hall
 412-648-8320
 Fax: 412-648-7092
 E-mail: hpa@pitt.edu
www.education.pitt.edu/hpa

Degrees Offered

Doctoral

- Exercise Physiology, PhD

The Department of Health and Physical Activity offers a Doctorate of Philosophy (PhD) in Exercise Physiology. This full-time degree program prepares students for positions at research and doctoral-granting universities and research medical centers. The student works closely with their faculty mentor to develop the appropriate plan of study and research experiences. Current research expertise of the faculty includes the following:

Obesity and Body Weight Regulation
Prevention and Treatment of Chronic Disease
Epidemiology of Physical Activity and Chronic Disease
Physical Activity Programming for Health and Fitness
Physical Activity for Children and Adolescents
Technology-Based Interventions for the Prevention and Treatment of Chronic Disease
Perceptual Responses to Physical Activity and Exercise

- Health and Physical Activity, EdD

The Department of Health and Physical Activity is addressing a growing need for professionals with training in health, fitness, physical activity programming, clinical application, and research. The EdD ARCO in health and physical activity provides students with an evidence-based education that results in expertise in their chosen field of study. Graduates of this program are prepared to design, implement, and lead health, physical activity, and fitness programs as well as corporate, commercial, hospital, community, and university wellness programs.

Master's

- Health and Fitness- Clinical/Practitioner Focus, MS
- Health and Fitness- Research Focus, MS

These tracks within the Master of Science degree focuses on training students to address the changing landscape related to promotion and study of optimal health and fitness through physical activity. This track will prepare students for careers focusing on healthy lifestyle behaviors and to pursue careers in the health and fitness industry such as directors of corporate, commercial, hospital, community, and university wellness programs.

- Health, Physical Activity, and Chronic Disease - Clinical/Practitioner Focus, MS
- Health, Physical Activity, and Chronic Disease- Research Focus, MS

These tracks within the Master of Science degree focuses on training students to address the changing landscape related to chronic disease prevention and treatment, with an emphasis on the promotion and study of physical activity and health. This track will prepare students for careers focusing on prevention and treatment of chronic disease through modification of healthy lifestyle behaviors, and to pursue careers as part of a team of professionals to director prevention and treatment initiatives within hospital, community, commercial, and university settings.

Bachelor's

- BS specializing in Exercise Science

Minors

- Applied Fitness
- Aquatics
- Dance
- Exercise Science

Doctoral

Exercise Physiology, PhD

Exercise Physiology Requirements

- The Plan of Study is to be submitted for Graduate Faculty review in the second semester of doctoral study.
- A minimum of 90 credits is required in the Doctoral Program
- A maximum of 30 credits from the master's degree, plus 9 post master's doctoral level courses may be applied to the doctoral plan of studies.
- A minimum of 15 credits must be at the 3000 level for courses taken at the University of Pittsburgh. Note that only 3 hours can be in a Directed Study or Clinical Internship, and only 3 hours can be in a College Teaching Practicum (enrollment in a College Teaching Practicum Requires Prior Department Approval).

Major Field Health and Physical Activity, Exercise Physiology (30-36 Credits)

Collateral Area (9-18 Credits Minimum)

Courses in academic discipline studies supportive of the candidate's major field of specialization. These credits must be in coursework outside the School of Education.

Research Methodology (15 Credits Minimum)

Minimum requirement is for the student to demonstrate coursework through ANOVA and ANCOVA, and HPA 3400 Advanced Research Methodology

Research Practicum (6 Credits Minimum)

Electives (Credits Variable)

Dissertation (18 Credits Minimum)

PhD Core Curriculum

Methods Courses

Preparing students to tackle problems of practice and policy, and create innovative research agendas, requires intentionality in the methods coursework that supports students' development of independent projects, meaningful contributions to advisors' research, and critical analysis of past research. To help ensure that students develop the necessary analytic competencies, students across the areas of concentration (ARCOs) for the PhD in the School of Education are required to complete **a minimum of 5 methods courses:** Quantitative 1 (EDUC 2100) and 2 (EDUC 3100); Qualitative 1 (EDUC 3104); and 2 seminars in advanced quantitative or qualitative methods, determined by the student and their advisor.

- EDUC 3100 - INTRODUCTION TO QUAN METHODS: DESCRIPTIVE AND INFERENTIAL STATISTICS
- EDUC 3103 - QUANTITATIVE METHODS 2
- EDUC 3104 - INTRODUCTION TO QUALITATIVE METHODS

First Year Seminar

To further support students' research competencies, PhD students also participate in a school wide first year seminar (EDUC 3102) and EDUC 3105). This seminar meets every other week (1 credit in fall and 2 credits in spring, taken over and above the typical 9 credit course load) and focuses on familiarizing students with practical and ethical issues in research (e.g., necessary clearances for working in schools, resolving questions of authorship and authorship order, human subjects guidelines), and supporting students work on their pre-dissertation proposal (e.g., developing innovative research questions, conducting a literature review).

- EDUC 3102 - FIRST YEAR SEMINAR 1
- EDUC 3105 - FIRST YEAR SEMINAR 2

Additionally, PhD students enroll in writing seminar courses taken over and above the typical 9-credit course load beginning in the second year of study. These credits are above and beyond the 90 credits required for graduation.

Health and Physical Activity, EdD

EdD Curriculum

The EdD program is a three-year 90-credit program, including 30 credits transferred from relevant graduate work. Students are required to transfer 30 credits of graduate work into the EdD program.

The EdD curriculum is delivered in several stages, through a variety methods:

- **Orientation:** The EdD cohort participates in a full-day, on campus, orientation in the spring before the summer start of the program. The day includes a welcome from the Dean of the School of Education, EdD program information, and cohort-building activities as well as an introductory session with other students in your Area of Concentration. Orientation typically takes place in April.
- **One-week intensive on ramp:** The EdD cohort will participate in a full-week, on campus, experience that includes intense work focused on understanding enduring problems of practice in education, health, and human development. This one-week experience, known as the "on-ramp", will be your first foundations course on framing, identifying, and investigating problems of practice. The on-ramp typically takes place in June.
- **Hybrid seminars:** You will experience a hybrid model of education through online course experiences and in-person, once per month (typically on Saturdays) sessions on the Pittsburgh campus. Attendance at in-person, on campus sessions is *required*.

SCHEDULE

Year 1: Summer		Year 1: Fall		Year 1: Spring		Year 1: Summer		
EDUC 3002 Foundation 1: Becoming a Leader Scholar Practitioner (3 credits) <i>ON-RAMP</i>		EDUC 3003 Foundation 2: Leadership in Groups and Organizations (3 credits)		EDUC 3004 Foundation 3: Education Contexts (3 credits)		EDUC 3005 Foundation 4: Investigating Policy as a Lever for Change (3 credits)		
EDUC 3001 Practitioner Inquiry 1 (3 credits)		ARCO: Course 1 (3 credits)		ARCO: Course 2 (3 credits)		Practitioner Inquiry 2 (3 credits)		
Year 2: Fall			Year 2: Spring			Year 2: Summer		
EDUC 3009 Supervised Practitioner Inquiry (3 credits)			EDUC 3007 Practitioner Inquiry 3 (3 credits)			EDUC 3008 Practitioner Inquiry 4 (3 credits)		
ARCO: Course 3 (3 credits)			ARCO: Course 4 (3 credits)			EDUC 3012 Laboratory of Practice (3 credits)		
Year 3: Fall			Year 3: Spring			Year 3: Summer		

EDUC 3099 Guidance in Scholarly Practice (6 credits)	EDUC 3099 Guidance in Scholarly Practice (6 credits)	EDUC 3099 Guidance in Scholarly Practice (6 credits)
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CORE COURSES Credits / Units: 24 Total

Foundation Courses

- EDUC 3002 - FOUNDATIONS 1:
- EDUC 3003 - FOUNDATIONS 2: LEADERSHIP IN GROUPS AND ORGANIZATIONS
- EDUC 3004 - FOUNDATIONS 3: CONTEXTS OF EDUCATION
- EDUC 3005 - FOUNDATIONS 4: POLICY AS A LEVER FOR CHANGE

Practitioner Inquiry Courses

- EDUC 3001 - PRACTITIONER INQUIRY 1
- EDUC 3006 - PRACTITIONER INQUIRY 2
- EDUC 3007 - PRACTITIONER INQUIRY 3
- EDUC 3008 - PRACTITIONER INQUIRY 4: APPLYING DISCIPLINED INQUIRY

SUPERVISED PRACTITIONER INQUIRY

Students will identify, review and synthesize relevant scholarship that supports as inquiry into a problem of practice.

- EDUC 3009 - SUPERVISED PRACTITIONER INQUIRY

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- EDUC 3012 - SUPERVISED INTERNSHIP

GUIDANCE IN SCHOLARLY PRACTICE

Guidance in Scholarly Practice: Based on research interests, the students will be required to write a manuscript that reports on the improvement science process.

Portfolio of Scholarly Practice: The portfolio of scholarly practice will provide evidence of learning and success in foundations, inquiry, and ARCO experiences.

- EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE

Health and Physical Activity ARCO Curriculum

Health and Physical Activity ARCO Courses

- HPA 3114 - EVIDENCE BASED LIFESTYLE PROGRAM DESIGN AND EVALUATION
- HPA 3115 - HEALTH PROMOTION POLICY AND PROGRAM IMPLEMENTATION
- HPA 3116 - RESOURCE AND FUNDING ACQUISITION FOR HEALTH PROMOTION PROGRAMMING
- HPA 3117 - HEALTH PROMOTION PROGRAM TRANSLATION AND SUSTAINABILITY

Master's

Health and Fitness- Clinical/Practitioner Focus, MS

In the Fall of 2019, the Health and Fitness - Clinical/Practitioner Focus was terminated. Students who were enrolled prior to the Fall 2019 term have the option to stay in the Health and Fitness - Clinical/Practitioner Focus or transfer to the Health and Physical Activity - Clinical Exercise Physiology or Health and Physical Activity - Healthy and Physical Activity Programming and Promotion. Students who choose to complete the program under the Health and Fitness - Clinical/Practitioner Focus name must do so by Summer 2019 term.

Plan of Study

Students are required to take the following courses:

- HPA 2267 - PHYSIOLOGICAL BASIS-FITNESS AND SPORT CONDITIONING
- HPA 2268 - PHYSICAL ACTIVITY AND HEALTH
- HPA 2269 - OBESITY PREVENTION AND TREATMENT
- HPA 2320 - PSYCHOSOCIAL ASPECTS OF HEALTH
- HPA 2322 - EVIDENCE BASED HEALTH PROGRAM PLANNING
- HPA 2371 - ADVANCED EXERCISE PHYSIOLOGY
- HPA 2374 - EXERCISE TESTING, PRESCRIPTION, AND SUPERVISION
- HPA 2375 - RESEARCH AND EXPERIMENTAL DESIGN IN EXERCISE PHYSIOLOGY
- HPA 2390 - NUTRITION IN SPORT AND EXERCISE
- HPA 2990 - RESEARCH SEMINAR IN HPA
- HPA 2996 - CLINICAL INTERNSHIP
- HPA 3374 - ADVANCED LABORATORY TECHNIQUES

Additional Prerequisites

Additional prerequisite credits may be required by the department based on the undergraduate training of the applicant.

Health and Fitness- Research Focus, MS

In the Fall of 2019, the Health and Fitness- Research Focus was terminated. Students who were enrolled prior to the Fall 2019 term have the option to stay in the Health and Fitness- Research Focus or transfer to the Health and Physical Activity - Clinical Exercise Physiology or Health and Physical Activity - Healthy and Physical Activity Programming and Promotion. Students who choose to complete the program under the Health and Fitness- Research Focus name must do so by Summer 2019 term.

Plan of Study

Students are required to take the following courses.

- HPA 2267 - PHYSIOLOGICAL BASIS-FITNESS AND SPORT CONDITIONING
- HPA 2268 - PHYSICAL ACTIVITY AND HEALTH
- HPA 2269 - OBESITY PREVENTION AND TREATMENT
- HPA 2371 - ADVANCED EXERCISE PHYSIOLOGY
- HPA 2374 - EXERCISE TESTING, PRESCRIPTION, AND SUPERVISION
- HPA 2320 - PSYCHOSOCIAL ASPECTS OF HEALTH
- HPA 2375 - RESEARCH AND EXPERIMENTAL DESIGN IN EXERCISE PHYSIOLOGY
- HPA 2390 - NUTRITION IN SPORT AND EXERCISE
- HPA 2410 - STATISTICS IN HPA RESEARCH
- HPA 2990 - RESEARCH SEMINAR IN HPA
- HPA 2998 - DIRECTED STUDY
- HPA 3374 - ADVANCED LABORATORY TECHNIQUES

Additional Prerequisites

Additional prerequisite credits may be required by the department based on the undergraduate training of the applicant.

Health and Physical Activity - Clinical Exercise Physiology, MS

Admission Requirements

The admission requirements will be unchanged compared to what is currently required for the Master of Science degree programs in the Department of Health and Physical Activity. These requirements include the following:

1. Applicants who possess an undergraduate degree in Exercise Science or a closely related field, or who can demonstrate foundational knowledge in key areas (human anatomy, human physiology, exercise physiology, exercise testing and prescription) are admitted to the Master of Science degree program provided that they meet all other School of Education admission requirements.
2. Applicants who do not possess an undergraduate degree in Exercise Science or a closely related field, or who cannot demonstrate foundational knowledge in key areas are provisionally admitted to the Master of Science Program provided that they complete coursework in the following areas prior to admission into the Master of Science Program in the Department of Health and Physical Activity (this was previously approved by the University in Spring 2018):
 1. Human Anatomy
 2. Human Physiology
 3. Exercise Physiology
 4. Exercise Testing and Prescription

Undergraduate Degree Requirement or Foundational Knowledge Requirement for Admission to the Master of Science Program in the Department of Health and Physical Activity	Provisional Admission Requirement*	
• Undergraduate degree in Exercise Science or a related field of study. OR • Foundational knowledge in Anatomy, Human Physiology, Exercise Physiology, Exercise Testing and Prescription	*Completion of courses in the following areas:	Options for Completing this Admission Requirement
	• Human Anatomy	Complete HPA 1011/12 (Applied Human Anatomy) or complete a comparable course.

	<ul style="list-style-type: none"> Human Physiology 	Complete HPA 1033 (Human Physiology) or complete a comparable course.
	<ul style="list-style-type: none"> Exercise Physiology 	Complete HPA 1042 (Physiology of Exercise) or complete a comparable course.
* Indicates that when the application is reviewed, only those courses where a gap in the core knowledge is identified will be required for admission.	<ul style="list-style-type: none"> Exercise Testing and Prescription 	Complete HPA 1224 (Fitness Assessment and Exercise Prescription) or complete a comparable course.

Academic Requirements

- A minimum of 30 credits for the non-thesis degree and 36 credits for the thesis degree option are required for the Clinical Exercise Physiology degree.
- Students must complete a comprehensive examination based on core competencies prior to graduation. Student will be eligible to sit for the comprehensive examination after completion of a minimum of 24 credits. Students will be provided a study guide to assist in their preparation for the comprehensive examination.
- Students must complete courses in the appropriate order as outlined on the Plan of Study to be given permission to register for the appropriate courses in this degree.
- All students must complete a minimum of 30 credits in the non-thesis option and a minimum of 36 credits in the thesis option.

Course Requirement	Non-Thesis Option	Thesis Option
HPA 2268 - PHYSICAL ACTIVITY AND HEALTH	X (3 credits)	X (3 credits)
HPA 2381 - CLINICAL EXERCISE AND PHYSICAL ACTIVITY PHYSIOLOGY 1	X (3 credits)	X (3 credits)
HPA 2380 - BEHAVIOR CHANGE AND HEALTH COACHING	X (3 credits)	X (3 credits)
HPA 2320 - PSYCHOSOCIAL ASPECTS OF HEALTH	X (3 credits)	X (3 credits)
HPA 2382 - CLINICAL EXERCISE AND PHYSICAL ACTIVITY PHYSIOLOGY 2	X (3 credits)	X (3 credits)
HPA 2383 - ADVANCED CLINICAL HEALTH AND PHYSICAL ACTIVITY ASSESSMENT	X (3 credits)	X (3 credits)
HPA 2384 - MOVEMENT SCIENCE IN HEALTH AND PHYSICAL ACTIVITY	X (3 credits)	X (3 credits)
Selects one of the following 2 options:		
Option 1: Research Design - HPA 2375 or PSYED 2030 + Statistics - HPA 2410 or PSYED 2018 <i>(Option 1 is required of students in the Thesis Option)</i> Option 2: 2 Electives (within or outside HPA)	X (6 credits)	X (6 credits)
Selects one of the following 2 options:		
Option 1: (Non-Thesis option): HPA 2385 - PRACTICUM IN HEALTH AND PHYSICAL ACTIVITY Option 2: (Thesis option): Elective (within or outside of HPA)	X (3 credits)	X (3 credits)

HPA 2999 - MASTER'S THESIS RESEARCH		X (6 credits)
TOTAL CREDITS	30	36

Prerequisites

Human Anatomy

Curriculum for Clinical Exercise Physiology

Curriculum for Clinical Exercise Physiology

Health and Physical Activity - Health and Wellness Management, MS

Admission Requirements

Admission Requirements for the Department of Health and Physical Activity and School of Education. The admission requirements will be consistent with what is currently required for other Master of Science degree programs in the Department of Health and Physical Activity. These requirements include the following:

1. Applicants who possess an undergraduate degree in Exercise Science or a closely related field, or who can demonstrate foundational knowledge in key areas (human anatomy, human physiology, exercise physiology, exercise testing and prescription) are admitted to the Master of Science degree program provided that they meet all other School of Education admission requirements.
2. Applicants who do not possess an undergraduate degree in Exercise Science or a closely related field, or who cannot demonstrate foundational knowledge in key areas are provisionally admitted to the Master of Science Program provided that they complete coursework in the following areas prior to admission into the Master of Science Program in the Department of Health and Physical Activity:
 1. Human Anatomy
 2. Human Physiology
 3. Exercise Physiology
 4. Exercise Testing and Prescription (not required for the "Health and Wellness Marketing" degree program)

Undergraduate Degree Requirement or Foundational Knowledge Requirement for Admission to the Master of Science Program in the Department of Health and Physical Activity	Provisional Admission Requirement*	
<ul style="list-style-type: none"> Undergraduate degree in Exercise Science or a related field of study. OR <ul style="list-style-type: none"> Foundational knowledge in Anatomy, Human Physiology, Exercise Physiology, Exercise Testing and Prescription 	*Completion of courses in the following areas:	Options for Completing this Admission Requirement
	<ul style="list-style-type: none"> Human Anatomy 	Complete HPA 1011/12 (Applied Human Anatomy) or complete a comparable course.
	<ul style="list-style-type: none"> Human Physiology 	Complete HPA 1033 (Human Physiology) or complete a comparable course.

* Indicates that when the application is reviewed, only those courses where a gap in the core knowledge is identified will be required for admission.	<ul style="list-style-type: none"> Exercise Physiology 	Complete HPA 1042 (Physiology of Exercise) or complete a comparable course.
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The Katz Graduate School of Business has the following admission requirements:

1. Four-Year Undergraduate Degree or Similar. Bachelor's degree from an accredited U.S. university, as determined by the Commission on Recognition of Postsecondary Accreditation, or the non-U.S. equivalent.
2. GMAT or GRE Test Results. Official and satisfactory GMAT or GRE scores.
3. TOEFL or IELTS Test Results (international applicants). TOEFL (100 or higher) or IELTS (7 or higher).

NOTE: Students must meet the admission requirements for both the Department of Health and Physical Activity (School of Education) and the Katz Graduate School of Business to be admitted into this academic program.

Academic Requirements

- A minimum of 30 credits for this non-thesis degree.
- Students must complete a comprehensive examination based on core competencies prior to graduation. Student will be eligible to sit for the comprehensive examination after completion of a minimum of 24 credits. Students will be provided a study guide to assist in their preparation for the comprehensive examination.
- Students must complete courses in the appropriate order as outlined on the Plan of Study to be given permission to register for the appropriate courses in this degree.

All students must complete a minimum of 30 credits in this non-thesis degree. The courses for this degree are as follows:

- HPA 2380 - BEHAVIOR CHANGE AND HEALTH COACHING
- HPA 2386 - HEALTH AND PHYSICAL ACTIVITY PROMOTION AND MARKETING
- HPA 2387 - MEDIA AND TECHNOLOGY IN HEALTH AND PHYSICAL ACTIVITY

Select one of the following HPA courses: (3 credits)

- HPA 2268 - PHYSICAL ACTIVITY AND HEALTH
- HPA 2320 - PSYCHOSOCIAL ASPECTS OF HEALTH
- HPA 2381 - CLINICAL EXERCISE AND PHYSICAL ACTIVITY PHYSIOLOGY 1
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BMKT 2409 - MARKETING MANAGEMENT
- BSPP 2409 - STRATEGIC MANAGEMENT
- BMIS 2409 - INFORMATION SYSTEMS
- BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM

Total Credits: 30

Health and Physical Activity Programming and Promotion, MS

Admission Requirements

The admission requirements will be unchanged compared to what is currently required for the Master of Science degree programs in the Department of Health and Physical Activity. These requirements include the following:

1. Applicants who possess an undergraduate degree in Exercise Science or a closely related field, or who can demonstrate foundational knowledge in key areas (human anatomy, human physiology, exercise physiology, exercise testing and prescription) are admitted to the Master of Science degree program provided that they meet all other School of Education admission requirements.
2. Applicants who do not possess an undergraduate degree in Exercise Science or a closely related field, or who cannot demonstrate foundational knowledge in key areas are provisionally admitted to the Master of Science Program provided that they complete coursework in the following areas prior to admission into the Master of Science Program in the Department of Health and Physical Activity (this was previously approved by the University in Spring 2018):
 1. Human Anatomy
 2. Human Physiology
 3. Exercise Physiology
 4. Exercise Testing and Prescription

Undergraduate Degree Requirement or Foundational Knowledge Requirement for Admission to the Master of Science Program in the Department of Health and Physical Activity	Provisional Admission Requirement*	
OR <ul style="list-style-type: none"> Undergraduate degree in Exercise Science or a related field of study. Foundational knowledge in Anatomy, Human Physiology, Exercise Physiology, Exercise Testing and Prescription 	*Completion of courses in the following areas:	Options for Completing this Admission Requirement
	<ul style="list-style-type: none"> Human Anatomy 	Complete HPA 1011/12 (Applied Human Anatomy) or complete a comparable course.
	<ul style="list-style-type: none"> Human Physiology 	Complete HPA 1033 (Human Physiology) or complete a comparable course.
	<ul style="list-style-type: none"> Exercise Physiology 	Complete HPA 1042 (Physiology of Exercise) or complete a comparable course.
<i>* Indicates that when the application is reviewed, only those courses where a gap in the core knowledge is identified will be required for admission.</i>	<ul style="list-style-type: none"> Exercise Testing and Prescription 	Complete HPA 1224 (Fitness Assessment and Exercise Prescription) or complete a comparable course.

Academic Requirements

- A minimum of 30 credits for the non-thesis degree and 36 credits for the thesis degree option are required for the Health and Physical Activity Programming and Promotion degree.
- Students must complete a comprehensive examination based on core competencies prior to graduation. Student will be eligible to sit for the comprehensive examination after completion of a minimum of 24 credits. Students will be provided a study guide to assist in their preparation for the comprehensive examination.
- Students must complete courses in the appropriate order as outlined on the Plan of Study to be given permission to register for the appropriate courses in this degree.
- All students must complete a minimum of 30 credits in the non-thesis option and a minimum of 36 credits in the thesis option.

Course Requirement	Non-Thesis Option	Thesis Option
HPA 2268 - PHYSICAL ACTIVITY AND HEALTH	X (3 credits)	X (3 credits)

HPA 2381 - CLINICAL EXERCISE AND PHYSICAL ACTIVITY PHYSIOLOGY I	X (3 credits)	X (3 credits)
HPA 2380 - BEHAVIOR CHANGE AND HEALTH COACHING	X (3 credits)	X (3 credits)
HPA 2320 - PSYCHOSOCIAL ASPECTS OF HEALTH	X (3 credits)	X (3 credits)
HPA 2387 - MEDIA AND TECHNOLOGY IN HEALTH AND PHYSICAL ACTIVITY	X (3 credits)	X (3 credits)
HPA 2322 - EVIDENCE BASED HEALTH PROGRAM PLANNING	X (3 credits)	X (3 credits)
HPA 2386 - HEALTH AND PHYSICAL ACTIVITY PROMOTION AND MARKETING	X (3 credits)	X (3 credits)
Selects one of the following 2 options:		
Option 1: Research Design - HPA 2375 or PSYED 2030 + Statistics - HPA 2410 or PSYED 2018 <i>(Option 1 is required of students in the Thesis Option)</i> Option 2: 2 Electives (within or outside HPA)	X (6 credits)	X (6 credits)
Selects one of the following 2 options:		
Option 1: (Non-Thesis option): HPA 2385 - PRACTICUM IN HEALTH AND PHYSICAL ACTIVITY Option 2: (Thesis option): Elective (within or outside of HPA)	X (3 credits)	X (3 credits)
HPA 2999 - MASTER'S THESIS RESEARCH		X (6 credits)
TOTAL CREDITS	30	36

Health, Physical Activity, and Chronic Disease - Clinical/Practitioner Focus, MS

In the Fall of 2019, the Health, Physical Activity, and Chronic Disease - Clinical/Practitioner Focus was terminated. Students who were enrolled prior to the Fall 2019 term have the option to stay in the Health, Physical Activity, and Chronic Disease - Clinical/Practitioner Focus or transfer to the Health and Physical Activity - Clinical Exercise Physiology or Health and Physical Activity - Healthy and Physical Activity Programming and Promotion. Students who choose to complete the program under the Health, Physical Activity, and Chronic Disease - Clinical/Practitioner Focus name must do so by Summer 2019 term.

Plan of Study

- HPA 2268 - PHYSICAL ACTIVITY AND HEALTH
- HPA 2269 - OBESITY PREVENTION AND TREATMENT

- HPA 2320 - PSYCHOSOCIAL ASPECTS OF HEALTH
- HPA 2322 - EVIDENCE BASED HEALTH PROGRAM PLANNING
- HPA 2371 - ADVANCED EXERCISE PHYSIOLOGY
- HPA 2374 - EXERCISE TESTING, PRESCRIPTION, AND SUPERVISION
- HPA 2375 - RESEARCH AND EXPERIMENTAL DESIGN IN EXERCISE PHYSIOLOGY
- HPA 2390 - NUTRITION IN SPORT AND EXERCISE
- HPA 2990 - RESEARCH SEMINAR IN HPA
- HPA 2996 - CLINICAL INTERNSHIP
- HPA 3374 - ADVANCED LABORATORY TECHNIQUES
- HPA 3377 - CHRONIC DISEASE CASE STUDIES

ELECTIVE

Additional prerequisite credits may be required by the department based on the undergraduate training of the applicant.

Health, Physical Activity, and Chronic Disease- Research Focus, MS

In the Fall of 2019, the Health, Physical Activity, and Chronic Disease - Research Focus was terminated. Students who were enrolled prior to the Fall 2019 term have the option to stay in the Health, Physical Activity, and Chronic Disease - Research Focus or transfer to the Health and Physical Activity - Clinical Exercise Physiology or Health and Physical Activity - Healthy and Physical Activity Programming and Promotion. Students who choose to complete the program under the Health, Physical Activity, and Chronic Disease - Research Focus name must do so by Summer 2019 term.

Plan of Study

- HPA 2268 - PHYSICAL ACTIVITY AND HEALTH
- HPA 2269 - OBESITY PREVENTION AND TREATMENT
- HPA 2371 - ADVANCED EXERCISE PHYSIOLOGY
- HPA 2374 - EXERCISE TESTING, PRESCRIPTION, AND SUPERVISION
- HPA 2320 - PSYCHOSOCIAL ASPECTS OF HEALTH
- HPA 2375 - RESEARCH AND EXPERIMENTAL DESIGN IN EXERCISE PHYSIOLOGY
- HPA 2390 - NUTRITION IN SPORT AND EXERCISE
- HPA 2410 - STATISTICS IN HPA RESEARCH
- HPA 2990 - RESEARCH SEMINAR IN HPA
- HPA 2998 - DIRECTED STUDY
- HPA 3374 - ADVANCED LABORATORY TECHNIQUES
- HPA 3377 - CHRONIC DISEASE CASE STUDIES

ELECTIVE

Additional prerequisite credits may be required by the department based on the undergraduate training of the applicant.

Department of Instruction and Learning

The mission of the Department of Instruction and Learning is to provide regional, national, and international leadership in the study and improvement of teaching and learning in diverse educational settings. As part of its effort to carry out this mission, the department offers commonwealth teacher education certification and degree programs.

The department offers the MAT, MEd, MS, EdD, and PhD degrees in instruction and learning as well as various certifications and a graduate certificate in urban education. It has the following. It has the following general areas of study:

- An area of concentration in early childhood education
- An area of concentration in elementary education
- An area of concentration in reading education
- Secondary education certification and areas of concentration in:
 - English and communications education
 - Mathematics education
 - Science education
 - Social studies education
 - Foreign language education
- Special education certification and areas of concentration in:
 - Special Education Teacher Preparation 7-12
 - Applied Behavior Analysis
 - Early intervention for children with disabilities
 - Education of students with mental and physical disabilities
 - Vision studies special education
 - General Special education
- Additional Doctoral Degrees
 - Language, Literacy, and Culture (LLC)
 - Science, Technology, Engineering, and Mathematics (STEM)
- Certificate in Urban Education

A brief section for each of these areas follows. In each section, a link to the program's Web site is provided. Readers interested in a specific program are encouraged to visit that program's Web site for additional information. Please pay special attention to information provided on prerequisite courses and the curriculum.

Contact Information

Department of Instruction and Learning
5300 Wesley W. Posvar Hall
412-624-7254
Fax: 412-648-7081
E-mail: dil@pitt.edu

Degree and Certification Requirements

For additional degree requirement information for many of the following degrees, refer to the school sections on Degree Requirements.

Program Information

Applied Behavior Analysis

The Applied Behavior Analysis (ABA) Program prepares practitioners who are qualified to assess, design, implement, and evaluate ABA programs for a range of populations, but with an emphasis on developmental disabilities and behavioral health issues. Successful completion of the coursework and practicum experiences allows students to seek certification as a Board Certified Behavior Analyst (BCBA) from the Behavior Analysis

Certification Board (BACB). With the growing number of children presenting with unique behavioral challenges and requiring additional supports, mental health providers, agencies, and school districts are increasingly seeking the services of professionals with highly specialized training in ABA. The ABA Area of Concentration offers two programs. Supervision of practicum experiences required by the national BACB is also available within the program.

- **MEd in Applied Behavior Analysis**

The Applied Behavior Analysis MEd program provides intensive instruction in the theoretical bases of Applied Behavior Analysis as well as the clinical and pedagogical application of the theory and principles. The courses are aimed at special educators and behavioral health providers and are designed to specifically prepare students to apply for the certification examination of the Behavior Analyst Certification Board, Inc (BACB). To become a Board Certified Behavior Analyst (BCBA), the Board requires a Master's degree, approved coursework in Applied Behavior Analysis, and a specified number of supervised practicum hours dependent upon intensity of supervision (750-1500 hours), and successful passage of a national examination following completion of the Master's degree, required coursework, and supervised practicum. Those who are interested should become familiar with the Board's requirements found on its website (<http://www.bacb.com>). This MEd program offers students the opportunity to pursue the intensive supervised practicum as part of the program's elective courses or students may make other arrangements outside the university to acquire those hours by following the requirements found on the BACB web site.

- **Certificate in Applied Behavior Analysis**

The University of Pittsburgh Applied Behavior Analysis Certificate program consists of the coursework required for a national certificate in Applied Behavior Analysis issued by the Behavior Analyst Certification Board (BACB). The program's coursework partially fulfills the requirements to become a Board Certified Behavior Analyst (BCBA).

Additional requirements include the possession of a master's degree, completion of supervised practicum hours, and successfully passing a national exam. While enrolled in the program, students may also pursue through the university, the intensive supervised practicum to acquire the practicum hours required by the BACB. Those who are interested should become familiar with the Board's requirements found on its website ([bacb.com](http://www.bacb.com)). BCBA pass rates for first-time candidates taking the BCBA exam from the University of Pittsburgh can be found at on the BACB web site.

This program is specifically designed for:

- Students who already have a Master's degree who wish to obtain a University of Pittsburgh certificate in Applied Behavior Analysis without having to enroll in a degree program; and
- Students who are enrolled in a graduate program at the University of Pittsburgh other than the MEd in Applied Behavior Analysis who wish to include a certificate in Applied Behavior Analysis as part of or in addition to their degree program

Autism Certificate

The University of Pittsburgh School of Education Autism Certificate is a 15-credit program designed to enrich the knowledge and skills of teachers and other practitioners in the area of autism. The program will focus on the characteristics and etiology of autism; assessment and instructional programming for language/communication, social skills, and academic subjects across settings and grade levels; and family, interagency, and community collaboration.

For those with a Pennsylvania Department of Education Level I or Level II teaching certificate, the program also fulfills the Pennsylvania Department of Education Autism Spectrum Disorders (ASD) Endorsement requirements. The list of possible certifications to which the endorsement might be added includes but is not limited to the following: regular and special education, school psychologist, principal, guidance counselor, speech and language clinician, occupational and physical therapist, reading specialist, and home and school visitor.

The following groups of individuals are encouraged to apply:

- Post- Baccalaureate or Post-Master's students who possess a Pennsylvania Department of Education Level I or Level II teaching certificate and are interested in obtaining the PDE Program Endorsement in Autism
- Post-Baccalaureate or Post-Master's students who do not have a teaching certificate, but who are interested in enhancing their credentials in the area of Autism
- Degree-seeking Master's students who are currently enrolled in a program that leads to a Pennsylvania Department of Education Level II teaching certificate and who are interested in obtaining the PDE Program Endorsement in Autism
- Degree-seeking Master's and Ph.D. students who do not have a teaching certificate, but who are interested in enhancing their credentials in the area of Autism

Master of Special Education with Academic Instruction Certificate (MOSAIC)

The University of Pittsburgh, School of Education, offers a specialization that leads to a Master's Degree in Special Education and dual teaching certificate for grades 7-12 - one in Special Education and one in a Secondary Content Area (English, Math, Science, Social Studies, or Foreign Language Education). Teaching candidates will study evidence based practices to improve adolescent learning through Special Education and Content Area coursework. Candidates will develop their professional teaching skills during practical experiences, in a variety of public middle and high school classrooms. The MOSAIC program is designed to provide future teachers with the skills, knowledge and experiences to be effective teachers of adolescents both with and without disabilities.

MOSAIC Master of Education (MEd) in Special Education with Instructional Certification in both Secondary Special Education and Secondary Content Area (English, Math, Science, Social Studies and Foreign Language Education) Grades 7-12

- Satisfies the requirements for a PA Instructional I Certificate in Special Education Grades 7-12, pending passing scores on PECT Special Ed 7-12 exams and successful completion of the PA Statewide Evaluation Form for Student Professional Knowledge and Practice (PDE 430)
- Satisfies the requirements for a PA Instructional I Certificate in a Specified Content Area (English, Math, Science, Social Studies, or Foreign Language) Grades 7-12, pending passing scores on Praxis II exam and successful completion of the PA Statewide Evaluation Form for Student Professional Knowledge and Practice (PDE 430)
- Requires completion of 42 credits
- Is completed in 12 months (summer II, fall, spring, summer I) beginning in June of the admission year
- Lasts four consecutive terms for full-time students - Summer II, Fall, Spring, Summer I
- Requires obtaining all Federal and PA state clearances before entering schools
- Requires a full-time practicum experience (5 days per week) at a local school district in both the fall and spring terms. Fall practicum includes content area and low-incidence disabilities placements. Spring practicum includes content area and high-incidence disabilities placements.
- Requires students to successfully complete the Special Education Comprehensive Exam

Early Childhood Education Program

1. MEd in Early Childhood Education

The Early Childhood Education Program focuses on the education of young children (birth to age 8) in public and private schools and centers, homes, and other facilities in which children within this age range are served. Strong emphasis is also placed on developing relationships with the families of young children and working collaboratively with other professionals. The program offers a range of coursework encompassing infants, toddlers, preschoolers, and primary-aged children. Through student teaching, field placements, and practical learning, students develop competence in the use of developmentally appropriate practices. Main themes within the program include understanding and respecting family diversity, supporting families in their roles with young children, and addressing the needs of children with special needs in inclusive settings.

The program is intended for individuals who already have an Early Childhood Education Certificate or whose career paths do not require them to have a certificate. Individuals who complete the post-baccalaureate Early Childhood Education Certification program (Primary Plus) at the University of Pittsburgh may apply up to 18 credits from their certification studies towards the Master of Education program. Application to the M.Ed. program must be made within three years of completing the certification program. Course work in the Master of Education program is intended to enhance the continuing professional development of early childhood teachers beyond the skills and competencies acquired during certification study and to assist them in gaining greater self-determination through heightened awareness and understanding of their own teaching practice.

2. MEd in Elementary Education

This is an online program. For more information about our online programs see Pitt Online.

The goals of the MEd program are:

- To enable teachers to enhance both their understanding and ability to meet the needs of the diverse learners in their classrooms.
 - To enable teachers to advance their understanding of one or more content areas.
 - To enable teachers to broaden their understanding of educational research, educational theories as they apply to practice, action research practices, and educational policy.
- ### 1. Primary Plus: PreK-4 Instructional I Teaching Certification

The Primary Plus: PreK-4 Teacher Certification Program prepares students to teach young children ages 4-9 in Pre-kindergarten and K-4 classrooms and to work collaboratively with parents and other professionals. Students will develop skills for employment in public and private schools and early childhood centers. Through coursework and field experiences with pre-kindergarteners and children in grades K-4, students will acquire an integrated understanding of academic content and child development in diverse inclusive settings. The program must be completed as a full-time student. No part-time option is available.

The Primary Plus: PreK-4 Teacher Certification Program is intended for individuals from a wide range of undergraduate degree and work backgrounds. A student who successfully completes the program and passes both the PECT (Pennsylvania Education Certification Test) in PreK-4 and the PA Statewide Evaluation Form for the Student Professional Knowledge and Practice (PDE 430) is eligible to apply for a Pennsylvania Instructional I certificate for PreK-4.

- prepares qualified graduates for initial certification in PreK-4 Early Childhood Education
- lasts three consecutive terms for full-time students - Summer II, Fall, Spring
- requires two full days per week in a PreK practicum and one full day per week at a K-4 student teaching site during Fall Term
- requires twelve full weeks of student teaching in a K-4 classroom in the Spring term
- requires obtaining all Federal and PA state clearances before entering schools

www.education.pitt.edu/earlychilded

Elementary Education Program

This is an online program. For more information about our online programs see Pitt Online.

www.education.pitt.edu/elementaryed

Reading Education Program

Graduate work in reading Education is available to individuals interested in working toward:

- K-12 reading specialist certification
- Master's degree in reading education

Those interested in doctoral study in the area of literacy should consult information related to the PhD and EdD Language, Literacy, and Culture area of concentration.

This program offers the following degree in instruction and learning with an area of concentration in reading education and certification and specialization options as noted below:

- Master of Education (MEd)
- Master of Education (MEd) + K-12 reading specialist certificate

Secondary Education Areas of Study

The secondary education area of study offers five areas of concentration:

- English and Communications Education
- Foreign Language Education
- Mathematics Education
- Science Education
- Social Studies Education

Within each of these areas of concentration, the student can choose to pursue a Master of Arts (MAT) teaching degree with certification in one area of concentration, or a Master of Education.

English and Communications Education

This program offers the following degrees in instruction and learning with an area of concentration in English and communications education and certification options as noted below:

- Master of Arts in Teaching (MAT)
- Instructional I Certificate

The mission of the MAT and Instructional I Teaching Certification programs in English and Communications Education at the University of Pittsburgh are to prepare secondary English and Communications teachers with content, pedagogical knowledge, and professional knowledge and skills to meet regional and national needs in the areas of literacy learning, language arts, and communication, especially in diverse school settings.

To achieve this mission, our programs follow the National Council of Teachers of English's criteria for highly qualified teachers of English Language Arts by teaching sophisticated content knowledge; current "best practices" in pedagogical and assessment strategies; the developmental trajectories and needs of adolescents from diverse cultural and linguistic backgrounds; culturally responsive and sustaining pedagogy; and professional leadership skills.

- Master of Education (MEd)

At the master's degree level, students may emphasize study in the specialization of English/Language Arts Education. The master's degree options are designed to help beginning and experienced elementary and secondary teachers acquire the concepts, skills, and attitudes of master teachers in their fields.

Students will work with an English Education faculty advisor to develop a Plan of Studies in the major field that combines work in English Education courses, related studies in education, and related electives from across the university.

www.education.pitt.edu/english

Foreign Language Education

Graduate work in the foreign language education area of concentration is available to qualified persons interested in pursuing K-12 Instructional I certification in French, Spanish, German, Latin, Chinese, Japanese, Italian, or Russian.

The following degrees in instruction and learning with an area of concentration in foreign language education and the certification options are defined below:

- Master of Arts in Teaching (MAT)
- Master of Education (MEd)
- Master of Education (MEd) and a University Certificate in the Teaching of English to Speakers of Other Languages (TESOL)

www.education.pitt.edu/foreignlanguage

Mathematics Education

This program offers the following degrees in instruction and learning with an area of concentration in mathematics education and secondary school teacher education certification as detailed below:

- Master of Arts in Teaching (MAT)

- Master of Education (MEd)

The MEd in Mathematics Education is a professional degree for the graduate student who wishes to pursue advanced study in the field. In

addition to addressing the needs and interests of beginning and experienced teachers whose objective is to advance their backgrounds as mathematics teachers in schools, the master's degree also prepares students for admission to doctoral study. Students complete a minimum of 36 credits.

- Doctor of Philosophy (PhD)

www.education.pitt.edu/mathematics

Science Education

The School of Education offers innovative graduate-level degree and certification options (biology, chemistry, earth and space science, general science, and physics) for science area majors interested in careers in teaching. The certification options in science education prepare the candidate for teaching assignments in grades seven through 12.

This program offers the following degrees in instruction and learning with an area of concentration in science education and certification programs as defined below:

- Master of Arts in Teaching (MAT)
- Master of Education (MEd)
- Doctor of Philosophy (PhD)

www.education.pitt.edu/science

Social Studies Education

The social studies education concentration offers courses of study leading to certification for grades seven through 12 and a master's degree.

This program offers the following degrees in instruction and learning with an area of concentration in social studies education and certification options as defined below:

- Master of Arts in Teaching (MAT)
 - Master of Education (MEd)
- Our online program is designed to engage you in dynamic discourse, advanced teaching methods, local and regional research, and to contextualize all you learn with your teaching and scholarly experiences in the field of secondary social studies education.

www.education.pitt.edu/socialstudies

Special Education Area of Study

The special education area of study within the Department of Instruction and Learning offers a variety of graduate study opportunities to individuals whose career goals include working with people with disabilities.

A master's degree (MEd) in instruction and learning is offered in each of the program's areas of concentration:

- Early Intervention for Children with Disabilities
- Education of Students with Mental and Physical Disabilities
- General Special Education
- Special Education Teacher Preparation
- Vision Studies Special Education

Work toward graduate degrees may be combined with special education teacher certification study, autism enforcement and vision studies. The areas of concentrations include academic and field work for full-time or equivalent part-time study. Field work appropriate to the individual areas is carried out at cooperating schools, agencies, and clinics in Western Pennsylvania.

The program also offers courses of study leading to eligibility for certification as supervisor of special education. At the doctoral level, the program provides opportunities for specialization studies with a particular emphasis on applied behavior analysis, learning disabilities, vision studies, orientation and mobility, or early intervention.

Early Intervention for Children with Disabilities

This concentration prepares students to teach infants, toddlers, and preschoolers with disabilities from birth to 5 years of age in hospital, home, and center-based settings, to support families of these young children in decision-making and resource identification, and to collaborate with other professionals in service delivery. The degree options are as follows:

www.education.pitt.edu/ei

Education of Mental and Physical Disabilities

The major goal of the Special Education PhD and Ed.D degree is the preparation of leadership personnel. Graduates must have leadership skills to identify the significant issues of the day and the ability to make decisions about the most effective use of new technologies and information to serve the nation's disabled population. They will also become researchers and scholars committed to furthering the knowledge and empirical base needed for enhancement of special education practice and of the training of special education personnel. Graduates will serve infants, children, youth, and adults with disabilities through roles as teacher educators, researchers, administrators, consultants, and supervisors.

As they have in the past, it is expected that graduates of this program will have a significant impact on the quality of educational opportunities for persons with disabilities by providing leadership for local education agencies, state educational agencies, private foundations and agencies, colleges, and universities.

This option is available for students with at least three years experience in teaching children with Mental and Physical Disabilities. (i.e., learning disabilities, intellectual disabilities, emotional/behavioral disabilities, etc.). The full-time only program requires a minimum of 90 credits of course work including dissertation research.

www.education.pitt.edu/mpd

Vision Studies Special Education

The vision studies concentration prepares professionals to educate children and adults with visual disabilities. This specialization enables students to acquire dual certification as teachers of children with visual disabilities and/or as Orientation and Mobility (O&M) specialists with a Master of Education degree. In addition, a component of the program provides the student with both didactic and clinical course work in early intervention with children who are blind and visually impaired. Teachers of children with visual disabilities provide instruction in educational placements that include public schools, resource rooms, and full-time classrooms for children with visual disabilities, or in approved private schools. Graduates provide specialized educational services as an itinerant teacher, a full-time classroom teacher, or a teacher consultant with children birth through age 21. O&M specialists provide necessary instruction to visually disabled children and adults to enable safe, independent travel. Training includes integrating skills such as orientation in space in conjunction with the use of a long cane, dog guide, or an optical or electronic device. Students in the vision studies specialization participate in both didactic and practicum experiences to gain a broad range of specialty skills.

The vision studies special education concentration offers the applicant a number of degree and certification options:

1. Commonwealth Certification in Vision Education
2. Academy for Certification of Vision Rehabilitation and Education Professionals (ACVREP) Certification in Orientation and Mobility (O&M)
3. Dual Certification in Vision Education and O&M
4. MEd in Instruction and Learning with Vision Education Certification
5. MEd in Instruction and Learning with O&M Certification
6. MEd with Dual Certification in Vision Education and O&M

General Special Education

Individually designed master's degree specializations (36 credits minimum) are available for those students who hold Pennsylvania special education teaching certificates or for regular educators who just want to learn more about special education. These specializations are designed to accommodate individualized professional goals but do not provide students with special education certification. Students may also pursue study for other certifications and/or other specialized study.

Language, Literacy and Culture

The Language, Literacy, and Culture (LLC) doctoral program brings together four previous doctoral programs in the Department of Instruction and Learning: English Education, Foreign Language Education, Reading Education, and Social Studies Education. LLC takes an inter- and multi-disciplinary approach to the study of cultural, linguistic, social, psychological, and political perspectives on educational studies. Changing immigration patterns, the population of K-12 schools, and new empirical and theoretical advances in education together indicate the need for diverse approaches and disciplinary lenses on the fields of teacher education and classroom teaching and learning. The focus is on the examination of educational issues using sociocultural, linguistic and critical theoretical approaches that are rooted in the promotion of equity, social justice and democratic values.

The LLC area of concentration is appropriate for students with backgrounds in subject matter disciplines (such as reading, English education, foreign and second language learning, applied linguistics, and social studies education) as well as for students interested in pursuing the kinds of interdisciplinary studies in instruction and learning listed above. The interdisciplinary emphasis provides students the opportunities to work with a group of dedicated faculty with diverse backgrounds in addition to being matched with an advisor who is appropriate to their interests.

Science, Technology, Engineering and Mathematics EdD

The STEM Doctor of Education (EdD) program is intended for teachers and educators who desire the skills and credentials needed to advance their practice-oriented careers. It offers a rigorous theoretical and practical orientation for scholar practitioners aspiring to become leaders in K-12 schools and institutions of higher learning, in positions such as district curriculum supervisor, faculty member at a teaching-focused university or district leader in the STEM fields. Candidates for the program must have a master's degree in a related field as well as extensive instructional work experience.

Four core courses examine ideas that lie at the intersection of research in STEM (based primarily in mathematics and science education) in the areas of Curriculum, Instruction, Assessment and Professional learning. Across these courses are threaded considerations of Equity (issues of fairness and justice in how people are treated and of how to provide access and opportunity to all learners), Policy (how policies are created, interpreted, and enacted, and their relationship to educational practice), Methodology (different procedures for studying educational phenomena in STEM education research and their implications) and Theories of learning (different perspectives on how people learn and their influence on instructional decision-making).

Supervisor of Special Education Certificate

Applications of the Supervisor of Special Education Certificate were on hold for the incoming 2018-19 academic year.

This certification option in special education is built on the assumption that most supervisory operations in education are, in principle, generic, with their fundamentals of theory and practice in common. The major distinguishing characteristic of this option is the application of supervisory theory to the context of the special education of exceptional children and youth. Specific emphasis is placed upon activities, relationships, facilities, agencies, persons, and processes that are peculiar to or have particular relevance to special education. The student completes a plan of studies encompassing such courses as supervision, curriculum development, current and legal issues in the specialization, and a supervision internship.

Urban Education

The School of Education Post-Baccalaureate Certificate in Urban Education addresses the social-emotional and learning needs of diverse students in urban schools locally and nationally in an effort to achieve greater equity in opportunity and experience. The program enrolls both preservice and in-service teachers.

The Urban Education certificate program aims to increase a teacher's level of effectiveness for their students in urban schools as well as increasing their marketability and longevity in the field. The certificate program is built upon the following themes developed through asset-based knowledge, understanding, attitudes, dispositions, beliefs, skills and practices:

- Social/Cultural/Relational Dynamics - deeply understanding our students, their families and communities, to best develop meaningful relationships from which to learn and teach.
- Authentic Teacher Self-Excavation - teachers deeply understanding themselves and their impact on students.
- Pedagogical/Curricular/Classroom Learning and Dynamics - deeply understanding and creating positive, responsive, effective classroom student experiences.

The program leads to a University Certificate in Urban Education and does not lead to commonwealth certification.

www.cue.pitt.edu

Certificate Requirements

The Certificate in Urban Education is a 15-credit program. Students are required to apply to the certificate program. They must have earned a baccalaureate degree at an accredited institution and meet the University's requirements for admission to graduate school. Applicants need not be concurrently enrolled in a graduate degree program in the School of Education.

For additional degree requirement information, refer to the Center for Urban Education website and the Department of Instruction and Learning website.

Vision Education

- Doctor of Philosophy (PhD)
The goal of the Blindness/Vision Impairment/Orientation and Mobility PhD degree is the preparation of leadership personnel to assume academic faculty positions at the university level. The focus of preparation for the PhD program is on teaching graduate and undergraduate courses, mentoring graduate students, developing a research agenda that will result in funded and published research and translating research outcomes for the improvement of educational and related service programs for individuals with disabilities. PhD candidates are mentored by a faculty adviser who shares their research interests and are supported by graduate faculty in Special Education. Students may focus their studies in one or more of the following areas: blindness, vision impairments, or orientation and mobility. The PhD program is writing and research-intensive and PhD candidates will have multiple opportunities to learn and participate in the review of research literature, the preparation and submission of research grant proposals, the design and implementation of research studies, and the preparation and dissemination of research reports.
- Master of Education (MEd)
The School of Education at the University of Pittsburgh requires all students pursuing a Master's of Education degree (MEd) to complete a minimum of 36-credits, 12 of which are the required graduate-level general education courses listed.

Applicants may choose to pursue the MEd degree through a variety of options (with or without certification):

- MEd degree with single certification as a Teacher of Students with Visual Impairments (TVI)
- MEd degree with single certification as an Orientation and Mobility (O&M) Specialist
- MEd degree with dual certification (TVI and O&M)
- MEd degree without certification but with a Vision Studies Area of Concentration

Students pairing the degree in combination with any certification option will complete additional credits hours to fulfill program requirements.

Additionally, the MEd program requires students to successfully complete the Vision Studies Comprehensive Exam. The Comprehensive Exam is a proctored three-hour exam based on the student's area of concentration and is completed towards the end of their MEd degree program.

- Single Certification - Teacher of Students with Visual Impairments (TVI)

The University of Pittsburgh, School of Education Vision Studies Program offers a hybrid program of study (online and on-campus) to prepare professionals to serve the educational needs of children who are blind or visually impaired. TVIs provide educational services to students' birth to 21 in a variety of educational settings, which include early intervention or preschools, public school classrooms, resource rooms, specialized schools, or the home. Graduates provide direct assessment and instruction in vision-specific subject areas.

The TVI certification courses are typically offered in a two-course per term pairing. Students may also combine a Master's of Education (MEd) degree with their TVI certification program. For additional curriculum details regarding this combination, please see the MEd degree with single certification as a Teacher of Students with Visual Impairments (TVI).

TVI certification allows the teacher to provide educational services needed by students who are blind or visually impaired. These services include:

- Assessing and evaluating educational strengths and needs including educational functional vision assessments
- Recommending appropriate service delivery plans
- Providing training in the use of adapted materials and devices
- Consulting with classroom teachers and parents regarding the impact of visual impairment on development and learning
- Direct instruction in:
 - Compensatory Academic Skills
 - Career Exploration
 - Sensory Efficiency Skills
 - Social Skills
 - Assistive Technology
 - Recreation and Leisure and activities
 - Self-Determination Skills
 - Techniques of Daily Lives

- Single Certification - Orientation and Mobility (O&M)

The University of Pittsburgh, School of Education Vision Studies Program offers a hybrid program of study (online and on-campus) to prepare professionals to serve the orientation and mobility (O&M) needs of children and adults who are blind or visually impaired. O&M Specialists provide the necessary instruction for safe, independent travel. The Vision Studies Program provides graduate students with competencies necessary to teach individuals from early childhood through adulthood. Training includes integrating skills such as orientation in space with the appropriate selection and use of mobility devices and/or optical devices for utilization of residual vision.

The O&M certification courses are offered online during the Fall and Spring semesters, as well as on-campus during the Summer. Students may also combine a Master's of Education (MEd) degree with their O&M certification program. For additional curriculum details regarding this combination, please see the MEd degree with single certification as an Orientation and Mobility (O&M) Specialist.

Graduates are eligible for national certification as an O&M Specialist by the Academy for Certification of Vision Rehabilitation & Education Professionals (ACVREP). With this certification, the graduate is qualified to provide O&M services needed by children and adults who are blind or visually impaired in public schools, rehabilitation agencies, Veteran's Administration hospitals. With this certification, the graduate is qualified to provide educational and rehabilitation services. These services include:

- Assessing and evaluating O&M strengths and needs including O&M functional vision assessment
- Recommending appropriate service delivery plans
- Providing training in the use of mobility materials and devices (e.g. prescriptive cane, optical and non-optical devices, dog guide, and electronic devices)
- Consulting with other education and rehabilitation personnel and family regarding the impact of blindness and visual impairment on the O&M process
- Direct instruction in:
 - Utilization of mobility devices
 - Gross motor development
 - Visual efficiency skills
 - Concept and sensory development
 - Utilization of residual vision
 - Spatial orientation
 - Instruction in travel in both indoor and outdoor environments
 - Utilization of mass transportation systems
 - Communication and social skills

- Self-determination skills
 - Utilization of tactile, visual, and auditory maps
 - Familiarization to familiar and unfamiliar environments
-
- Dual Certification - TVI and O&M

Applied Behavior Analysis

Certificate

Applied Behavior Analysis Certificate

Certificate Program

- IL 2564 - APPLIED BEHAVIORAL ANALYSIS 1: FUNDAMENTALS 1
- IL 2565 - APPLIED BEHAVIORAL ANALYSIS 2: FUNDAMENTALS 2
- IL 2566 - APPLIED BEHAVIORAL ANALYSIS 3: APPLICATIONS IN DEVELOPMENTAL DISABILITIES
- IL 2567 - APPLIED BEHAVIORAL ANALYSIS 4: EMOTIONAL BEHAVIORAL DISABILITIES OF CHILDREN AND ADOLESCENTS
- IL 2568 - APPLIED BEHAVIORAL ANALYSIS 5: CURRENT DEVELOPMENTS IN APPLIED BEHAVIORAL ANALYSIS
- IL 2578 - APPLIED BEHAVIORAL ANALYSIS 6: ETHICS

BACB Requirement (Optional)

For students wishing to pursue the national BCBA

- IL 2569 - APPLIED BEHAVIORAL ANALYSIS PRACTICUM

Autism Spectrum Disorders Endorsement/Certificate

The University of Pittsburgh School of Education Autism Certificate is a 15-credit program, consisting of (a) a core of three required 3-credit graduate level courses (9 credits total), (b) 3 or 4 credits of practicum experience with children with autism, and (c) one 3 credit elective course.

Core Courses

- IL 2505 - AUTISM: CHARACTERISTICS AND INTERVENTIONS
- IL 2506 - SOCIAL AND COMMUNICATIVE INTERVENTIONS: AUTISM
- IL 2586 - AUTISM INTERVENTIONS IN SCHOOL AND COMMUNITY SETTINGS

Practicum

Choose 3.0 credits for the following courses

- IL 2850 - PRACTICUM - PRESCHOOL
- IL 2780 - AUTISM ENDORSEMENT PRACTICUM

Elective Courses

Choose 3.0 credits from the following courses

- IL 2509 - APPLD BHVR ANAL/POSTV BHVR SUPRT
- IL 2511 - CURR PRG DVLP-LOW INCDNC DISABS
- IL 2585 - TECHNOLOGY-BASED INTERVENTIONS: AUTISM

Early Childhood Education - Primary Plus: PreK-4 Teacher Certificate

The Primary Plus: PreK-4 Teacher Certification Program prepares students to teach young children ages 4-9 in Pre-kindergarten and K-4 classrooms and to work collaboratively with parents and other professionals. Students will develop skills for employment in public and private schools and early childhood centers. Through coursework and field experiences with pre-kindergarteners and children in grades K-4, students will acquire an integrated understanding of academic content and child development in diverse inclusive settings. The program must be completed as a full-time student. No part-time option is available.

The Primary Plus: PreK-4 Teacher Certification Program is intended for individuals from a wide range of undergraduate degree and work backgrounds. A student who successfully completes the program and passes both the PECT (Pennsylvania Education Certification Test) in PreK-4 and the PA Statewide Evaluation Form for the Student Professional Knowledge and Practice (PDE 430) is eligible to apply for a Pennsylvania Instructional I certificate for PreK-4.

- prepares qualified graduates for initial certification in PreK-4 Early Childhood Education
- lasts three consecutive terms for full-time students - Summer II, Fall, Spring
- requires two full days per week in a PreK practicum and one full day per week at a K-4 student teaching site during Fall Term
- requires twelve full weeks of student teaching in a K-4 classroom in the Spring term
- requires obtaining all Federal and PA state clearances before entering schools

Click through to read the Primary Plus PreK-4 Teacher Certification Academic Checklist.

Interested in finding out more about our teacher education programs? Admissions representatives can answer questions you have at an upcoming Teacher Education Information Session.

Requirements

The Primary Plus: PreK-4 Teacher Certification Program prepares students to teach young children ages 4-9 in Pre-kindergarten and K-4 classrooms and to work collaboratively with parents and other professionals. Students will develop skills for employment in public and private schools and early childhood centers. Through coursework and field experiences with pre-kindergarteners and children in grades K-4, students will acquire an integrated understanding of academic content and child development in diverse inclusive settings. The program is designed for full-time study (Summer II, Fall and Spring Semesters).

English Education - English Instructional I Certificate

Requirements

- IL 2230 - TEACHING AND LEARNING IN SECONDARY ENGLISH 1
- IL 2245 - TEACHING & LEARNING IN SECONDARY ENGLISH 2
- IL 2725 - PRACTICUM IN SECONDARY ENGLISH EDUCATION
- IL 2502 - STUDNT W/DISAB IN SECNDRY CLSSRM
- IL 2257 - TEACHING ENGLISH LANGUAGE LEARNERS
- IL 2820 - TEACHING AND LEARNING IN SECONDARY ENGLISH 3
- IL 2520 - LITERACY ASSESSMENT & INSTRUCTION FOR CHILDREN WITH DISABILITIES IN INCLUSIVE SETTINGS IN SEC CLSSRM
- IL 2881 - INTERNSHIP-ENGLISH OR COM EDUC

- IL 2824 - STUDENT TEACHING SEMINAR IN ENGLISH OR COMMUNICATION EDUCATION
- PSYED 2265 - ATTENTIONAL TEACHING PRACTICES 1
- PSYED 2266 - ATTENTIONAL TEACHING PRACTICES 2

PY Core Curriculum (Instructional I Certification)

Foreign Language Education - Foreign Language Instructional I Certificate

The University of Pittsburgh, School of Education, offers two post-baccalaureate programs for Foreign Language teacher certification (grades K-12). The two programs are an Instructional I Teacher Certificate Program and a Master of Arts in Teaching (MAT) Program. Certification Studies are available in French, German, Italian, Spanish, Chinese, Japanese, or Latin. Native speakers of the language of certification are not exempt from prerequisite course work in the culture, civilization literature, and structure of their language. Applicants who are non-native speakers of the language of certification are also required to achieve at least Advanced-Low rating on an oral proficiency interview by an individual certified by the American Council on the Teaching of Foreign Languages. Details of the Instructional I Teaching Certificate Program are outlined below.

- satisfies the requirements for a Pennsylvania Instructional I Certificate (pending passing scores on the Writing Proficiency Test (WPT) and national PRAXIS II Exam of Fundamental Content Knowledge, successful completion of the PA Statewide Evaluation Form for Student Professional Knowledge and Practice (PDE 430), and satisfactory performance in courses and student teaching)
- can be completed in two terms (fall and spring) of 15 credit hours each
- can be designed to accommodate part-time students
- requires 10 hours per week at a local school district in the fall term and a full-time student teaching experience in the spring term
- requires obtaining all Federal and PA state clearances before entering schools
- contains 18 credits which can be applied within three years toward a Master of Education degree
- students may apply for financial aid

Certificate Requirements

- IL 2252 - TEACHING AND LEARNING IN K-12 FOREIGN LANGUAGE 1
- IL 2882 - INTERNSHIP - FOREIGN LANGUAGE
- IL 2258 - TEACHING & LEARNING IN SECONDARY FOREIGN LANGUAGE 2
- IL 2892 - PRACTICUM IN K-12 FOREIGN LANGUAGE
- IL 2502 - STUDENT W/DISAB IN SECNDRY CLSSRM
- IL 2257 - TEACHING ENGLISH LANGUAGE LEARNERS
- IL 2520 - LITERACY ASSESSMENT & INSTRUCTION FOR CHILDREN WITH DISABILITIES IN INCLUSIVE SETTINGS IN SEC CLSSRM
- IL 2826 - STUDENT TECHNG SEM-FOREIGN LANG
- IL 2254 - TEACHING & LEARNING IN K-12 FOREIGN LANGUAGE 3
- PSYED 2265 - ATTENTIONAL TEACHING PRACTICES 1
- PSYED 2266 - ATTENTIONAL TEACHING PRACTICES 2

Mathematics (7-12) Instructional I Certificate

The University of Pittsburgh, School of Education, offers two post-baccalaureate programs for Mathematics teacher certification (grades 7-12). The two programs are an Instructional I Teaching Certificate and a Master of Arts in Teaching Program (MAT). Details of the Instructional I Teaching Certificate are outlined below.

- satisfies the requirements for a Pennsylvania Instructional I Certificate (pending passing scores on the national PRAXIS II Exam, successful completion of the PA Statewide Evaluation Form for Student Professional Knowledge and Practice (PDE 430), and satisfactory performance in courses and student teaching)
- can be completed in two terms (fall and spring) of 15 credit hours each
- can be designed to accommodate part-time students

- requires 10 hours per week at a local school district in the fall term and a full-time student teaching experience in the spring term
- requires obtaining all Federal and PA state clearances before entering schools
- contains 18 credits which can be applied within three years toward a Master of Education degree
- students may apply for financial aid

Requirements

A Secondary Content Area teacher certificate (English, Math, Science, Social Studies, or Foreign Language Education) is combined with a second teaching certificate for Special Education grades 7-12 and a Master of Education in Special Education. Teaching candidates will study evidence based practices to improve adolescent learning through Special Education and Content Area coursework. Candidates will develop their professional teaching skills during practical experiences, in a variety of public middle and high school classrooms. The MOSAIC program is designed to provide future teachers with the skills, knowledge and experiences to be effective teachers of adolescents both with and without disabilities.

- IL 2476 - TEACHING AND LEARNING IN SECONDARY MATH 1
- IL 2740 - PRACTICUM IN SECONDARY MATHEMATICS
- IL 2477 - TEACHING AND LEARNING IN SECONDARY MATH 2
- IL 2502 - STUDENT W/DISAB IN SECNDRY CLSSRM
- IL 2257 - TEACHING ENGLISH LANGUAGE LEARNERS
- IL 2478 - TEACHING AND LEARNING IN SECONDARY MATH 3
- IL 2520 - LITERACY ASSESSMENT & INSTRUCTION FOR CHILDREN WITH DISABILITIES IN INCLUSIVE SETTINGS IN SEC CLSSRM
- IL 2495 - INTERNSHIP - MATH
- IL 2842 - STUDENT TEACHING SEMINAR-MATHEMATICS
- PSYED 2265 - ATTENTIONAL TEACHING PRACTICES 1
- PSYED 2266 - ATTENTIONAL TEACHING PRACTICES 2

Reading Specialist Certificate of Advanced Study K-12

The School of Education offers preparation that leads to certification as a Reading Specialist (K-12). Coursework is completed in a blended format of on-campus and online study. The curriculum for the Reading Specialist Certificate of Advanced Study (K-12) is designed to provide candidates with opportunities to build specialized knowledge, engage in principled practice in supervised settings, and prepare for leadership roles in schools and school districts. The curriculum addresses the International Reading Association's *Standards for Reading Professionals* (2010) in the areas of:

- Foundational Knowledge
- Curriculum and Instruction
- Assessment and Evaluation
- Diversity
- Literate Environment
- Professional Learning and Leadership

Requirements

It is required that applicants have an initial teaching certificate. If initial certification does not include PDE-required special education courses (9 credits) and an English Language Learners course (3 credits), then those courses must be completed before application for certification. Teaching experience is advised. A minimum of 24 credit hours is required.

- IL 2203 - LANGUAGE AND LANGUAGE SYSTEMS
- IL 2211 - COMPREHENSION AND VOCABULARY
- IL 2216 - LITERACY ASSESSMENTS AND INTERVENTION MODELS
- IL 2217 - LITERACY PRACTICUM WITH ELEMENTARY STUDENTS
- IL 2219 - DISCIPLINARY LITERACY
- IL 2218 - LITERACY PRACTICUM WITH ADOLESCENT STUDENTS

- IL 2243 - THEORY & PRAC IN TCHNG WRITING
- IL 2281 - LEADERSHIP SCHOOL LITERACY PROGM

Science Education - Science (7-12) Instructional I Certificate

The University of Pittsburgh, School of Education offers a post-baccalaureate program for Secondary Science teacher certification (grades 7-12). Certification Studies are available in Biology, Chemistry, Physics, Earth and Space Science, and General Science. Certification in more than one science is also available. Details are outlined below.

- satisfies the requirements for a Pennsylvania Instructional I Certificate (pending passing scores on the national PRAXIS II Exam, successful completion of the PA Statewide Evaluation Form for Student Professional Knowledge and Practice (PDE 430), and satisfactory performance in courses and student teaching)
- can be completed in two terms (fall and spring) of 15 credit hours each
- can be designed to accommodate part-time students
- requires 10 hours per week at a local school district in the fall term and a full-time student teaching experience in the spring term
- requires obtaining all Federal and PA state clearances before entering schools
- contains 18 credits which can be applied within three years toward a Master of Education degree
- students may apply for financial aid

Requirements

- IL 2430 - TEACHING & LEARNING IN SECONDARY SCIENCE 1
- IL 2845 - PRACTICUM IN SECONDARY SCIENCE
- IL 2431 - TEACHING & LEARNING IN SECONDARY SCIENCE 2
- IL 2502 - STUDNT W/DISAB IN SECNDRY CLSSRM
- IL 2257 - TEACHING ENGLISH LANGUAGE LEARNERS
- IL 2432 - TEACHING & LEARNING IN SECONDARY SCIENCE 3
- IL 2520 - LITERACY ASSESSMENT & INSTRUCTION FOR CHILDREN WITH DISABILITIES IN INCLUSIVE SETTINGS IN SEC CLSSRM
- IL 2843 - STUDENT TEACHING SEM - SCIENCE
- IL 2496 - INTERNSHIP - SCIENCE
- PSYED 2265 - ATTENTIONAL TEACHING PRACTICES 1
- PSYED 2266 - ATTENTIONAL TEACHING PRACTICES 2

Social Studies Education - Social Studies (7-12) Instructional I Certificate

The University of Pittsburgh, School of Education, offers two post-baccalaureate programs for Social Studies teacher certification. The two programs are an Instructional I Teaching Certificate Program and a Master of Arts in Teaching (MAT) Program. Details of the Instructional I Teaching Certificate are outlined below.

- satisfies the requirements for a Pennsylvania Instructional I Certificate (pending passing scores on the national PRAXIS II Exam, successful completion of the PA Statewide Evaluation Form for Student Professional Knowledge and Practice (PDE 430), and satisfactory performance in courses and student teaching)
- can be completed in two terms (fall and spring) of 15 credit hours each
- can be designed to accommodate part-time students
- requires 10 hours per week at a local school district in the fall term and a full-time student teaching experience in the spring term
- requires obtaining all Federal and PA state clearances before entering schools
- contains 18 credits which can be applied within three years toward a Master of Education degree
- students may apply for financial aid

Requirements

- IL 2260 - TEACHING & LEARNING IN SECONDARY SOCIAL STUDIES 1
- IL 2262 - TEACHING & LEARNING IN SECONDARY SOCIAL STUDIES 2
- IL 2278 - PRACTICUM IN SECONDARY SOCIAL STUDIES
- IL 2502 - STUDENT WITH DISABILITIES IN SECONDARY CLASSROOM
- IL 2257 - TEACHING ENGLISH LANGUAGE LEARNERS
- IL 2827 - TEACHING AND LEARNING IN SECONDARY SOCIAL STUDIES 3
- IL 2520 - LITERACY ASSESSMENT & INSTRUCTION FOR CHILDREN WITH DISABILITIES IN INCLUSIVE SETTINGS IN SECONDARY CLASSROOM
- IL 2883 - INTERNSHIP - SOCIAL STUDIES
- IL 2828 - STUDENT TEACHING SEMINAR-SOCIAL STUDIES
- PSYED 2265 - ATTENTIONAL TEACHING PRACTICES 1
- PSYED 2266 - ATTENTIONAL TEACHING PRACTICES 2

Special Education Pre-K - 8 Teacher Certification

Students pursuing a Special Education PreK-8 certification-only track are required to complete a minimum of 30 credits beyond the prerequisite course work. Most students complete the certification program in three semesters. Students begin with two courses in the summer session and then complete two semesters of full-time study in the fall and spring semesters. Each year a new cohort of students begins the program together starting in the summer. With the exception of the first summer term, special education courses are offered in the evening.

During the fall term students are required to spend one day per week in each school to which they are assigned for student teaching in preparation for student teaching in the spring. Students complete two different full-time student teaching experiences in the spring, each of eight weeks duration. During the student teaching experiences, teacher candidates are closely supervised by both a university supervisor and an experienced mentor teacher. The School of Education Office of Placement Services and Clinical Practices will arrange field placements for students.

Requirements

The Special Education Teacher Preparation PreK-8 (SETP PreK-8) specialization is a post baccalaureate program with two paths for completion. One option combines special education teacher certification with a Master of Education (MEd) degree in Instruction and Learning. The other option is for special education teacher certification only. This specialization prepares special educators to teach children and youth with a range of disabilities and emphasizes educational needs rather than categorical labels. Individuals holding the PreK-8 certification may provide specialized support and instruction to eligible students with cognitive, behavior, physical, and/or health disabilities within the specified grade level range in a variety of settings. Pennsylvania requires all special educators to also be initially certified to teach the general education population and curriculum. In that case, these programs accept previously certified elementary level teachers and reading specialists and furthers their ability to effectively teach a diverse student body.

Additionally, the Combined Accelerated Studies in Education (CASE) program is a five-year program that combines undergraduate and graduate work. Students who successfully complete the program will receive a Bachelor of Science (BS) degree in Applied Developmental Psychology and a Masters of Education (MEd) degree in Instruction and Learning. This program prepares students to apply for dual teacher certification in PreK-Grade 4 and Special Education PreK-8. The CASE program provides prospective teachers with a rich blend of coursework and field experiences. Students who complete the program will gain a strong background in the liberal arts along with the specific professional and pedagogical knowledge and practice skills necessary to be an effective educator.

- IL 2509 - APPLIED BEHAVIOR ANALYSIS/POSTV BEHAVIOR SUPPORT
- IL 2511 - CURRICULUM DEVELOPMENT-LOW INCIDENCE DISABILITIES
- IL 2512 - ASSESSMENT INSTRUCTION-HIGH INCIDENCE DISABILITIES
- IL 2513 - INSTRUCTIONAL METHODS-HIGH INCIDENCE DISABILITIES
- IL 2522 - EDUCATION OF STUDENTS WITH EMOTIONAL DISTURBANCE
- IL 2751 - METHODS AND MANAGEMENT IN SPECIAL EDUCATION
- IL 2853 - STUDENT TEACHING - STUDENTS WITH HIGH INCIDENCE OF DISABILITIES
- IL 2854 - STUDENT TEACHING WITH LOW INCIDENCE OF DISABILITIES
- IL 2858 - STUDENT TEACHING SEMINAR - SPECIAL EDUCATION TEACHER PREPARATION
- IL 2591 - LITERACY TUTORING

Specialization Course

Choose 3.0 credits from the following courses.

(Students may also choose a content area course in Math, Science, Social Studies, or English if approved by their advisor)

- IL 2505 - AUTISM: CHARACTERISTICS AND INTERVENTIONS
- IL 2506 - SOCIAL AND COMMUNICATIVE INTERVENTIONS: AUTISM
- IL 2525 - TECHNOLOGY FOR CHILDREN WITH VI
- IL 2529 - BRAILLE
- IL 2530 - INTRODUCTION TO THE EYE AND LOW VISION
- IL 2531 - EDUCATION OF CHILDREN WITH VI I
- IL 2532 - EARLY INTERVENTION FOR CHILDREN WITH VI
- IL 2533 - ORIENTATION AND MOBILITY FOR THE TVI
- IL 2548 - SPECIAL TOPICS SPECIAL EDUCATION
- IL 2562 - ASESMNT YOUNG CHLDRN DISABLTY
- IL 2707 - FIELD SEMINAR IN EARLY CHILDHOOD EDUCATION
- IL 2906 - COMMUNITY RESOURCES SEMINAR: YOUNG CHILDREN AND FAMILIES
- IL 3542 - WEB CURRNT ISSUES & TRENDS SP ED

Supervisor of Special Education Certificate

Through four courses and an internship (15 credits), the program provides candidates with the opportunity to develop and knowledge of and competence in the fundamental concepts of supervising special education programs.

Requirements

This certification option in special education is built on the assumption that most supervisory operations in education are, in principle, generic, with their fundamentals of theory and practice in common. The major distinguishing characteristic of this option is the application of supervisory theory to the context of the special education of exceptional children and youth. Specific emphasis is placed upon activities, relationships, facilities, agencies, persons, and processes that are peculiar to or have particular relevance to special education. The student completes a plan of studies encompassing such courses as supervision, curriculum development, current and legal issues in the specialization, and a supervision internship.

Current Issues and Trends in Special Education

- IL 2542 - WEB CURRNT ISSUES & TRENDS SP ED
- OR-
- IL 3542 - WEB CURRNT ISSUES & TRENDS SP ED

Instructional Practices in Special Education

- IL 3541 - WEB INSTRNL PRACTICES SP EDUC

Legal and Legislative Foundations of Special Education

- IL 2928 - WEB LEGL & LEGISLTV FDS OF SP ED
- OR-
- IL 3928 - WEB LEGL & LEGISLTV FDS OF SP ED

***IL XXXX - New Special Education Course**

The new course will combine related topics from ADMPS 2115, IL 3571, and IL 3501.

Internship in Special Education

- IL 2596 - INTERNSHIP IN SPECIAL EDUCATION
- OR-

- IL 3596 - INTERNSHIP IN SPECIAL EDUCATION

Vision Studies - Dual Certification in Vision Education and Orientation and Mobility Certificate

Graduates with dual certification integrate skills acquired from both the Teacher of Students with Visual Impairments (TVI) and Orientation and Mobility (O&M) components of the program into a more comprehensive service. Dually certified graduates are highly desirable to potential employers. A teacher who has earned Pennsylvania Department of Education (PDE) certification as a TVI and national professional certification in O&M from the Academy for Certification of Vision Rehabilitation & Education Professionals (ACVREP) (<http://www.acvrep.org>) will have a stronger background in motor development, sensory training, concept development, and movement. See the single certification O&M overview or the single certification TVI overview for more specific details regarding each certification option.

Students gaining admission to the dual TVI & O&M certification program will be admitted into a fall term cohort. In this hybrid program, the didactic courses are offered online in the fall, spring, and summer terms. Within the TVI certification tract, all courses are offered online, but the summer provides a time for face-to-face classes in Pittsburgh on the Oakland campus. Additionally, the O&M program requires students to participate in one Summer 6-week on-campus experience.

In addition to these didactic courses, students complete three levels of clinical practice. The first is an observational experience focused on TVI and O&M instructional practices. The second is a TVI student teaching practicum. Students apply for a PDE Instructional I teaching certificate upon successful completion of the TVI didactic coursework, the student teaching practicum, and the required Praxis II exams.

The third practicum is an O&M Internship required by ACVREP, which is scheduled at the completion of the O&M courses. Students are also required to attend a weekend workshop at Pitt's Oakland Campus prior to beginning the O&M internship. Students completing the academic and clinical requirements of the O&M curricula must pass a national certification exam in O&M (see the ACVREP website for details) in order to become eligible for O&M certification.

Students have multiple options towards program completion. The dual certification courses are typically offered in a two-course per term pairing. Students may also combine a Master's of Education (MEd) degree to their certification program of study. Students needing to complete a MEd degree and/or co-requisite courses may add additional courses to become a full-time student. The dual certification program takes approximately 3 years to complete.

Vision Studies - Orientation and Mobility (O&M) Certificate

If you are already certified in a vision related field of study (e.g., TVI, Rehab Teacher for the Blind, or Low Vision Therapist), then you only need to complete the 21-credits of O&M Certification courses listed on the O&M Suggested Plan of Study (Option 1). If you do not possess certification in a vision related field of study, you must complete the 21-credits of O&M Certification courses plus 11-credits of additional TVI Certification courses (Option 2).

In addition, students complete and O&M internship which is required by the national certifying body ACVREP and is scheduled at the completion of the O&M didactic coursework. Students are also required to attend a weekend workshop on Pitt's Oakland campus prior to the beginning of the O&M internship. This single certification program takes approximately 2 years to complete.

Students may also combine a M.Ed. degree with the O&M certification program.

O&M Certification Curricula (Option 1)

All courses are 3 credits unless otherwise indicated.

- IL 2540 - FOUNDATIONS OF ORIENTATION AND MOBILITY
- IL 2750 - TECHNIQUES OF ORIENTATION AND MOBILITY 1
- IL 2752 - TECHNIQUES OF ORIENTATION AND MOBILITY 2
- IL 2541 - PROGRAM DEVELOPMENT: ORIENTATION AND MOBILITY
- IL 2753 - ORIENTATION AND MOBILITY FOR DIVERSE POPULATIONS
- IL 2857 - LEVEL 3 INTERNSHIP PRACTICUM - ORIENTATION AND MOBILITY

O&M Certification Curricula (Option 2)

Required courses for O&M single certification for students who **do not possess** certification in a vision related field of study. This path (Option 2) also requires all the courses from Option 1 above, for a total of 32 credits.

All courses are 3 credits unless otherwise indicated.

- IL 2530 - INTRODUCTION TO THE EYE AND LOW VISION
- IL 2531 - EDUCATION OF CHILDREN WITH VI 1
- IL 2532 - EARLY INTERVENTION FOR CHILDREN WITH VI
- IL 2527 - LEVEL 1 OBSERVATIONAL PRACTICUM: VI

- IL 2540 - FOUNDATIONS OF ORIENTATION AND MOBILITY
- IL 2750 - TECHNIQUES OF ORIENTATION AND MOBILITY 1
- IL 2752 - TECHNIQUES OF ORIENTATION AND MOBILITY 2
- IL 2541 - PROGRAM DEVELOPMENT: ORIENTATION AND MOBILITY
- IL 2857 - LEVEL 3 INTERNSHIP PRACTICUM - ORIENTATION AND MOBILITY

Vision Studies - Teacher of Students with Visual Impairments (TVI) Certificate

In addition to 31 credits of online courses, students complete two levels of clinical practice. The first is an observational experience focused on TVI instruction. The second is a student teaching practicum, which is required for all initial or second-field certification applicants. Students apply for their PDE Instructional I teaching certificate upon successful completion of TVI coursework, student teaching practicum, and the required Praxis II exams.

MEd Vision Studies Curriculum

All courses are 3 credits, except where indicated.

- IL 2525 - TECHNOLOGY FOR CHILDREN WITH VI
- IL 2529 - BRAILLE
- IL 2530 - INTRODUCTION TO THE EYE AND LOW VISION
- IL 2531 - EDUCATION OF CHILDREN WITH VI 1
- IL 2532 - EARLY INTERVENTION FOR CHILDREN WITH VI
- IL 2533 - ORIENTATION AND MOBILITY FOR THE TVI
- IL 2545 - EDUCATION OF CHILDREN WITH VI 2
- IL 2547 - NEMETH CODE/ABACUS
- IL 2527 - LEVEL 1 OBSERVATIONAL PRACTICUM: VI
This course is taken twice for 1 credit each.
- IL 2524 - LEVEL 2 STUDENT TEACHING PRACTICUM: VI

Concentration

Science, Technology, Engineering & Mathematics (STEM), EdD

EdD Curriculum

The EdD program is a three-year 90-credit program, including 30 credits transferred from relevant graduate work. Students are required to transfer 30 credits of graduate work into the EdD program.

The EdD curriculum is delivered in several stages, through a variety methods:

- **Orientation:** The EdD cohort participates in a full-day, on campus, orientation in the spring before the summer start of the program. The day includes a welcome from the Dean of the School of Education, EdD program information, and cohort-building activities as well as an introductory session with other students in your Area of Concentration. Orientation typically takes place in April.
- **One-week intensive on ramp:** The EdD cohort will participate in a full-week, on campus, experience that includes intense work focused on understanding enduring problems of practice in education, health, and human development. This one-week experience, known as the "on-ramp", will be your first foundations course on framing, identifying, and investigating problems of practice. The on-ramp typically takes place in June.
- **Hybrid seminars:** You will experience a hybrid model of education through online course experiences and in-person, once per month (typically on Saturdays) sessions on the Pittsburgh campus. Attendance at in-person, on campus sessions is *required*.

SCHEDULE

Year 1: Summer	Year 1: Fall	Year 1: Spring	Year 1: Summer
EDUC 3002 Foundation 1: Becoming a Leader Scholar Practitioner (3 credits) <i>ON-RAMP</i>	EDUC 3003 Foundation 2: Leadership in Groups and Organizations (3 credits)	EDUC 3004 Foundation 3: Education Contexts (3 credits)	EDUC 3005 Foundation 4: Investigating Policy as a Lever for Change (3 credits)
EDUC 3001 Practitioner Inquiry 1 (3 credits)	ARCO: Course 1 (3 credits)	ARCO: Course 2 (3 credits)	Practitioner Inquiry 2 (3 credits)
Year 2: Fall	Year 2: Spring	Year 2: Summer	
EDUC 3009 Supervised Practitioner Inquiry (3 credits)	EDUC 3007 Practitioner Inquiry 3 (3 credits)	EDUC 3008 Practitioner Inquiry 4 (3 credits)	
ARCO: Course 3 (3 credits)	ARCO: Course 4 (3 credits)	EDUC 3012 Laboratory of Practice (3 credits)	
Year 3: Fall	Year 3: Spring	Year 3: Summer	
EDUC 3099 Guidance in Scholarly Practice (6 credits)	EDUC 3099 Guidance in Scholarly Practice (6 credits)	EDUC 3099 Guidance in Scholarly Practice (6 credits)	

CORE COURSES Credits / Units: 24 Total

Foundation Courses

- EDUC 3002 - FOUNDATIONS 1:
- EDUC 3003 - FOUNDATIONS 2: LEADERSHIP IN GROUPS AND ORGANIZATIONS
- EDUC 3004 - FOUNDATIONS 3: CONTEXTS OF EDUCATION
- EDUC 3005 - FOUNDATIONS 4: POLICY AS A LEVER FOR CHANGE

Practitioner Inquiry Courses

- EDUC 3001 - PRACTITIONER INQUIRY 1
- EDUC 3006 - PRACTITIONER INQUIRY 2
- EDUC 3007 - PRACTITIONER INQUIRY 3

- EDUC 3008 - PRACTITIONER INQUIRY 4: APPLYING DISCIPLINED INQUIRY

SUPERVISED PRACTITIONER INQUIRY

Students will identify, review and synthesize relevant scholarship that supports as inquiry into a problem of practice.

- EDUC 3009 - SUPERVISED PRACTITIONER INQUIRY

LABORATORY OF PRACTICE

Students will complete a Laboratory of Practice, a setting where theory and practice inform and enrich each other and facilitate transformative and generative learning that is measured by the development of scholarly expertise and implementation of practice (Carnegie Project on the Education Doctorate, 2010). Students choose from three types of experiences: job embedded, aspirant, or global.

- EDUC 3012 - SUPERVISED INTERNSHIP

GUIDANCE IN SCHOLARLY PRACTICE

Guidance in Scholarly Practice: Based on research interests, the students will be required to write a manuscript that reports on the improvement science process.

Portfolio of Scholarly Practice: The portfolio of scholarly practice will provide evidence of learning and success in foundations, inquiry, and ARCO experiences.

- EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE

Science, Technology, Engineering & Mathematics (STEM) ARCO Curriculum

Science, Technology, Engineering & Mathematics (STEM) ARCO Courses

- LSAP 3096 - CURRICULUM ISSUES IN MATHEMATICS AND SCIENCE EDUCATION
- IL 3471 - INSTRUCTIONAL ISSUES IN MATH AND SCIENCES EDUCATIONS
- IL 3475 - PROFESSIONAL LEARNING IN MATH-SCIENCE EDUCATION
- IL 3476 - ASSESSMENT & EVAL IN MATH & SCIENCE EDUCATION

Doctoral

Education of Mental and Physical Disabilities, PhD

The University of Pittsburgh School of Education's Doctor of Philosophy (PhD) programs prepare students to be **nationally competitive** and highly qualified for **research careers** in both academic and non-academic institutions. Our **full-time, research-intensive PhDs** produce scholars who demonstrate excellent writing and research skills, independent scholarship and productivity, and proficiency in teaching. Under the guidance of our **distinguished graduate faculty**, students will have the opportunity to produce peer-reviewed publications, present at professional conferences, and collaborate on grant-writing and review, positioning them to **excel in their careers as researchers and faculty**. Because the PhDs are full-time, students can be fully immersed in their coursework and research in preparation for an **impactful scholarly career**.

Special Education - Doctor of Philosophy (PhD)

The goal of the Special Education PhD degree is the preparation of leadership personnel to assume academic faculty positions at the university level. The focus of preparation for the PhD program is on teaching graduate and undergraduate courses, mentoring graduate students, developing a research agenda that will result in funded and published research and translating research outcomes for the improvement of educational and related service programs for children and youth with disabilities. PhD candidates are mentored by a faculty adviser who shares their research interests and are supported by graduate faculty in Special Education. Students may focus their studies in one or more of the following areas: applied behavior analysis, autism, emotional and behavior disorders, learning disabilities, or severe disabilities. The PhD program is writing and research-intensive and PhD

candidates will have multiple opportunities to learn and participate in the review of research literature, the preparation and submission of research grant proposals, the design and implementation of research studies, and the preparation and dissemination of research reports. A limited amount of financial assistance in the form of doctoral fellowships is available for full time students on a competitive basis.

PhD Core Curriculum

Methods Courses

Preparing students to tackle problems of practice and policy, and create innovative research agendas, requires intentionality in the methods coursework that supports students' development of independent projects, meaningful contributions to advisors' research, and critical analysis of past research. To help ensure that students develop the necessary analytic competencies, students across the areas of concentration (ARCOs) for the PhD in the School of Education are required to complete **a minimum of 5 methods courses**: Quantitative 1 (EDUC 2100) and 2 (EDUC 3100); Qualitative 1 (EDUC 3104); and 2 seminars in advanced quantitative or qualitative methods, determined by the student and their advisor.

- EDUC 3100 - INTRODUCTION TO QUAN METHODS: DESCRIPTIVE AND INFERENTIAL STATISTICS
- EDUC 3103 - QUANTITATIVE METHODS 2
- EDUC 3104 - INTRODUCTION TO QUALITATIVE METHODS

First Year Seminar

To further support students' research competencies, PhD students also participate in a school wide first year seminar (EDUC 3102) and EDUC 3105). This seminar meets every other week (1 credit in fall and 2 credits in spring, taken over and above the typical 9 credit course load) and focuses on familiarizing students with practical and ethical issues in research (e.g., necessary clearances for working in schools, resolving questions of authorship and authorship order, human subjects guidelines), and supporting students work on their pre-dissertation proposal (e.g., developing innovative research questions, conducting a literature review).

- EDUC 3102 - FIRST YEAR SEMINAR 1
- EDUC 3105 - FIRST YEAR SEMINAR 2

Additionally, PhD students enroll in writing seminar courses taken over and above the typical 9-credit course load beginning in the second year of study. These credits are above and beyond the 90 credits required for graduation.

Education of Mental and Physical Disabilities Requirements

The major goal of the Special Education PhD and Ed.D degrees is the preparation of leadership personnel. Graduates must have leadership skills to identify the significant issues of the day and the ability to make decisions about the most effective use of new technologies and information to serve the nation's disabled population. They will also become researchers and scholars committed to furthering the knowledge and empirical base needed for enhancement of special education practice and of the training of special education personnel. Graduates will serve infants, children, youth, and adults with disabilities through roles as teacher educators, researchers, administrators, consultants, and supervisors.

Students complete either a PhD or Ed.D in Special Education with a particular emphasis in learning disabilities, deaf and hard of hearing, vision studies, orientation and mobility, or early intervention. As they have in the past, it is expected that graduates of this program will have a significant impact on the quality of educational opportunities for persons with disabilities by providing leadership for local education agencies, state educational agencies, private foundations and agencies, colleges, and universities.

This option is available for students with at least three years experience in teaching children with Mental and Physical Disabilities. (i.e., learning disabilities, mental retardation, etc.). Students may choose between the Ph.D. or Ed.D. Both programs require a minimum of 90 credits of course work including dissertation research. The Ph.D. requires a one year research residency on campus.

Language, Literacy and Culture, EdD

EdD Curriculum

The EdD program is a three-year 90-credit program, including 30 credits transferred from relevant graduate work. Students are required to transfer 30 credits of graduate work into the EdD program.

The EdD curriculum is delivered in several stages, through a variety methods:

- **Orientation:** The EdD cohort participates in a full-day, on campus, orientation in the spring before the summer start of the program. The day includes a welcome from the Dean of the School of Education, EdD program information, and cohort-building activities as well as an introductory session with other students in your Area of Concentration. Orientation typically takes place in April.
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- **Hybrid seminars:** You will experience a hybrid model of education through online course experiences and in-person, once per month (typically on Saturdays) sessions on the Pittsburgh campus. Attendance at in-person, on campus sessions is *required*.

SCHEDULE

Year 1: Summer	Year 1: Fall	Year 1: Spring	Year 1: Summer
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EDUC 3001 Practitioner Inquiry 1 (3 credits)	ARCO: Course 1 (3 credits)	ARCO: Course 2 (3 credits)	Practitioner Inquiry 2 (3 credits)
Year 2: Fall	Year 2: Spring	Year 2: Summer	
EDUC 3009 Supervised Practitioner Inquiry (3 credits)	EDUC 3007 Practitioner Inquiry 3 (3 credits)	EDUC 3008 Practitioner Inquiry 4 (3 credits)	
ARCO: Course 3 (3 credits)	ARCO: Course 4 (3 credits)	EDUC 3012 Laboratory of Practice (3 credits)	
Year 3: Fall	Year 3: Spring	Year 3: Summer	
EDUC 3099 Guidance in Scholarly Practice (6 credits)	EDUC 3099 Guidance in Scholarly Practice (6 credits)	EDUC 3099 Guidance in Scholarly Practice (6 credits)	

CORE COURSES Credits / Units: 24 Total

Foundation Courses

- EDUC 3002 - FOUNDATIONS 1:
- EDUC 3003 - FOUNDATIONS 2: LEADERSHIP IN GROUPS AND ORGANIZATIONS
- EDUC 3004 - FOUNDATIONS 3: CONTEXTS OF EDUCATION
- EDUC 3005 - FOUNDATIONS 4: POLICY AS A LEVER FOR CHANGE

Practitioner Inquiry Courses

- EDUC 3001 - PRACTITIONER INQUIRY 1
- EDUC 3006 - PRACTITIONER INQUIRY 2
- EDUC 3007 - PRACTITIONER INQUIRY 3

- EDUC 3008 - PRACTITIONER INQUIRY 4: APPLYING DISCIPLINED INQUIRY

SUPERVISED PRACTITIONER INQUIRY

Students will identify, review and synthesize relevant scholarship that supports as inquiry into a problem of practice.

- EDUC 3009 - SUPERVISED PRACTITIONER INQUIRY

LABORATORY OF PRACTICE

Students will complete a Laboratory of Practice, a setting where theory and practice inform and enrich each other and facilitate transformative and generative learning that is measured by the development of scholarly expertise and implementation of practice (Carnegie Project on the Education Doctorate, 2010). Students choose from three types of experiences: job embedded, aspirant, or global.

- EDUC 3012 - SUPERVISED INTERNSHIP

GUIDANCE IN SCHOLARLY PRACTICE

Guidance in Scholarly Practice: Based on research interests, the students will be required to write a manuscript that reports on the improvement science process.

Portfolio of Scholarly Practice: The portfolio of scholarly practice will provide evidence of learning and success in foundations, inquiry, and ARCO experiences.

- EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE

Language, Literacy and Culture Curriculum

Language, Literacy and Culture ARCO Courses

- IL 3012 - CRITICAL READING IN LANGUAGE LITERACY AND CULTURE 1
- IL 3013 - CRITICAL READINGS IN LANGUAGE, LITERACY, AND CULTURE 2
- IL 3014 - THEORETICAL PERSPECTIVES IN LANGUAGE, LITERACY AND CULTURE 1
- IL 3015 - THEORETICAL PERSPECTIVES IN LANGUAGE, LITERACY AND CULTURE 2

Language, Literacy and Culture, PhD

The Language, Literacy, and Culture (LLC) PhD is for students who aim to conduct research on the interconnection of culture, language, and literacy in both formal and informal educational settings. The goal of the LLC program is to develop interdisciplinary knowledge complemented by specialized knowledge of teaching and learning in foreign and second language, literacy, social studies, and early childhood education. We frame the exploration of teaching and learning within perspectives that promote equity, social justice, and democratic values.

Faculty and students in our program study issues such as:

- Civic education and racial identity among disenfranchised populations
- Critical historiography in secondary social studies classrooms
- Sociocultural approaches to foreign and second language acquisition
- Comprehension instruction in the context of text-based discussions of informational texts
- Writing, language, and grammar instruction in high school English classrooms
- New and multiple literacies in urban classrooms
- Representations in children's literature
- Immigrant families' home literacy practices

Faculty are actively involved in collaborations within the University of Pittsburgh World History Center; Center for Urban Education; Women's Studies; College of Arts and Sciences; Center for Race and Social Problems; and with University Prep, a 6-12 partnership school; and Falk School, a K-8 laboratory school.

As members of the LLC community, students engage closely with and learn from faculty who conduct research in the field and have a strong commitment to high-quality teaching. Through a combination of coursework, research collaborations with faculty, and teaching and supervision

practicum experiences, students prepare for careers in research and teaching universities, research institutes, educational non-profits, and educational consulting.

The PhD in Language, Literacy, and Culture includes a core set of courses designed to engage students in an exploration of teaching and learning from a variety of perspectives: linguistic, critical, psychological, historical, and sociocultural.

LLC PhD Handbook

Requirements	Credits
Major Field Studies	30-36
At least 15 credits must be at the 3000 level	
Supervised Research Practice	6
Minor Field Area	9-18 minimum
Research Methods	12 minimum
Electives	Variable
Doctoral Dissertation Research	18
Total Required Credits	90

Curriculum

PhD students in the Language, Literacy, and Culture program who enter the program without a Masters degree in a relevant field are required to take eight to nine courses within the major field of LLC, five research methods courses, six courses in a cognate (supporting) field, the first year seminar, annual writing workshops, and elective courses as needed. Students with a Masters degree in a related field can transfer credits toward the PhD with approval by the LLC faculty. PhD students are also required to complete one research practicum and one teaching practicum. Furthermore, all PhD students are required to be full-time students. PhD students must successfully pass required doctoral milestone projects in order to continue in the program. The PhD program culminates with completion of a doctoral dissertation.

Major Field (24-27 Credits - 15 credits minimum at 3000 level.

(If a doctoral-level course from a department other than DIL is numbered in the 2000, it can count as a 3000 level course on the plan of studies.)

IL 3248 (required)

Cognate Field (0, 9 or 18 Credits)

Courses in academic discipline studies supportive of the candidate's area of specialization. These credits must be in coursework outside of the School of Education.

Research Methods (15 credits)

EDUC 3104 (required)

EDUC 3100 (required)

EDUC 3105 (required)

First Year Seminars (3 Credits)

EDUC 3102 (required)

EDUC 3105 (required)

Research Practicum (3 Credits)

Teaching Practicum (3 credits)

IL 3526 Practicum in College Teaching

Electives (Credits Variable)

Doctor of Philosophy (PhD) Degree Requirements

The Doctor of Philosophy degree in the School of Education is a research-intensive training model that prepares students to be nationally competitive for research careers in both academic and non-academic institutions

Admissions requirements include the GRE for both national and international applicants. International students require a minimum of 100 or higher TOEFL composite score with sub-scores of 21 or higher or 7.0 IELTS with sub-scores of 6.0 or higher. After screening, a small group of applicants will be interviewed prior to a final decision. Only applicants committed to full-time study will be considered (except in unusual circumstances where the applicant works in a setting where research opportunities are available such as a research assistant on a funded project at a research institute).

Plan of Studies

Prior to advancement to the formal stage called Doctoral Study, the student, in consultation with the academic advisor, must complete a plan of studies that conforms to program requirements. The plan of studies, approved by the academic advisor, the program coordinator, and department is filed in the Office of Admissions and Enrollment Services.

PhD students are required to file a Plan of Studies during the first year in the program. In formulating the doctoral Plan of Studies, both the student and the academic advisor must pay close attention to these School of Education requirements as well as requirements specific to the particular program or department in which the degree specialization is taken. It is the responsibility of the student to learn particular requirements from the academic advisor. The completion of requirements for the doctorate must be satisfied through registration at the University of Pittsburgh.

Courses approved for transfer credit must be listed individually on the plan of studies. Also, when a student plan of studies lists directed study credits, a directed study agreement form must be completed, signed by both the student and faculty supervisor, and submitted for each directed study at the time of registration. Forms are available from the department.

Any changes in the plan of studies must be approved by the academic advisor and the program coordinator, conform to program requirements, and be filed with the Office of Admissions and Enrollment Services. At the time of graduation, completed courses must comply with the approved plan of studies.

Credit Requirements

The PhD degree requires a minimum of 90 credits in a degree program beyond the baccalaureate, distributed as follows: a minimum of 72 course credits (including transfer credits) and a minimum of 18 dissertation credits. Doctoral-level courses are numbered in the 3000 series, but courses numbered in the 2000 series may also be appropriate for doctoral study if approved on a plan of studies. Generally, courses numbered below 2000 do not meet the minimum requirements for doctoral study. Exceptions require the approval of the program or department. No lower-level undergraduate course (numbered 0001-0999) may be applied toward a doctoral degree. Department and program websites list specific degree requirements.

Acceptance of Transfer Credits

PhD students apply a maximum of 30 post-baccalaureate credits for transfer from other institutions in keeping with University-wide requirements (*see Acceptance of Transfer Credits*). Both applicants for admission and continuing University of Pittsburgh doctoral students seeking acceptance of transfer credits toward a doctoral degree must submit their transcripts with a completed "Course Credits Accepted" form, available on the School of Education website. When approved, transfer credits must appear on the student's Plan of Studies. The registrar, after notification of acceptance of transfer credits, will enter the individual transfer credits on the student's transcript. Grades (and quality points) are not recorded for credits accepted by transfer.

Each course transferred must meet the following conditions:

- The course grade must be at least B (GPA = 3.00) or its equivalent.
- The course must be judged relevant to a student's doctoral Plan of Studies by the program or department.
- The course must be approved for equivalent graduate degrees at the accredited institution, extension, or off-campus center of other institutions at which the course was taken.

The completion of requirements for the doctorate must be satisfied through registration at the University of Pittsburgh. However, under certain circumstances, a student may earn in an accredited graduate institution other than the University of Pittsburgh a limited number of credits toward a doctoral degree.

Doctoral students desiring to take courses at another institution following admission to the University of Pittsburgh should review the course descriptions and receive approval from their academic advisors and program or department prior to registering for those courses if they wish to ensure that these credits will be acceptable for transfer.

Residency

PhD students are required to be enrolled for full-time study, including involvement in research activities.

Supporting Field

PhD students are required to complete a minimum of nine credits in an academic discipline outside of education. This requirement may be met in one of three ways:

1. For a student who does not have a bachelor's degree or an equivalent number of credits to that for a bachelor's degree in an appropriate academic discipline, a minimum of 18 credits must be taken outside the School of Education in one field or in an interdisciplinary concentration (e.g., Latin American Studies or psycholinguistics) as approved by the program or department. No more than 6 of these credits may be used to satisfy research methodology requirements.
2. For a student who has a bachelor's degree or an equivalent number of credits for a bachelor's degree in an academic discipline, a minimum of 9 credits must be taken outside the School of Education in one field or in an interdisciplinary concentration as approved by the program or department. None of the 9 credits may be used to satisfy research methodology requirements.
3. For a student who has a master's degree or an equivalent number of credits toward a master's degree in a relevant academic discipline outside of education, no additional credits outside the School of Education need to be taken.

Supervised Research

PhD students are required to complete a supervised research experience that results in a written report of the experience. Enrollment for six credits of supervised research, internship, practicum, or directed study is required.

Statute of Limitations

From the student's initial registration for doctoral study at the University of Pittsburgh, all requirements for the PhD must be completed within a period of 10 years (or 8 years if the student has received credit for a master's degree appropriate to the field of study).

Under certain conditions, the dean/associate dean may grant an extension of a student's statute of limitations. The request for extension must include a recommendation made by the academic advisor, with the recommendation approved by the Dean of the school. The statute of limitations can only be extended once.

Doctoral Preliminary Evaluation

Each doctoral student is required to take a preliminary evaluation designed to assess the breadth of the student's knowledge of the discipline, the student's achievement during the initial phase of graduate study, and the student's potential to apply research methods independently. The preliminary

evaluation is administered by the program or department to which the student has been admitted. Procedures of administration are available from the program or department.

Advancement to Doctoral Study

To advance to doctoral study, a student must:

- be admitted to full graduate status;
- have completed at least 15 post-master's graduate credits at the University of Pittsburgh;
- have earned a GPA of at least 3.30 (transfer credits not considered) in post-master's graduate study at the University of Pittsburgh;
- have a Plan of Studies approved by the academic advisor and the program coordinator on file in the Office of Admissions and Enrollment Services; and
- have passed the doctoral preliminary evaluation.

Comprehensive Examination

After advancement to doctoral study, each doctoral student is required to take a comprehensive examination. The comprehensive examination is constructed, administered, and scored by the department or program to which the student has been admitted. Procedures and schedules of administration are available from the department or program.

A student must be registered in the term during which the comprehensive examination is taken. In no case may the student be graduated in the same term in which the comprehensive examination is taken. After the comprehensive examination is passed, the student has the remaining time specified by the statute of limitations to complete all remaining doctoral degree requirements. Satisfactory completion of the doctoral comprehensive examination requirement is part of the demonstration of doctoral competency.

Ordinarily, students do not register for dissertation credits until they have passed the comprehensive examination.

Doctoral Competency

Each doctoral student is required to demonstrate doctoral competency by satisfactorily completing the supervised research requirement and doctoral comprehensive examination. The form certifying that a student has demonstrated doctoral competency is initiated by the student's academic advisor, signed by the academic advisor, the program coordinator, and the department chairperson, and then sent to the Office of Admissions and Enrollment Services. The dean/associate dean notifies the student that doctoral competency has been demonstrated.

Doctoral Committee

For the PhD student, the doctoral committee consists of the research advisor and at least three other members, including one member from another department outside the School of Education at the University of Pittsburgh or from an appropriate graduate program outside education at another academic institution. The research advisor and a majority of the total committee must be full or adjunct members of the graduate faculty of the University of Pittsburgh. Current graduate faculty membership may be found on the University's Institutional Research website.

The program faculty, the department chairperson, and the dean/associate dean must approve membership on and subsequent changes in the doctoral committee. After the program has approved the doctoral committee, the research advisor initiates the "Proposed Doctoral Committee" form to obtain the signatures of the program coordinator, the department chairperson, and the dean/associate dean. The dean/associate dean must give final approval of the doctoral committee before the overview examination may be scheduled.

Dissertation Overview

The dissertation overview is a written proposal and must be presented to the doctoral committee for approval after doctoral competency has been demonstrated.

The Overview Examination

The overview examination is conducted by the doctoral committee, is chaired by the research advisor, and is open to any faculty member of the graduate faculty of the University wishing to attend. Although any faculty member may participate in the examination, only members of the doctoral committee may be present during the final deliberation and vote on approving the overview. Each member of the doctoral committee must sign the overview form and vote on approving the overview. The committee must unanimously approve the overview in order for the student to be advanced to doctoral candidacy.

Dissertation

Students should review the information detailed under Dissertation and Abstract and Final Oral Examination for University-wide regulations regarding dissertations and dissertation defenses. School of Education-specific rules follow:

The Dissertation Defense

The same rules apply here as detailed under The Overview Examination above.

Vote on the Dissertation Defense

Each member of the doctoral committee must sign the dissertation defense form and vote to pass or fail the student on the dissertation defense. If the decision of the committee is not unanimous, the case is referred to the dean/associate dean for resolution.

Submission Requirements and Fees

For general information concerning preparation of the dissertation, refer to the ETD website.

At least one week prior to the end of the term, the dissertation is submitted in final form to the Office of Admissions and Enrollment Services along with the following materials:

- Signed dissertation defense form
- Signed ETD approval form
- Two copies of the dissertation abstract initialed by the research advisor
- Completed ProQuest Agreement forms
- Completed Survey of Earned Doctorate form
- Receipt from the Student Payment Center for payment of the dissertation processing fee
- Two copies of the title page

Information concerning requirements for preparing the abstract, the forms to be completed, and the amount of the fees to be paid is available in the Office of Admissions and Enrollment Services. The dissertation and abstract will be examined there to see that they are prepared in an acceptable form and style. For dissertation preparation style information refer to the ETD Format Guidelines. Questions not answered in these documents regarding form and/or style will be referred to the dean/associate dean for review and final decision.

Mathematics Education, PhD

The Doctor of Philosophy (PhD) in mathematics education emphasizes the development of scholarly attainment in the theory, research, and practice of mathematics education. Graduates of this program are prepared to be faculty members in research-focused colleges or universities, researchers in non-academic institutions, or leaders in schools, universities, research facilities or other settings in which mathematics education takes place. From the beginning of the program, students have opportunities to work with faculty in research activities, eventually developing their own lines of interest, which they pursue through the dissertation phase and beyond. Currently, potential areas of work include studying student and teacher learning, particularly in urban settings, with respect to race and other issues of equity-including identifying mathematics instructional practices that provide high-quality learning opportunities to all students; studying how teachers can be supported to develop high-quality and equitable forms of practice; and understanding how students' and teachers' learning is influenced by the larger institutional settings in which they study and work.

Doctor of Philosophy Degree

PhD Core Curriculum

Methods Courses

Preparing students to tackle problems of practice and policy, and create innovative research agendas, requires intentionality in the methods coursework that supports students' development of independent projects, meaningful contributions to advisors' research, and critical analysis of past research. To help ensure that students develop the necessary analytic competencies, students across the areas of concentration (ARCOs) for the PhD in the School of Education are required to complete **a minimum of 5 methods courses**: Quantitative 1 (EDUC 2100) and 2 (EDUC 3100); Qualitative 1 (EDUC 3104); and 2 seminars in advanced quantitative or qualitative methods, determined by the student and their advisor.

- EDUC 3100 - INTRODUCTION TO QUAN METHODS: DESCRIPTIVE AND INFERENTIAL STATISTICS
- EDUC 3103 - QUANTITATIVE METHODS 2
- EDUC 3104 - INTRODUCTION TO QUALITATIVE METHODS

First Year Seminar

To further support students' research competencies, PhD students also participate in a school wide first year seminar (EDUC 3102) and EDUC 3105). This seminar meets every other week (1 credit in fall and 2 credits in spring, taken over and above the typical 9 credit course load) and focuses on familiarizing students with practical and ethical issues in research (e.g., necessary clearances for working in schools, resolving questions of authorship and authorship order, human subjects guidelines), and supporting students work on their pre-dissertation proposal (e.g., developing innovative research questions, conducting a literature review).

- EDUC 3102 - FIRST YEAR SEMINAR 1
- EDUC 3105 - FIRST YEAR SEMINAR 2

Additionally, PhD students enroll in writing seminar courses taken over and above the typical 9-credit course load beginning in the second year of study. These credits are above and beyond the 90 credits required for graduation.

Science Education, PhD

Requirements	Credits
Major Field Studies	30-36
At least 15 credits must be at the 3000 level	
Supervised Research Practice	6
Minor Field Area	9-18 minimum
Research Methods	12 minimum
Electives	Variable
Doctoral Dissertation Research	18
Total Required Credits	90

Doctor of Philosophy Degree

The Doctor of Philosophy (PhD) in mathematics and science education emphasizes the development of scholarly attainment in the theory, research, and practice of mathematics and science education. Graduates of this program are prepared to be faculty members in research-focused colleges or universities, researchers in non-academic institutions, or leaders in schools, universities, research facilities or other settings in which mathematics and science education takes place. From the beginning of the program, students have opportunities to work with faculty in research activities, eventually developing their own lines of interest, which they pursue through the dissertation phase and beyond. Currently, potential areas of work include studying student and teacher learning, particularly in urban settings. In this work we aim to identify mathematics or science instructional practices that provide high-quality learning opportunities to all students; study how teachers can be supported to develop high-quality and equitable forms of practice; and understand how students' and teachers' learning is influenced by the larger institutional settings in which they study and work.

PhD Core Curriculum

Methods Courses

Preparing students to tackle problems of practice and policy, and create innovative research agendas, requires intentionality in the methods coursework that supports students' development of independent projects, meaningful contributions to advisors' research, and critical analysis of past research. To help ensure that students develop the necessary analytic competencies, students across the areas of concentration (ARCOs) for the PhD in the School of Education are required to complete **a minimum of 5 methods courses**: Quantitative 1 (EDUC 2100) and 2 (EDUC 3100); Qualitative 1 (EDUC 3104); and 2 seminars in advanced quantitative or qualitative methods, determined by the student and their advisor.

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- EDUC 3102 - FIRST YEAR SEMINAR 1
- EDUC 3105 - FIRST YEAR SEMINAR 2

Additionally, PhD students enroll in writing seminar courses taken over and above the typical 9-credit course load beginning in the second year of study. These credits are above and beyond the 90 credits required for graduation.

Special Education, EdD

EdD Curriculum

The EdD program is a three-year 90-credit program, including 30 credits transferred from relevant graduate work. Students are required to transfer 30 credits of graduate work into the EdD program.

The EdD curriculum is delivered in several stages, through a variety methods:

- **Orientation:** The EdD cohort participates in a full-day, on campus, orientation in the spring before the summer start of the program. The day includes a welcome from the Dean of the School of Education, EdD program information, and cohort-building activities as well as an introductory session with other students in your Area of Concentration. Orientation typically takes place in April.
- **One-week intensive on ramp:** The EdD cohort will participate in a full-week, on campus, experience that includes intense work focused on understanding enduring problems of practice in education, health, and human development. This one-week experience, known as the "on-ramp", will be your first foundations course on framing, identifying, and investigating problems of practice. The on-ramp typically takes place in June.
- **Hybrid seminars:** You will experience a hybrid model of education through online course experiences and in-person, once per month (typically on Saturdays) sessions on the Pittsburgh campus. Attendance at in-person, on campus sessions is *required*.

SCHEDULE

Year 1: Summer	Year 1: Fall	Year 1: Spring	Year 1: Summer
EDUC 3002 Foundation 1: Becoming a Leader Scholar Practitioner (3 credits) <i>ON-RAMP</i>	EDUC 3003 Foundation 2: Leadership in Groups and Organizations (3 credits)	EDUC 3004 Foundation 3: Education Contexts (3 credits)	EDUC 3005 Foundation 4: Investigating Policy as a Lever for Change (3 credits)

EDUC 3001 Practitioner Inquiry 1 (3 credits)	ARCO: Course 1 (3 credits)	ARCO: Course 2 (3 credits)	Practitioner Inquiry 2 (3 credits)
Year 2: Fall	Year 2: Spring	Year 2: Summer	
EDUC 3009 Supervised Practitioner Inquiry (3 credits) ARCO: Course 3 (3 credits)	EDUC 3007 Practitioner Inquiry 3 (3 credits) ARCO: Course 4 (3 credits)	EDUC 3008 Practitioner Inquiry 4 (3 credits) EDUC 3012 Laboratory of Practice (3 credits)	
Year 3: Fall	Year 3: Spring	Year 3: Summer	
EDUC 3099 Guidance in Scholarly Practice (6 credits)	EDUC 3099 Guidance in Scholarly Practice (6 credits)	EDUC 3099 Guidance in Scholarly Practice (6 credits)	

CORE COURSES Credits / Units: 24 Total

Foundation Courses

- EDUC 3002 - FOUNDATIONS 1:
- EDUC 3003 - FOUNDATIONS 2: LEADERSHIP IN GROUPS AND ORGANIZATIONS
- EDUC 3004 - FOUNDATIONS 3: CONTEXTS OF EDUCATION
- EDUC 3005 - FOUNDATIONS 4: POLICY AS A LEVER FOR CHANGE

Practitioner Inquiry Courses

- EDUC 3001 - PRACTITIONER INQUIRY 1
- EDUC 3006 - PRACTITIONER INQUIRY 2
- EDUC 3007 - PRACTITIONER INQUIRY 3
- EDUC 3008 - PRACTITIONER INQUIRY 4: APPLYING DISCIPLINED INQUIRY

SUPERVISED PRACTITIONER INQUIRY

Students will identify, review and synthesize relevant scholarship that supports as inquiry into a problem of practice.

- EDUC 3009 - SUPERVISED PRACTITIONER INQUIRY

LABORATORY OF PRACTICE

Students will complete a Laboratory of Practice, a setting where theory and practice inform and enrich each other and facilitate transformative and generative learning that is measured by the development of scholarly expertise and implementation of practice (Carnegie Project on the Education Doctorate, 2010). Students choose from three types of experiences: job embedded, aspirant, or global.

- EDUC 3012 - SUPERVISED INTERNSHIP

GUIDANCE IN SCHOLARLY PRACTICE

Guidance in Scholarly Practice: Based on research interests, the students will be required to write a manuscript that reports on the improvement science process.

Portfolio of Scholarly Practice: The portfolio of scholarly practice will provide evidence of learning and success in foundations, inquiry, and ARCO experiences.

- EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE

Special Education ARCO Curriculum

Special Education ARCO Courses

- IL 3541 - WEB INSTRNL PRACTICES SP EDUC
- IL 3542 - WEB CURRNT ISSUES & TRENDS SP ED
- IL 3928 - WEB LEGL & LEGISLTV FDS OF SP ED

The new course will combine related topics from ADMPS 2115, IL 3571, and IL 3501.

Beginning in fall 2019, EdD Special Education students will be able to simultaneously complete the requirements for the PA Supervisor of Special Education certification within the existing 60 credits of the EdD Program. They may also opt to complete the EdD without adding the Supervisor of Special Education PDE certification.

Students pursuing both the EdD and Supervisor of Special Education PDE certification will take 3 total credits of IL 3596 Internship in Special Education over the course of three semesters, instead of EDUC 3012 Supervised Internship. These students will be expected to follow internship guidelines and requirements established for the Supervisor of Special Education PDE certification. Students not electing to, or not qualified to complete the Supervisor of Special Education certification will not take IL 3596, and will instead take EDUC 3012 Supervised Internship.

Students choosing for EdD/Supervisor of Special Education PDE certification program will need to pass all required courses in the plan of studies and maintain a 3.0 GPA or better in addition to completing program benchmarks (See Appendix A). Students planning to apply for the Supervisor of Special Education certification are also required to pass the PRAXIS II examination in Educational Leadership: Administration and Supervision (Test Code 5411) in order to be certified.

- IL 3596 - INTERNSHIP IN SPECIAL EDUCATION

Graduate Certificate

Science, Technology, Engineering, Art & Mathematics (STEAM), Online Certificate

Curriculum

All students must complete 12 course credits for this STEAM Education Certificate within the Department of Instruction and Learning.

Course names:

- STEAM Instructional Design 3 credits
- STEAM Transdisciplinary Learning Approaches 3 credits
- STEAM Assessment 3 credits
- STEAM Implementation 3 credits

Field-based hours are required (30 hours) to meet the STEM Endorsement and therefore will be a part of all courses. These hours will be embedded in coursework of STEAM Transdisciplinary Learning Approaches and STEAM Implementation.

Joint Degree

Foreign Language Education with TESOL Certificate, MEd

Master's Degree Requirements

The requirements presented in this section are school-wide requirements that have been established in addition to the University-wide requirements detailed under general academic regulations. Students should review the general academic regulations section in addition to the specific school information detailed below.

Common Requirements

All master's degrees awarded by the School of Education require the completion of an approved plan of studies consisting of a minimum of 36 credits (including 9 credits in Basic Areas of Education) and the passing of a comprehensive examination.

Acceptance of Transfer Credits

For University-wide rules, see Acceptance of Transfer Credits under General Academic Regulations. School-specific detail follows.

A maximum of 6 transfer credits may be counted toward an MA or MS degree. A maximum of 12 transfer credits may be counted toward an MAT or MEd degree. Only graduate courses taken as a graduate student may be transferred and applied toward a master's degree. The only exception are courses taken while an undergraduate student at the University of Pittsburgh during the final term of undergraduate study that meet the following requirements, as explained in the Graduate Catalog:

Undergraduate students who need fewer than 15 credits to complete requirements for the baccalaureate degree and who intend to continue study toward an advanced degree may be permitted during their final term to register for graduate courses that will later apply toward a graduate degree. The student must obtain written permission from the school of proposed graduate study that the courses may count when and if the student is admitted into the graduate degree program. This privilege should not be granted if the proposed total program exceeds a normal full-time load. Although these credits will appear on the undergraduate transcript, they will not count toward fulfilling undergraduate degree requirements. They will be posted as advanced standing credits on the graduate transcript.

Grade Point Average/Academic Probation

All students enrolled in master's degree programs are required to maintain a grade point average (GPA) of at least 3.000. The cumulative GPA is based on all course work taken after enrollment in the appropriate graduate program. A student is automatically placed on academic probation when the cumulative GPA after 6 credits or more, exclusive of transfer credits, falls below 3.00. Although the credits allowed for acceptable work completed elsewhere by students enrolled in the School of Education count toward the total number of credits required for the graduate degree, the grades earned in such courses are not included in GPA computations.

While on probation students are limited to registering only for courses in which a letter grade is given. To be removed from probation status, a student must achieve a 3.50 GPA in 6 credits or more. A student can only be placed on academic probation status once during their program of study. Students placed on academic probation status will receive notification in the form of a letter from the School of Education, and they will be recommended to seek guidance from their academic advisor.

Ordinarily, students are required to terminate graduate study after two terms on probation. A student who does not meet the GPA or credit requirements will be dismissed from the School of Education, unless serious extenuating circumstances exist. The request for continuation must include a recommendation made by the Department Chair (or designated faculty member) and the academic advisor, with the recommendation approved by the Dean of the school.

Statute of Limitations

All requirements for a master's degree must be completed within a period of four consecutive calendar years from the student's initial registration for master's study in an MA or MS degree program or within five years in an MAT or MEd program.

Under certain conditions, the dean/associate dean may grant an extension of a student's statute of limitations. The request for extension must include a recommendation made by the academic advisor, with the recommendation approved by the Dean of the school. The statute of limitations can only be extended once.

Leave of Absence

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

Academic Integrity Policy

Students have the right to be treated by faculty in a fair and conscientious manner in accordance with the ethical standards generally recognized within the academic community (as well as those recognized within the profession). Students have the responsibility to be honest and to conduct themselves in an ethical manner while pursuing academic studies. Should a student be accused of a breach of academic integrity or have questions regarding faculty responsibilities, procedural safeguards including provisions of due process have been designed to protect student rights. These general procedures may be found in Guidelines on Academic Integrity: Student and Faculty Obligations and Hearing Procedures at www.provost.pitt.edu. The School of Education has its own academic integrity policies, posted on the School of Education website. Students are encouraged to review these school-specific guidelines as well.

Plan of Studies

Before completion of 15 credits, students, in consultation with their academic advisor, should complete a Plan of Studies that conforms to program requirements. The plan of studies, approved by the academic advisor and the program coordinator, is filed in the Office of Admissions and Enrollment Services.

Any changes in the Plan of Studies must be approved by the academic advisor and the program coordinator, conform to program requirements, and be filed in the Office of Admissions and Enrollment Services. At the time of graduation, completed courses must comply with the approved Plan of Studies.

Basic Areas of Education Requirement

All master's degrees conferred by the School of Education require a minimum of 9 credits of study from the Basic Areas of Education (BAE), 3 credits each from courses offered in the content areas of psychological perspectives on education, social and cultural perspectives on education, and research methods. A maximum of 6 credit hours of BAE courses may be taken from those offered within a single department. The courses in each area that may be used to meet this requirement are listed below. See also individual program curricula for exceptions to how their master's degree programs meet the Basic Areas of Education Requirement.

Psychological Perspectives on Education

- EDUC 2000 - PSYCHOLOGY OF LEARNING AND DEVELOPMENT FOR EDUCATION
- EDUC 2007 - HUMAN LEARNING
- EDUC 2008 - CONCEPTION TO EARLY CHILDHOOD
- EDUC 2009 - DEVELOPMENT: MIDDLE CHILDHOOD/ADOLESCENCE

Social and Cultural Perspectives on Education

- EDUC 2100 - EDUCATION AND SOCIETY
- EDUC 2102 - HISTORY OF EDUCATION
- EDUC 2103 - RACE AND RACISM IN EDUCATION AND SOCIETY
- EDUC 2104 - LEADERSHIP IN SERVICE LEARNING
- EDUC 2105 - SOCIOLOGY OF EDUCATION
- EDUC 2106 - EDUCATION AND CULTURE
- EDUC 2107 - EVIDENCE BASED HEALTH PROGRAM PLANNING
- EDUC 2108 - STATE/NATIONAL POLITICS OF EDUCATION
- EDUC 2109 - GENDER IN EDUCATION
- EDUC 2110 - GENDER AND EDUCATION
- EDUC 2111 - CONTEMPORARY PHILOSOPHY OF EDUCATION
- EDUC 2112 - POLITICS AND HISTORY OF HIGHER EDUCATION

Research Methods

- EDUC 2200 - DISCIPLINED INQUIRY *
- EDUC 2201 - INTRODUCTION TO RESEARCH METHODOLOGY
- EDUC 2202 - EDUCATIONAL/PSYCHOLOGICAL MEASUREMENT
- EDUC 2205 - FIELD METHODS

*Enrollment limited to MAT students

Additional Requirements

Master's Comprehensive Examination

The School of Education requires a comprehensive examination for all master's degrees. The comprehensive examination is designed to assess the student's mastery of the general field of graduate study. The comprehensive examination is constructed, administered, and scored by the program or department to which the student has been admitted. Procedures and schedules of administration are available from the program or department. *The student must be enrolled to take the comprehensive examination.

**See also Comprehensive Examination under Regulations Pertaining to Master of Arts and Master of Science Degrees. The University-wide regulations on comprehensive examinations detailed there apply to all School of Education master's programs.*

Thesis, Thesis Equivalent, and Research Paper Requirements

Some MA and MS degree programs within the School of Education are offered with a thesis requirement while others are offered with the option of completing either a thesis or a thesis equivalent. All MAT degree programs and some MEd programs require the completion of a research paper.

Master's Degree with Thesis

The master's degree with thesis is intended for graduate students who have pursued advanced graduate study in at least one field of education specialization and have demonstrated through the master's thesis the capability to plan and carry through a project of original research. The plan of studies should include at least 6 credits in thesis work.

Thesis Overview

The thesis overview is a written proposal for the thesis. The overview is presented to the master's committee, which consists of a minimum of three faculty members (at least one from another program or department) selected in consultation with the student by the research advisor and approved by the department. The student must submit a form for approval of the thesis committee. A student must be registered in the term during which the thesis overview meeting is scheduled. A unanimous vote of the master's committee is required for approval of the overview. The outcome of the overview meeting is submitted on the appropriate form along with a corrected copy of the overview to the Office of Admissions and Enrollment Services.

Approval of Research with Human Subjects

If the research proposed in the overview involves human subjects, the proposed research must be approved by the University Institutional Review Board (IRB) for the Protection of Human Subjects before it may be carried out. Information on materials that must be submitted and the procedures that must be followed for an IRB review are available in departmental offices and the Office of Admissions and Enrollment Services.

Advancement to Master's Candidacy

To be advanced to candidacy for the master's degree with thesis a student must:

- be admitted to full graduate status;
- have a minimum grade point average of 3.00 (transfer credits not considered);
- have an approved plan of studies on file in the Office of Admissions and Enrollment Services;
- have passed the comprehensive examination;
- have an approved overview on file in the Office of Admissions and Enrollment Services; and
- if the proposed research involves human subjects, have a letter on file in the Office of Admissions and Enrollment Services from the IRB approving the proposed research.

Thesis Preparation

The thesis research is completed and the thesis is prepared under the direction of the research advisor according to the approved overview. In preparing the thesis, the student must follow the University's ETD Format Guidelines, and specific departmental or program requirements.

Final Oral Examination

The completed thesis is submitted to the master's committee for the final oral examination. The student must be registered in the term during which the final oral examination is scheduled. The final oral examination is devoted primarily to the thesis, and an affirmative vote by a majority of the committee members is required to pass the examination. One corrected copy of the thesis as approved by the master's committee must be filed, along with one copy of a research advisor approved abstract and the form showing a passed final oral examination, no later than one week before the end of the term during which the student expects to graduate. The dean/associate dean must approve any exception to this requirement.

Master's Degree with Thesis Equivalent Option/Research Paper

Master's degrees with the thesis equivalent option or research paper requirement are intended for graduate students who have pursued advanced study in at least one field of educational specialization and have demonstrated capability of presenting information relevant to an issue or problem in education. The plan of studies should include at least 3 credits in a research seminar, supervised research, or directed study involving research in the student's focus area.

Research Paper Requirements

Each candidate for the master's degree with the thesis equivalent option or research paper requirement must complete, in acceptable form, a research paper that demonstrates the ability to locate, organize, and summarize information bearing on an issue or problem in education. This project is usually initiated and completed in the research seminar of the student's major. For certain majors, this requirement may be met by other means, such as successful exhibits or demonstrations.

Master of Education Degree with TESOL Certificate

This option permits qualified individuals for the MEd with a specialization in foreign language education to be considered upon application by the Department of Instruction and Learning and by the Department of Linguistics for admission to the University of Pittsburgh certificate program in the Teaching of English to Speakers of Other Languages (TESOL). If accepted, students combine course work for the MEd in foreign language education with required courses for the TESOL certificate. Students complete a minimum of 37 credits in this combined specialization. The University of Pittsburgh TESOL certificate is not to be confused with state certification for teaching in the public elementary or secondary schools. The degree is ideal for individuals seeking positions as English language teachers in other countries or in university English Language Institutes. Each applicant who is not a native speaker of English must: (1) achieve a score of 100 or higher on the internet-based TOEFL (Skill Requirements: Reading and Listening - High; Speaking and Writing - one skill must be at the level of Good) or 7.5 or higher on the IELTS (Skills Requirement: Speaking and Writing - combined minimum of 13) and (2) have good spoken English skills.

Required Course

- EDUC 2000 - PSYCHOLOGY OF LEARNING AND DEVELOPMENT FOR EDUCATION

Social and Cultural Perspectives on Education

Choose 3.0 credits from the following courses:

- IL 2405 - INTRODUCTION TO ACTION RESEARCH METHODS
- IL 2256 - ISSUES IN FOREIGN LANGUAGE ED
- IL 2253 - PRIN/PRA FRGN LANG TESTNG ASSMNT

Foreign Language Education Elective

- LING 1000 - INTRODUCTION TO LINGUISTICS
- LING 2738 - LINGUISTIC STRUCTURES OF ENGLISH
- LING 2142 - THEORIES AND PRACTICES OF SECOND LANGUAGE TEACHING
- LING 2146 - SECOND LANGUAGE ACQUISITION
- LING 2143 - SEM LANG TCHNG MATLS DEVELOPMENT
- LING 2195 - PRACTICUM ESL TEACHING
- IL 2290 - RESEARCH SEMINR FOR MED STUDENTS

Master's

Applied Behavior Analysis, MEd

Program Studies-Applied Behavior Analysis

- IL 2564 - APPLIED BEHAVIORAL ANALYSIS 1: FUNDAMENTALS 1
- IL 2565 - APPLIED BEHAVIORAL ANALYSIS 2: FUNDAMENTALS 2
- IL 2566 - APPLIED BEHAVIORAL ANALYSIS 3: APPLICATIONS IN DEVELOPMENTAL DISABILITIES
- IL 2567 - APPLIED BEHAVIORAL ANALYSIS 4: EMOTIONAL BEHAVIORAL DISABILITIES OF CHILDREN AND ADOLESCENTS
- IL 2568 - APPLIED BEHAVIORAL ANALYSIS 5: CURRENT DEVELOPMENTS IN APPLIED BEHAVIORAL ANALYSIS
- IL 2578 - APPLIED BEHAVIORAL ANALYSIS 6: ETHICS

Program Studies-Approved Electives

Choose 9.0 credits from the following courses

- IL 2505 - AUTISM: CHARACTERISTICS AND INTERVENTIONS
- IL 2506 - SOCIAL AND COMMUNICATIVE INTERVENTIONS: AUTISM
- IL 2509 - APPLD BHVR ANAL/POSTV BHVR SUPRT
- IL 2511 - CURR PRG DVLP-LOW INCDNC DISABS
- IL 2522 - ED STDNT EMOTIONAL DISTURBANCE
- IL 2529 - BRAILLE
- IL 2530 - INTRODUCTION TO THE EYE AND LOW VISION
- IL 2531 - EDUCATION OF CHILDREN WITH VI 1
- IL 2533 - ORIENTATION AND MOBILITY FOR THE TVI
- IL 2540 - FOUNDATIONS OF ORIENTATION AND MOBILITY
- IL 2569 - APPLIED BEHAVIORAL ANALYSIS PRACTICUM
- IL 2585 - TECHNOLOGY-BASED INTERVENTIONS: AUTISM

Psychological Perspective on Education

Choose 3.0 credits from the following courses.

- EDUC 2000 - PSYCHOLOGY OF LEARNING AND DEVELOPMENT FOR EDUCATION
- EDUC 2007 - HUMAN LEARNING
- EDUC 2008 - CONCEPTION TO EARLY CHILDHOOD
- EDUC 2009 - DEVELOPMENT: MIDDLE CHILDHOOD/ADOLESCENCE
- PSYED 2127 - HUMAN LEARNING
- PSYED 2503 - DEVELOPMENT: CONCEPTION THROUGH EARLY CHILDHOOD
- PSYED 2504 - DVLP: MIDDLE CHLHD/ADOLESCENCE

Research Methods

Research Methods: Choose 3.0 credits from the following 2 courses

- EDUC 2201 - INTRODUCTION TO RESEARCH METHODOLOGY
- PSYED 2001 - INTRODUCTION TO RESEARCH METHODOLOGY

Social and Cultural Perspectives on Education

Choose 3.0 credits from the following courses

- ADMPS 2050 - RACE AND RACISM IN EDUCATION AND SOCIETY
- ADMPS 2133 - GENDER AND EDUCATION
- ADMPS 2302 - STATE/NATIONAL POLITICS OF EDUCATION
- ADMPS 2305 - SOCIOLOGY OF EDUCATION
- ADMPS 2306 - HISTORY OF EDUCATION
- ADMPS 2307 - POLITICS AND HISTORY OF HIGHER EDUCATION
- ADMPS 2310 - CONTEMPORARY PHILOSOPHY OF EDUCATION
- ADMPS 2342 - EDUCATION AND CULTURE
- ADMPS 2344 - LEADERSHIP IN SERVICE LEARNING
- ADMPS 2352 - ANTHROPOLOGY OF EDUCATION
- EDUC 2100 - EDUCATION AND SOCIETY
- EDUC 2102 - HISTORY OF EDUCATION
- EDUC 2103 - RACE AND RACISM IN EDUCATION AND SOCIETY
- EDUC 2104 - LEADERSHIP IN SERVICE LEARNING
- EDUC 2105 - SOCIOLOGY OF EDUCATION
- EDUC 2106 - EDUCATION AND CULTURE
- EDUC 2107 - EVIDENCE BASED HEALTH PROGRAM PLANNING
- EDUC 2108 - STATE/NATIONAL POLITICS OF EDUCATION
- EDUC 2110 - GENDER AND EDUCATION
- EDUC 2111 - CONTEMPORARY PHILOSOPHY OF EDUCATION
- EDUC 2112 - POLITICS AND HISTORY OF HIGHER EDUCATION
- HPA 2322 - EVIDENCE BASED HEALTH PROGRAM PLANNING
- EDUC 2109 - GENDER IN EDUCATION

Research Seminar

- IL 2590 - RESEARCH SEMINAR IN SP ED

Combined Accelerated Studies in Education (CASE), MEd

Requirements

After completion of the junior and senior years of study in the undergraduate Combined Accelerated Studies in Education (CASE) program the student can apply for admission to the graduate CASE Program. The 40 credit program leads to an MEd degree, PreK-4 certification and PreK-8 special education certification.

- IL 2290 - RESEARCH SEMINR FOR MED STUDENTS
- IL 2434 - MATH AND SCIENCE METHODS 2 (PRE K - GRADE 4)
- IL 2509 - APPLD BHVR ANAL/POSTV BHVR SUPRT
- IL 2512 - ASSMNT INSTRUC-HIGH INCDNC DISAB
- IL 2513 - INSTRNL METH-HIGH INCIDNC DISABS
- IL 2522 - ED STDNT EMOTIONAL DISTURBANCE
- IL 2707 - FIELD SEMINAR IN EARLY CHILDHOOD EDUCATION
- IL 2751 - METHODS AND MANAGEMENT IN SP ED
- IL 2800 - STUDENT TEACHING-EARLY CHLDHD ED
- IL 2853 - STUDENT TEACHING - STUDENTS WITH HIGH INCIDENCE OF DISABILITIES
- IL 2858 - STUDENT TEACHING SEMINAR - SPECIAL EDUCATION TEACHER PREPARATION

Early Childhood Education, MEd

The program is intended for individuals who already have an Early Childhood Education Certificate or whose career paths do not require them to have a certificate. Individuals who complete the post-baccalaureate Early Childhood Education Certification program (Primary Plus) at the University of Pittsburgh may apply up to 18 credits from their certification studies towards the Master of Education program. Application to the M.Ed. program must be made within three years of completing the certification program. Course work in the Master of Education program is intended to enhance the continuing professional development of early childhood teachers beyond the skills and competencies acquired during certification study and to assist them in gaining greater self-determination through heightened awareness and understanding of their own teaching practice. Students complete a minimum 36-credit-hour program and must fulfill all curriculum and degree requirements for graduation.

Basic Areas of Education (12 credits)

Education and Human Development - 3 credits

Education and Society - 3 credits

Intro to Research Methodology - 3 credits

- IL 2290 - RESEARCH SEMINR FOR MED STUDENTS or
- IL 2690 - RESEARCH SEMINAR ONLINE

Methods Courses

- IL 2042 - LANGUAGE AND LITERATURE FOR THE YOUNG CHILD
- IL 2270 - INTEGRATED ART & MUSIC IN ELEMENTARY SCHOOL
- IL 2433 - MATH/SCIENCE INSTRUCTION FOR YOUNG LEARNERS 1 (PREK - GRADE 4)
- IL 2434 - MATH AND SCIENCE METHODS 2 (PRE K - GRADE 4)
- IL 2905 - TEACHING INFANTS, TODDLERS AND PRESCHOOLERS
- IL 2208 - READING/WRITING METHODS 1: PRE K - GRADE 1
- IL 2209 - READING WRITING METHODS 2: GRADE 2-4
- IL 2268 - SOCIAL STUDIES METHODS PRE-K - 4
- IL 2047 - INTEGRATED CURRICULUM PRE-K-4
- IL 2563 - SEM: INCLUSION EARLY CHILDHOOD
- Other Elective Approved by Advisor - 3 credits

Major Field Studies

- IL 2041 - INTRO TO EARLY CHILDHOOD ED
- IL 2906 - COMMUNITY RESOURCES SEMINAR: YOUNG CHILDREN AND FAMILIES
- Advanced Course in Family Studies or Approved Elective - 3 credits
- Practicum or Approved Elective - 3 credits

Special Ed

One of the following:

- IL 2500 - FOUNDATIONS OF SPECIAL EDUC
- IL 2501 - STUDENT W/DISAB IN ELEM CLSSRM
- IL 2523 - LITERACY ASSESSMENT & INSTRUCTION FOR CHILDREN WITH DISABILITIES IN INCLUSIVE SETNGS IN ELEM CLSSRMS
- IL 2505 - AUTISM: CHARACTERISTICS AND INTERVENTIONS

Early Intervention for Children with Disabilities Focus on Early Intervention, MEd

The Early Intervention program is an academic Master's program that prepares individuals to work with young children with disabilities (ages birth to 5 years) and their families. A hands-on, carefully supervised approach is used to assist students in developing competence in assessing young children with a variety of disabilities and planning, implementing, and evaluating appropriate educational programs for them. Students are taught to work in partnership with families and to collaborate with professionals from other disciplines. Consideration is given to a wide range of service delivery models including home, center, school, and hospital-based programs. Special emphasis is placed on preparing students to address the needs of young children with disabilities in natural, community settings that are designed for the inclusion of all children through direct and consultative service delivery.

Master's Degree Requirements

The requirements presented in this section are school-wide requirements that have been established in addition to the University-wide requirements detailed under general academic regulations. Students should review the general academic regulations section in addition to the specific school information detailed below.

Common Requirements

All master's degrees awarded by the School of Education require the completion of an approved plan of studies consisting of a minimum of 36 credits (including 9 credits in Basic Areas of Education) and the passing of a comprehensive examination.

Acceptance of Transfer Credits

For University-wide rules, see Acceptance of Transfer Credits under General Academic Regulations. School-specific detail follows.

A maximum of 6 transfer credits may be counted toward an MA or MS degree. A maximum of 12 transfer credits may be counted toward an MAT or MEd degree. Only graduate courses taken as a graduate student may be transferred and applied toward a master's degree. The only exception are courses taken while an undergraduate student at the University of Pittsburgh during the final term of undergraduate study that meet the following requirements, as explained in the Graduate Catalog:

Undergraduate students who need fewer than 15 credits to complete requirements for the baccalaureate degree and who intend to continue study toward an advanced degree may be permitted during their final term to register for graduate courses that will later apply toward a graduate degree. The student must obtain written permission from the school of proposed graduate study that the courses may count when and if the student is

admitted into the graduate degree program. This privilege should not be granted if the proposed total program exceeds a normal full-time load. Although these credits will appear on the undergraduate transcript, they will not count toward fulfilling undergraduate degree requirements. They will be posted as advanced standing credits on the graduate transcript.

Grade Point Average/Academic Probation

All students enrolled in master's degree programs are required to maintain a grade point average (GPA) of at least 3.000. The cumulative GPA is based on all course work taken after enrollment in the appropriate graduate program. A student is automatically placed on academic probation when the cumulative GPA after 6 credits or more, exclusive of transfer credits, falls below 3.00. Although the credits allowed for acceptable work completed elsewhere by students enrolled in the School of Education count toward the total number of credits required for the graduate degree, the grades earned in such courses are not included in GPA computations.

While on probation students are limited to registering only for courses in which a letter grade is given. To be removed from probation status, a student must achieve a 3.50 GPA in 6 credits or more. A student can only be placed on academic probation status once during their program of study. Students placed on academic probation status will receive notification in the form of a letter from the School of Education, and they will be recommended to seek guidance from their academic advisor.

Ordinarily, students are required to terminate graduate study after two terms on probation. A student who does not meet the GPA or credit requirements will be dismissed from the School of Education, unless serious extenuating circumstances exist. The request for continuation must include a recommendation made by the Department Chair (or designated faculty member) and the academic advisor, with the recommendation approved by the Dean of the school.

Statute of Limitations

All requirements for a master's degree must be completed within a period of four consecutive calendar years from the student's initial registration for master's study in an MA or MS degree program or within five years in an MAT or MEd program.

Under certain conditions, the dean/associate dean may grant an extension of a student's statute of limitations. The request for extension must include a recommendation made by the academic advisor, with the recommendation approved by the Dean of the school. The statute of limitations can only be extended once.

Leave of Absence

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

Academic Integrity Policy

Students have the right to be treated by faculty in a fair and conscientious manner in accordance with the ethical standards generally recognized within the academic community (as well as those recognized within the profession). Students have the responsibility to be honest and to conduct themselves in an ethical manner while pursuing academic studies. Should a student be accused of a breach of academic integrity or have questions regarding faculty responsibilities, procedural safeguards including provisions of due process have been designed to protect student rights. These general procedures may be found in Guidelines on Academic Integrity: Student and Faculty Obligations and Hearing Procedures at www.provost.pitt.edu. The School of Education has its own academic integrity policies, posted on the School of Education website. Students are encouraged to review these school-specific guidelines as well.

Plan of Studies

Before completion of 15 credits, students, in consultation with their academic advisor, should complete a Plan of Studies that conforms to program requirements. The plan of studies, approved by the academic advisor and the program coordinator, is filed in the Office of Admissions and Enrollment Services.

Any changes in the Plan of Studies must be approved by the academic advisor and the program coordinator, conform to program requirements, and be filed in the Office of Admissions and Enrollment Services. At the time of graduation, completed courses must comply with the approved Plan of Studies.

Basic Areas of Education Requirement

All master's degrees conferred by the School of Education require a minimum of 9 credits of study from the Basic Areas of Education (BAE), 3 credits each from courses offered in the content areas of psychological perspectives on education, social and cultural perspectives on education, and research methods. A maximum of 6 credit hours of BAE courses may be taken from those offered within a single department. The courses in each area that may be used to meet this requirement are listed below. See also individual program curricula for exceptions to how their master's degree programs meet the Basic Areas of Education Requirement.

Psychological Perspectives on Education

- EDUC 2000 - PSYCHOLOGY OF LEARNING AND DEVELOPMENT FOR EDUCATION
- EDUC 2007 - HUMAN LEARNING
- EDUC 2008 - CONCEPTION TO EARLY CHILDHOOD
- EDUC 2009 - DEVELOPMENT: MIDDLE CHILDHOOD/ADOLESCENCE

Social and Cultural Perspectives on Education

- EDUC 2100 - EDUCATION AND SOCIETY
- EDUC 2102 - HISTORY OF EDUCATION
- EDUC 2103 - RACE AND RACISM IN EDUCATION AND SOCIETY
- EDUC 2104 - LEADERSHIP IN SERVICE LEARNING
- EDUC 2105 - SOCIOLOGY OF EDUCATION
- EDUC 2106 - EDUCATION AND CULTURE
- EDUC 2107 - EVIDENCE BASED HEALTH PROGRAM PLANNING
- EDUC 2108 - STATE/NATIONAL POLITICS OF EDUCATION
- EDUC 2109 - GENDER IN EDUCATION
- EDUC 2110 - GENDER AND EDUCATION
- EDUC 2111 - CONTEMPORARY PHILOSOPHY OF EDUCATION
- EDUC 2112 - POLITICS AND HISTORY OF HIGHER EDUCATION

Research Methods

- EDUC 2200 - DISCIPLINED INQUIRY *
- EDUC 2201 - INTRODUCTION TO RESEARCH METHODOLOGY
- EDUC 2202 - EDUCATIONAL/PSYCHOLOGICAL MEASUREMENT
- EDUC 2205 - FIELD METHODS

*Enrollment limited to MAT students

Additional Requirements

Master's Comprehensive Examination

The School of Education requires a comprehensive examination for all master's degrees. The comprehensive examination is designed to assess the student's mastery of the general field of graduate study. The comprehensive examination is constructed, administered, and scored by the program or department to which the student has been admitted. Procedures and schedules of administration are available from the program or department. *The student must be enrolled to take the comprehensive examination.

**See also Comprehensive Examination under Regulations Pertaining to Master of Arts and Master of Science Degrees. The University-wide regulations on comprehensive examinations detailed there apply to all School of Education master's programs.*

Thesis, Thesis Equivalent, and Research Paper Requirements

Some MA and MS degree programs within the School of Education are offered with a thesis requirement while others are offered with the option of completing either a thesis or a thesis equivalent. All MAT degree programs and some MEd programs require the completion of a research paper.

Master's Degree with Thesis

The master's degree with thesis is intended for graduate students who have pursued advanced graduate study in at least one field of education specialization and have demonstrated through the master's thesis the capability to plan and carry through a project of original research. The plan of studies should include at least 6 credits in thesis work.

Thesis Overview

The thesis overview is a written proposal for the thesis. The overview is presented to the master's committee, which consists of a minimum of three faculty members (at least one from another program or department) selected in consultation with the student by the research advisor and approved by the department. The student must submit a form for approval of the thesis committee. A student must be registered in the term during which the thesis overview meeting is scheduled. A unanimous vote of the master's committee is required for approval of the overview. The outcome of the overview meeting is submitted on the appropriate form along with a corrected copy of the overview to the Office of Admissions and Enrollment Services.

Approval of Research with Human Subjects

If the research proposed in the overview involves human subjects, the proposed research must be approved by the University Institutional Review Board (IRB) for the Protection of Human Subjects before it may be carried out. Information on materials that must be submitted and the procedures that must be followed for an IRB review are available in departmental offices and the Office of Admissions and Enrollment Services.

Advancement to Master's Candidacy

To be advanced to candidacy for the master's degree with thesis a student must:

- be admitted to full graduate status;
- have a minimum grade point average of 3.00 (transfer credits not considered);
- have an approved plan of studies on file in the Office of Admissions and Enrollment Services;
- have passed the comprehensive examination;
- have an approved overview on file in the Office of Admissions and Enrollment Services; and
- if the proposed research involves human subjects, have a letter on file in the Office of Admissions and Enrollment Services from the IRB approving the proposed research.

Thesis Preparation

The thesis research is completed and the thesis is prepared under the direction of the research advisor according to the approved overview. In preparing the thesis, the student must follow the University's ETD Format Guidelines, and specific departmental or program requirements.

Final Oral Examination

The completed thesis is submitted to the master's committee for the final oral examination. The student must be registered in the term during which the final oral examination is scheduled. The final oral examination is devoted primarily to the thesis, and an affirmative vote by a majority of the committee members is required to pass the examination. One corrected copy of the thesis as approved by the master's committee must be filed, along with one copy of a research advisor approved abstract and the form showing a passed final oral examination, no later than one week before the end of the term during which the student expects to graduate. The dean/associate dean must approve any exception to this requirement.

Master's Degree with Thesis Equivalent Option/Research Paper

Master's degrees with the thesis equivalent option or research paper requirement are intended for graduate students who have pursued advanced study in at least one field of educational specialization and have demonstrated capability of presenting information relevant to an issue or problem in education. The plan of studies should include at least 3 credits in a research seminar, supervised research, or directed study involving research in the student's focus area.

Research Paper Requirements

Each candidate for the master's degree with the thesis equivalent option or research paper requirement must complete, in acceptable form, a research paper that demonstrates the ability to locate, organize, and summarize information bearing on an issue or problem in education. This project is usually initiated and completed in the research seminar of the student's major. For certain majors, this requirement may be met by other means, such as successful exhibits or demonstrations.

Master of Education Degree - Focus on Early Intervention

A hands-on, carefully supervised approach is used to assist students in developing competence in assessing young children with a variety of disabilities and planning, implementing, and evaluating educational programs for them. The specialization emphasizes the development of collaborative partnerships with families and with other professionals in the delivery of services. Special consideration is given to preparing students to address the needs of young children with disabilities in community settings that are designed for the inclusion of all children. Course work and practicum experiences are based on evidenced-based practices. Students complete a minimum of 37 credit hours beyond six hours of prerequisite course work.

Intro to Research Methodology

Choose 3.0 credits from the following courses:

- EDUC 2201 - INTRODUCTION TO RESEARCH METHODOLOGY
- PSYED 2001 - INTRODUCTION TO RESEARCH METHODOLOGY
- IL 2563 - SEM: INCLUSION EARLY CHILDHOOD
- IL 2561 - PROGRAMMING IN EARLY INTERVENTION
- IL 2562 - ASSESSMENT YOUNG CHILDREN DISABILITY
- IL 2582 - WORKING WITH FAMILIES
- IL 2505 - AUTISM: CHARACTERISTICS AND INTERVENTIONS

Practicum

Choose 6.0 credits from the following courses. You must take one of the courses twice.

- IL 2850 - PRACTICUM - PRESCHOOL
- IL 2852 - PRACTICUM - INFANTS & TODDLERS

Seminar

Choose 2.0 credits from the following courses.

- IL 2594 - INTERDISCIPLINARY LEADERSHIP SEMINAR DEVELOPMENTAL DISABILITY 1
- IL 2906 - COMMUNITY RESOURCES SEMINAR: YOUNG CHILDREN AND FAMILIES
- IL 2519 - ORAL MOTOR AND FEEDING STRATEGIES: YOUNG CHILDREN WITH DISABILITIES
- IL 2518 - POSITIONING, HANDLING AND MOBILITY: YOUNG CHILDREN WITH DISABILITIES
- IL 2507 - EARLY INTERVENTION CONSULTATION
- IL 3509 - ADV SEMINAR: EARLY INTERVENTION

Approved Electives

Approved Electives - 6.0 credits

Prerequisites

It is suggested that the courses below are taken as prerequisites, although they may be taken concurrently early in the student's program.

Foundations of Special Education - 3 credits

Child Development - 3 credits

Elementary Education, MEd

This is an online program. For more information about our online programs see Pitt Online.

What are the goals of the MEd program?

- To enable teachers to enhance both their understanding and ability to meet the needs of the diverse learners in their classrooms.
- To enable teachers to advance their understanding of one or more content areas.
- To enable teachers to broaden their understanding of educational research, educational theories as they apply to practice, action research practices, and educational policy.

What are the MEd program options in Elementary Education?

There is one 36-credit MEd option, however, those students who received their teaching certificate from the University of Pittsburgh will be admitted to the program with advanced standing. These students will need to take only 18 additional credits and will use 18 credits from their graduate certification program to complete the 36-credit requirement.

Similarly, if a student completed a graduate education program at another university, he/she will be granted up to 12 advanced credits. These courses will be transferred into the 36-credit MEd program and an additional 24 credits will be completed at the University of Pittsburgh.

Who is eligible for each of these options?

- Former certification candidates who completed their coursework at the University of Pittsburgh
- People who completed a certification in an undergraduate program
- People who completed a graduate-level certification program at a university other than the University of Pittsburgh
- International students who are not eligible for a teacher certification program but would like to earn a masters degree in elementary education

How will I design my program?

If you meet program requirements and are admitted into the MEd program, you will receive a letter offering you admission with the name of your advisor. Once you accept the offer of admission, contact your advisor to begin planning your program. Registration is done online so the curricula for the programs found in this website help you determine which courses you can choose to take.

What other requirements will there be in addition to the courses?

- During the last term of your program, contact your advisor to request a take- home comprehensive exam. You are to take only three hours to complete it and must return it within one week after receiving it.
- Within the first two weeks of the term in which you will be graduating, you must contact the Admissions and Enrollment Center (412-648-2230) and request that an application for graduation be sent to you or you can stop in (5300 Posvar) and pick up the necessary paperwork.

Master's Degree Requirements

The requirements presented in this section are school-wide requirements that have been established in addition to the University-wide requirements detailed under general academic regulations. Students should review the general academic regulations section in addition to the specific school information detailed below.

Common Requirements

All master's degrees awarded by the School of Education require the completion of an approved plan of studies consisting of a minimum of 36 credits (including 9 credits in Basic Areas of Education) and the passing of a comprehensive examination.

Acceptance of Transfer Credits

For University-wide rules, see Acceptance of Transfer Credits under General Academic Regulations. School-specific detail follows.

A maximum of 6 transfer credits may be counted toward an MA or MS degree. A maximum of 12 transfer credits may be counted toward an MAT or MEd degree. Only graduate courses taken as a graduate student may be transferred and applied toward a master's degree. The only exception are courses taken while an undergraduate student at the University of Pittsburgh during the final term of undergraduate study that meet the following requirements, as explained in the Graduate Catalog:

Undergraduate students who need fewer than 15 credits to complete requirements for the baccalaureate degree and who intend to continue study toward an advanced degree may be permitted during their final term to register for graduate courses that will later apply toward a graduate degree. The student must obtain written permission from the school of proposed graduate study that the courses may count when and if the student is admitted into the graduate degree program. This privilege should not be granted if the proposed total program exceeds a normal full-time load. Although these credits will appear on the undergraduate transcript, they will not count toward fulfilling undergraduate degree requirements. They will be posted as advanced standing credits on the graduate transcript.

Grade Point Average/Academic Probation

All students enrolled in master's degree programs are required to maintain a grade point average (GPA) of at least 3.000. The cumulative GPA is based on all course work taken after enrollment in the appropriate graduate program. A student is automatically placed on academic probation when the cumulative GPA after 6 credits or more, exclusive of transfer credits, falls below 3.00. Although the credits allowed for acceptable work completed elsewhere by students enrolled in the School of Education count toward the total number of credits required for the graduate degree, the grades earned in such courses are not included in GPA computations.

While on probation students are limited to registering only for courses in which a letter grade is given. To be removed from probation status, a student must achieve a 3.50 GPA in 6 credits or more. A student can only be placed on academic probation status once during their program of study. Students placed on academic probation status will receive notification in the form of a letter from the School of Education, and they will be recommended to seek guidance from their academic advisor.

Ordinarily, students are required to terminate graduate study after two terms on probation. A student who does not meet the GPA or credit

requirements will be dismissed from the School of Education, unless serious extenuating circumstances exist. The request for continuation must include a recommendation made by the Department Chair (or designated faculty member) and the academic advisor, with the recommendation approved by the Dean of the school.

Statute of Limitations

All requirements for a master's degree must be completed within a period of four consecutive calendar years from the student's initial registration for master's study in an MA or MS degree program or within five years in an MAT or MEd program.

Under certain conditions, the dean/associate dean may grant an extension of a student's statute of limitations. The request for extension must include a recommendation made by the academic advisor, with the recommendation approved by the Dean of the school. The statute of limitations can only be extended once.

Leave of Absence

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

Academic Integrity Policy

Students have the right to be treated by faculty in a fair and conscientious manner in accordance with the ethical standards generally recognized within the academic community (as well as those recognized within the profession). Students have the responsibility to be honest and to conduct themselves in an ethical manner while pursuing academic studies. Should a student be accused of a breach of academic integrity or have questions regarding faculty responsibilities, procedural safeguards including provisions of due process have been designed to protect student rights. These general procedures may be found in Guidelines on Academic Integrity: Student and Faculty Obligations and Hearing Procedures at www.provost.pitt.edu. The School of Education has its own academic integrity policies, posted on the School of Education website. Students are encouraged to review these school-specific guidelines as well.

Plan of Studies

Before completion of 15 credits, students, in consultation with their academic advisor, should complete a Plan of Studies that conforms to program requirements. The plan of studies, approved by the academic advisor and the program coordinator, is filed in the Office of Admissions and Enrollment Services.

Any changes in the Plan of Studies must be approved by the academic advisor and the program coordinator, conform to program requirements, and be filed in the Office of Admissions and Enrollment Services. At the time of graduation, completed courses must comply with the approved Plan of Studies.

Basic Areas of Education Requirement

All master's degrees conferred by the School of Education require a minimum of 9 credits of study from the Basic Areas of Education (BAE), 3 credits each from courses offered in the content areas of psychological perspectives on education, social and cultural perspectives on education, and research methods. A maximum of 6 credit hours of BAE courses may be taken from those offered within a single department. The courses in each area that may be used to meet this requirement are listed below. See also individual program curricula for exceptions to how their master's degree programs meet the Basic Areas of Education Requirement.

Psychological Perspectives on Education

- EDUC 2000 - PSYCHOLOGY OF LEARNING AND DEVELOPMENT FOR EDUCATION

- EDUC 2007 - HUMAN LEARNING
- EDUC 2008 - CONCEPTION TO EARLY CHILDHOOD
- EDUC 2009 - DEVELOPMENT: MIDDLE CHILDHOOD/ADOLESCENCE

Social and Cultural Perspectives on Education

- EDUC 2100 - EDUCATION AND SOCIETY
- EDUC 2102 - HISTORY OF EDUCATION
- EDUC 2103 - RACE AND RACISM IN EDUCATION AND SOCIETY
- EDUC 2104 - LEADERSHIP IN SERVICE LEARNING
- EDUC 2105 - SOCIOLOGY OF EDUCATION
- EDUC 2106 - EDUCATION AND CULTURE
- EDUC 2107 - EVIDENCE BASED HEALTH PROGRAM PLANNING
- EDUC 2108 - STATE/NATIONAL POLITICS OF EDUCATION
- EDUC 2109 - GENDER IN EDUCATION
- EDUC 2110 - GENDER AND EDUCATION
- EDUC 2111 - CONTEMPORARY PHILOSOPHY OF EDUCATION
- EDUC 2112 - POLITICS AND HISTORY OF HIGHER EDUCATION

Research Methods

- EDUC 2200 - DISCIPLINED INQUIRY *
- EDUC 2201 - INTRODUCTION TO RESEARCH METHODOLOGY
- EDUC 2202 - EDUCATIONAL/PSYCHOLOGICAL MEASUREMENT
- EDUC 2205 - FIELD METHODS

*Enrollment limited to MAT students

Additional Requirements

Master's Comprehensive Examination

The School of Education requires a comprehensive examination for all master's degrees. The comprehensive examination is designed to assess the student's mastery of the general field of graduate study. The comprehensive examination is constructed, administered, and scored by the program or department to which the student has been admitted. Procedures and schedules of administration are available from the program or department. *The student must be enrolled to take the comprehensive examination.

**See also Comprehensive Examination under Regulations Pertaining to Master of Arts and Master of Science Degrees. The University-wide regulations on comprehensive examinations detailed there apply to all School of Education master's programs.*

Thesis, Thesis Equivalent, and Research Paper Requirements

Some MA and MS degree programs within the School of Education are offered with a thesis requirement while others are offered with the option of completing either a thesis or a thesis equivalent. All MAT degree programs and some MEd programs require the completion of a research paper.

Master's Degree with Thesis

The master's degree with thesis is intended for graduate students who have pursued advanced graduate study in at least one field of education specialization and have demonstrated through the master's thesis the capability to plan and carry through a project of original research. The plan of studies should include at least 6 credits in thesis work.

Thesis Overview

The thesis overview is a written proposal for the thesis. The overview is presented to the master's committee, which consists of a minimum of three faculty members (at least one from another program or department) selected in consultation with the student by the research advisor and approved by the department. The student must submit a form for approval of the thesis committee. A student must be registered in the term during which the thesis overview meeting is scheduled. A unanimous vote of the master's committee is required for approval of the overview. The outcome of the overview meeting is submitted on the appropriate form along with a corrected copy of the overview to the Office of Admissions and Enrollment Services.

Approval of Research with Human Subjects

If the research proposed in the overview involves human subjects, the proposed research must be approved by the University Institutional Review Board (IRB) for the Protection of Human Subjects before it may be carried out. Information on materials that must be submitted and the procedures that must be followed for an IRB review are available in departmental offices and the Office of Admissions and Enrollment Services.

Advancement to Master's Candidacy

To be advanced to candidacy for the master's degree with thesis a student must:

- be admitted to full graduate status;
- have a minimum grade point average of 3.00 (transfer credits not considered);
- have an approved plan of studies on file in the Office of Admissions and Enrollment Services;
- have passed the comprehensive examination;
- have an approved overview on file in the Office of Admissions and Enrollment Services; and
- if the proposed research involves human subjects, have a letter on file in the Office of Admissions and Enrollment Services from the IRB approving the proposed research.

Thesis Preparation

The thesis research is completed and the thesis is prepared under the direction of the research advisor according to the approved overview. In preparing the thesis, the student must follow the University's ETD Format Guidelines, and specific departmental or program requirements.

Final Oral Examination

The completed thesis is submitted to the master's committee for the final oral examination. The student must be registered in the term during which the final oral examination is scheduled. The final oral examination is devoted primarily to the thesis, and an affirmative vote by a majority of the committee members is required to pass the examination. One corrected copy of the thesis as approved by the master's committee must be filed, along with one copy of a research advisor approved abstract and the form showing a passed final oral examination, no later than one week before the end of the term during which the student expects to graduate. The dean/associate dean must approve any exception to this requirement.

Master's Degree with Thesis Equivalent Option/Research Paper

Master's degrees with the thesis equivalent option or research paper requirement are intended for graduate students who have pursued advanced study in at least one field of educational specialization and have demonstrated capability of presenting information relevant to an issue or problem in education. The plan of studies should include at least 3 credits in a research seminar, supervised research, or directed study involving research in the student's focus area.

Research Paper Requirements

Each candidate for the master's degree with the thesis equivalent option or research paper requirement must complete, in acceptable form, a research paper that demonstrates the ability to locate, organize, and summarize information bearing on an issue or problem in education. This project is usually initiated and completed in the research seminar of the student's major. For certain majors, this requirement may be met by other means, such as successful exhibits or demonstrations.

Master of Education Degree

The MEd is a 36-credit program specializing in elementary education. Applicants are required to have a 3.00 undergraduate GPA and to be certified in elementary education.

English and Communications Education, MAT

The University of Pittsburgh, School of Education, offers two post-baccalaureate programs for Secondary English and Communications teacher certification (grades 7-12), the Master of Arts in Teaching (MAT) Program and Instructional I Teaching Certificate. MAT certification is available in Comprehensive English and in three areas of Communication - Theater Arts Concentration, Film Media Concentration, and Speech Concentration. Certification in more than one English or Communication area is also available. Details of the MAT program are outlined below:

- requires Teaching Interns to take and pass the Content Knowledge test (Praxis II) during the first semester of their program in order to obtain their Intern Certificate
- satisfies the requirements for a Pennsylvania Instructional I Certificate (pending passing scores on the national PRAXIS II Exam, successful completion of the PA Statewide Evaluation Form for Student Professional Knowledge and Practice (PDE 430), and satisfactory performance in courses and in the internship)
- is completed in three terms (fall, spring, summer 1 session) beginning in late August of the admission year and concluding in mid-June of the following year
- consists of 36 credits of graduate course work combined with a maximum 4.5 day per week internship in a local school district from September through June

*Discover more about our programs through the words of current students and alumni in a **Teacher Certification** video. In addition, find out more about the new **Urban Scholars** via videos that follow four students as they go through a full year of the program, which prepares preservice teachers to be successful in urban schools by pairing them with skilled mentors who help build positive relationships with students.*

Interested in finding out more about our teacher education programs? Admissions representatives can answer questions you have at an upcoming Teacher Education Information Session.

MAT Program

- IL 2230 - TEACHING AND LEARNING IN SECONDARY ENGLISH 1
- IL 2245 - TEACHING & LEARNING IN SECONDARY ENGLISH 2
- IL 2725 - PRACTICUM IN SECONDARY ENGLISH EDUCATION
- IL 2502 - STUDNT W/DISAB IN SECNDRY CLSSRM
- IL 2257 - TEACHING ENGLISH LANGUAGE LEARNERS
- EDUC 2200 - DISCIPLINED INQUIRY
- IL 2820 - TEACHING AND LEARNING IN SECONDARY ENGLISH 3
- IL 2520 - LITERACY ASSESSMENT & INSTRUCTION FOR CHILDREN WITH DISABILITIES IN INCLUSIVE SETTINGS IN SEC CLSSRM
- IL 2881 - INTERNSHIP-ENGLISH OR COM EDUC
- IL 2824 - STUDENT TEACHING SEMINAR IN ENGLISH OR COMMUNICATION EDUCATION
- IL 2990 - RESEARCH SEMINAR FOR MAT INTERNS
- PSYED 2265 - ATTENTIONAL TEACHING PRACTICES 1
- PSYED 2266 - ATTENTIONAL TEACHING PRACTICES 2

English and Communications Education, MEd

Students complete a minimum of 36 credits of specialized study in English education. All students must pass a comprehensive examination to complete the degree.

Students who have completed the English Education certification program at the University of Pittsburgh may transfer up to 18 graduate-level course credits from their certification coursework to the MEd program. Students should consult their advisors for the exact number of credits they can transfer.

MEd English and Communications Education Core Curriculum

24 credits from the following 6 courses:

- EDUC 2000 - PSYCHOLOGY OF LEARNING AND DEVELOPMENT FOR EDUCATION
- EDUC 2100 - EDUCATION AND SOCIETY
- IL 2235 - THEORY AND PRACTICE IN TEACHING LANGUAGE, GRAMMAR AND USAGE
- IL 2239 - THEORY AND PRACTICE IN TEACHING NEW MEDIA AND LITERACIES
- IL 2240 - THEORY AND PRACTICE: ASSESSMENT IN ENGLISH EDUCATION
- IL 2243 - THEORY & PRAC IN TCHNG WRITING
- IL 2246 - THRY & PRAC: MULTI-CULTURAL LIT
- IL 2290 - RESEARCH SEMINR FOR MED STUDENTS

Research Methodology

Choose 3.0 credits from the following 2 courses

- EDUC 2201 - INTRODUCTION TO RESEARCH METHODOLOGY
- IL 2405 - INTRODUCTION TO ACTION RESEARCH METHODS

Electives

Choose 9.0 credits from the following 6 courses

The elective courses may be taken in the School of Education or from other schools/departments, such as English Language or Linguistics, as long as the courses support the student's professional growth in English Education and are approved by the student's advisor. Pitt online courses that will count as electives are: IL 2201, IL 2257, ADMPS 2117.

- ADMPS 2117 - DIFFERENTIATED INSTRUCTIONAL PRACTICES
(online course)
- IL 2257 - TEACHING ENGLISH LANGUAGE LEARNERS
(online course)
- IL 2523 - LITERACY ASSESSMENT & INSTRUCTION FOR CHILDREN WITH DISABILITIES IN INCLUSIVE SETNGS IN ELEM CLSSRMS
- LSAP 3595 - SPECIAL TOPICS

Foreign Language Education, MAT

Foreign Language Education - Master of Education (MAT)

The University of Pittsburgh, School of Education, offers a post-baccalaureate program for Foreign Language teacher certification (grades K-12), the Master of Arts in Teaching (MAT) Program. Certification Studies are available in French, German, Italian, Spanish, Chinese, Japanese, or Latin. Native speakers of the language of certification are not exempt from prerequisite course work in the culture, civilization literature, and structure of their language. Applicants who are non-native speakers of the language of certification are also required to achieve at least an Advanced-Low rating

on an oral proficiency interview by an individual certified by the American Council on the Teaching of Foreign Languages. Details of the MAT program are outlined below:

- requires Teaching Interns to pass the Written Proficiency Test (WPT) in the language of certification during the first semester of their program in order to attain the Intern Certificate. The WPT, in combination with the OPI (part of the admissions process), fulfills the Praxis II requirements for the state-this is the preferred way of satisfying the Praxis II requirements. Please note that this applies to all foreign language candidates with the exception of those students pursuing certification in Latin-because no OPI or WPT in Latin is available, students pursuing this option must satisfy Praxis II requirements in taking and passing the standard Content Knowledge test in Latin.
- satisfies the requirements for a Pennsylvania Instructional I Certificate (pending passing scores on the Writing Proficiency Test (WPT) and national PRAXIS II Exam of Fundamental Content Knowledge, successful completion of the PA Statewide Evaluation Form for Student Professional Knowledge and Practice (PDE 430), and satisfactory performance in courses and student teaching)
- is completed in three terms (fall, spring, summer 1 session) beginning in late August of the admission year and concluding in mid-June of the following year
- consists of 36 credits of graduate course work combined with a maximum 4.5 day per week internship in a local school district from September through June

Click through to read the Foreign Language Education Academic Checklist.

*Discover more about our programs through the words of current students and alumni in a **Teacher Certification** video. In addition, find out more about the new **Urban Scholars** via videos that follow four students as they go through a full year of the program, which prepares preservice teachers to be successful in urban schools by pairing them with skilled mentors who help build positive relationships with students.*

Interested in finding out more about our teacher education programs? Admissions representatives can answer questions you have at an upcoming Teacher Education Information Session.

Master's Degree Requirements

The requirements presented in this section are school-wide requirements that have been established in addition to the University-wide requirements detailed under general academic regulations. Students should review the general academic regulations section in addition to the specific school information detailed below.

Common Requirements

All master's degrees awarded by the School of Education require the completion of an approved plan of studies consisting of a minimum of 36 credits (including 9 credits in Basic Areas of Education) and the passing of a comprehensive examination.

Acceptance of Transfer Credits

For University-wide rules, see Acceptance of Transfer Credits under General Academic Regulations. School-specific detail follows.

A maximum of 6 transfer credits may be counted toward an MA or MS degree. A maximum of 12 transfer credits may be counted toward an MAT or MEd degree. Only graduate courses taken as a graduate student may be transferred and applied toward a master's degree. The only exception are courses taken while an undergraduate student at the University of Pittsburgh during the final term of undergraduate study that meet the following requirements, as explained in the Graduate Catalog:

Undergraduate students who need fewer than 15 credits to complete requirements for the baccalaureate degree and who intend to continue study toward an advanced degree may be permitted during their final term to register for graduate courses that will later apply toward a graduate degree. The student must obtain written permission from the school of proposed graduate study that the courses may count when and if the student is admitted into the graduate degree program. This privilege should not be granted if the proposed total program exceeds a normal full-time load. Although these credits will appear on the undergraduate transcript, they will not count toward fulfilling undergraduate degree requirements. They will be posted as advanced standing credits on the graduate transcript.

Grade Point Average/Academic Probation

All students enrolled in master's degree programs are required to maintain a grade point average (GPA) of at least 3.000. The cumulative GPA is based on all course work taken after enrollment in the appropriate graduate program. A student is automatically placed on academic probation when the cumulative GPA after 6 credits or more, exclusive of transfer credits, falls below 3.00. Although the credits allowed for acceptable work completed elsewhere by students enrolled in the School of Education count toward the total number of credits required for the graduate degree, the grades earned in such courses are not included in GPA computations.

While on probation students are limited to registering only for courses in which a letter grade is given. To be removed from probation status, a student must achieve a 3.50 GPA in 6 credits or more. A student can only be placed on academic probation status once during their program of study. Students placed on academic probation status will receive notification in the form of a letter from the School of Education, and they will be recommended to seek guidance from their academic advisor.

Ordinarily, students are required to terminate graduate study after two terms on probation. A student who does not meet the GPA or credit requirements will be dismissed from the School of Education, unless serious extenuating circumstances exist. The request for continuation must include a recommendation made by the Department Chair (or designated faculty member) and the academic advisor, with the recommendation approved by the Dean of the school.

Statute of Limitations

All requirements for a master's degree must be completed within a period of four consecutive calendar years from the student's initial registration for master's study in an MA or MS degree program or within five years in an MAT or MEd program.

Under certain conditions, the dean/associate dean may grant an extension of a student's statute of limitations. The request for extension must include a recommendation made by the academic advisor, with the recommendation approved by the Dean of the school. The statute of limitations can only be extended once.

Leave of Absence

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

Academic Integrity Policy

Students have the right to be treated by faculty in a fair and conscientious manner in accordance with the ethical standards generally recognized within the academic community (as well as those recognized within the profession). Students have the responsibility to be honest and to conduct themselves in an ethical manner while pursuing academic studies. Should a student be accused of a breach of academic integrity or have questions regarding faculty responsibilities, procedural safeguards including provisions of due process have been designed to protect student rights. These general procedures may be found in Guidelines on Academic Integrity: Student and Faculty Obligations and Hearing Procedures at www.provost.pitt.edu. The School of Education has its own academic integrity policies, posted on the School of Education website. Students are encouraged to review these school-specific guidelines as well.

Plan of Studies

Before completion of 15 credits, students, in consultation with their academic advisor, should complete a Plan of Studies that conforms to program requirements. The plan of studies, approved by the academic advisor and the program coordinator, is filed in the Office of Admissions and Enrollment Services.

Any changes in the Plan of Studies must be approved by the academic advisor and the program coordinator, conform to program requirements, and be filed in the Office of Admissions and Enrollment Services. At the time of graduation, completed courses must comply with the approved Plan of Studies.

Basic Areas of Education Requirement

All master's degrees conferred by the School of Education require a minimum of 9 credits of study from the Basic Areas of Education (BAE), 3 credits each from courses offered in the content areas of psychological perspectives on education, social and cultural perspectives on education, and research methods. A maximum of 6 credit hours of BAE courses may be taken from those offered within a single department. The courses in each area that may be used to meet this requirement are listed below. See also individual program curricula for exceptions to how their master's degree programs meet the Basic Areas of Education Requirement.

Psychological Perspectives on Education

- EDUC 2000 - PSYCHOLOGY OF LEARNING AND DEVELOPMENT FOR EDUCATION
- EDUC 2007 - HUMAN LEARNING
- EDUC 2008 - CONCEPTION TO EARLY CHILDHOOD
- EDUC 2009 - DEVELOPMENT: MIDDLE CHILDHOOD/ADOLESCENCE

Social and Cultural Perspectives on Education

- EDUC 2100 - EDUCATION AND SOCIETY
- EDUC 2102 - HISTORY OF EDUCATION
- EDUC 2103 - RACE AND RACISM IN EDUCATION AND SOCIETY
- EDUC 2104 - LEADERSHIP IN SERVICE LEARNING
- EDUC 2105 - SOCIOLOGY OF EDUCATION
- EDUC 2106 - EDUCATION AND CULTURE
- EDUC 2107 - EVIDENCE BASED HEALTH PROGRAM PLANNING
- EDUC 2108 - STATE/NATIONAL POLITICS OF EDUCATION
- EDUC 2109 - GENDER IN EDUCATION
- EDUC 2110 - GENDER AND EDUCATION
- EDUC 2111 - CONTEMPORARY PHILOSOPHY OF EDUCATION
- EDUC 2112 - POLITICS AND HISTORY OF HIGHER EDUCATION

Research Methods

- EDUC 2200 - DISCIPLINED INQUIRY *
- EDUC 2201 - INTRODUCTION TO RESEARCH METHODOLOGY
- EDUC 2202 - EDUCATIONAL/PSYCHOLOGICAL MEASUREMENT
- EDUC 2205 - FIELD METHODS

*Enrollment limited to MAT students

Additional Requirements

Master's Comprehensive Examination

The School of Education requires a comprehensive examination for all master's degrees. The comprehensive examination is designed to assess the student's mastery of the general field of graduate study. The comprehensive examination is constructed, administered, and scored by the program or department to which the student has been admitted. Procedures and schedules of administration are available from the program or department. *The student must be enrolled to take the comprehensive examination.

**See also Comprehensive Examination under Regulations Pertaining to Master of Arts and Master of Science Degrees. The University-wide regulations on comprehensive examinations detailed there apply to all School of Education master's programs.*

Thesis, Thesis Equivalent, and Research Paper Requirements

Some MA and MS degree programs within the School of Education are offered with a thesis requirement while others are offered with the option of completing either a thesis or a thesis equivalent. All MAT degree programs and some MEd programs require the completion of a research paper.

Master's Degree with Thesis

The master's degree with thesis is intended for graduate students who have pursued advanced graduate study in at least one field of education specialization and have demonstrated through the master's thesis the capability to plan and carry through a project of original research. The plan of studies should include at least 6 credits in thesis work.

Thesis Overview

The thesis overview is a written proposal for the thesis. The overview is presented to the master's committee, which consists of a minimum of three faculty members (at least one from another program or department) selected in consultation with the student by the research advisor and approved by the department. The student must submit a form for approval of the thesis committee. A student must be registered in the term during which the thesis overview meeting is scheduled. A unanimous vote of the master's committee is required for approval of the overview. The outcome of the overview meeting is submitted on the appropriate form along with a corrected copy of the overview to the Office of Admissions and Enrollment Services.

Approval of Research with Human Subjects

If the research proposed in the overview involves human subjects, the proposed research must be approved by the University Institutional Review Board (IRB) for the Protection of Human Subjects before it may be carried out. Information on materials that must be submitted and the procedures that must be followed for an IRB review are available in departmental offices and the Office of Admissions and Enrollment Services.

Advancement to Master's Candidacy

To be advanced to candidacy for the master's degree with thesis a student must:

- be admitted to full graduate status;
- have a minimum grade point average of 3.00 (transfer credits not considered);
- have an approved plan of studies on file in the Office of Admissions and Enrollment Services;
- have passed the comprehensive examination;
- have an approved overview on file in the Office of Admissions and Enrollment Services; and
- if the proposed research involves human subjects, have a letter on file in the Office of Admissions and Enrollment Services from the IRB approving the proposed research.

Thesis Preparation

The thesis research is completed and the thesis is prepared under the direction of the research advisor according to the approved overview. In preparing the thesis, the student must follow the University's ETD Format Guidelines, and specific departmental or program requirements.

Final Oral Examination

The completed thesis is submitted to the master's committee for the final oral examination. The student must be registered in the term during which the final oral examination is scheduled. The final oral examination is devoted primarily to the thesis, and an affirmative vote by a majority of the committee members is required to pass the examination. One corrected copy of the thesis as approved by the master's committee must be filed, along with one copy of a research advisor approved abstract and the form showing a passed final oral examination, no later than one week before the end of the term during which the student expects to graduate. The dean/associate dean must approve any exception to this requirement.

Master's Degree with Thesis Equivalent Option/Research Paper

Master's degrees with the thesis equivalent option or research paper requirement are intended for graduate students who have pursued advanced study in at least one field of educational specialization and have demonstrated capability of presenting information relevant to an issue or problem in education. The plan of studies should include at least 3 credits in a research seminar, supervised research, or directed study involving research in the student's focus area.

Research Paper Requirements

Each candidate for the master's degree with the thesis equivalent option or research paper requirement must complete, in acceptable form, a research paper that demonstrates the ability to locate, organize, and summarize information bearing on an issue or problem in education. This project is usually initiated and completed in the research seminar of the student's major. For certain majors, this requirement may be met by other means, such as successful exhibits or demonstrations.

Master of Arts in Teaching Degree

The Master of Arts in Teaching degree is available for qualified liberal arts graduates who want to combine initial teacher certification in a particular foreign language with advanced study for a master's degree. Applicants must have completed, or must be able to complete, prerequisite course work before beginning the MAT. Native speakers of the language of certification are not exempt from prerequisite course work in the culture, civilization, literature, and structure of their language. Students complete a minimum of 36 credits. Applicants are also required to submit results of an Oral Proficiency Interview by an individual certified by the American Council on the Teaching of Foreign Languages. A rating of Advanced Low or higher on the Oral Proficiency Interview is expected.

- IL 2252 - TEACHING AND LEARNING IN K-12 FOREIGN LANGUAGE 1
- IL 2258 - TEACHING & LEARNING IN SECONDARY FOREIGN LANGUAGE 2
- IL 2892 - PRACTICUM IN K-12 FOREIGN LANGUAGE
- IL 2502 - STUDNT W/DISAB IN SECNDRY CLSSRM
- IL 2257 - TEACHING ENGLISH LANGUAGE LEARNERS
- EDUC 2200 - DISCIPLINED INQUIRY
- IL 2520 - LITERACY ASSESSMENT & INSTRUCTION FOR CHILDREN WITH DISABILITIES IN INCLUSIVE SETTINGS IN SEC CLSSRM
- IL 2990 - RESEARCH SEMINAR FOR MAT INTERNS
- IL 2882 - INTERNSHIP - FOREIGN LANGUAGE
- PSYED 2265 - ATTENTIONAL TEACHING PRACTICES 1
- PSYED 2266 - ATTENTIONAL TEACHING PRACTICES 2
- IL 2826 - STUDENT TECHNG SEM-FOREIGN LANG
- IL 2254 - TEACHING & LEARNING IN K-12 FOREIGN LANGUAGE 3

Foreign Language Education, MEd

Master of Education (MEd) - Foreign Language Education

The MEd with specialization in foreign language education is a professional degree for individuals wishing to pursue advanced study in the field of teaching and learning foreign languages combined with trends, issues, a practice-based approach to new, current methodologies, and research in education in general. This option is tailored to the needs of practicing or returning foreign language teachers who wish to learn about recent developments in the field of foreign language education. This degree is also suitable for international students who wish to learn more about foreign language instruction (e.g., English as a foreign language) in their home countries. Some course work in a particular foreign language at the graduate level is also possible within this option. This option does not provide courses or clinical experiences for initial teacher certification. The degree consists of a minimum of 36 credit hours and may be completed on a part-time basis. Six credits earned while pursuing the MEd from an approved, graduate study-abroad program may be counted toward this degree. International students are required to provide proof of English language proficiency at the time of application by a score of 80 or higher on the TOEFL IBT test, a minimum score of 213 on the CBT, a Band 6.5 on the

International English Language Testing System (IELTS), or by having earned a degree in an accredited United States university. In the last term of the program, it is required that all MEd candidates sign up to take a written comprehensive exam scheduled in October and March of each year.

MEd with Specialization in TESOL

The MEd can also be done in conjunction with a TESOL certificate (Teaching English to Speakers of Other Languages). Students pursuing this opportunity, which is completed in collaboration with Pitt's Department of Linguistics, have the option of choosing from two concentrations within the TESOL certificate: higher education and K-12. The higher education option is ideal for students who plan to work primarily with adult students in the United States and abroad. The K-12 concentration is available only to those students who already hold a PA Instructional I or II certificate (this option is also open to students who have earned a teaching certificate outside of PA, although the application process may vary). Completion of the K-12 concentration allows students to earn an endorsement from the Pennsylvania Department of Education (PDE) as an English as a Second Language (ESL) Program Specialist. Please note that international students applying to the MEd with specialization in TESOL are only eligible to complete the higher education concentration, and must provide evidence of having achieved a score of 80 or higher on the TOEFL IBT test, a minimum score of 213 on the CBT, or a Band 6.5 on the International English Language Testing System (IELTS) for admission consideration. Unlike the MEd in Foreign Language Education, the MEd with Specialization in TESOL does not accept an earned degree in an accredited United States university as evidence of English language proficiency.

Master's Degree Requirements

The requirements presented in this section are school-wide requirements that have been established in addition to the University-wide requirements detailed under general academic regulations. Students should review the general academic regulations section in addition to the specific school information detailed below.

Common Requirements

All master's degrees awarded by the School of Education require the completion of an approved plan of studies consisting of a minimum of 36 credits (including 9 credits in Basic Areas of Education) and the passing of a comprehensive examination.

Acceptance of Transfer Credits

For University-wide rules, see Acceptance of Transfer Credits under General Academic Regulations. School-specific detail follows.

A maximum of 6 transfer credits may be counted toward an MA or MS degree. A maximum of 12 transfer credits may be counted toward an MAT or MEd degree. Only graduate courses taken as a graduate student may be transferred and applied toward a master's degree. The only exception are courses taken while an undergraduate student at the University of Pittsburgh during the final term of undergraduate study that meet the following requirements, as explained in the Graduate Catalog:

Undergraduate students who need fewer than 15 credits to complete requirements for the baccalaureate degree and who intend to continue study toward an advanced degree may be permitted during their final term to register for graduate courses that will later apply toward a graduate degree. The student must obtain written permission from the school of proposed graduate study that the courses may count when and if the student is admitted into the graduate degree program. This privilege should not be granted if the proposed total program exceeds a normal full-time load. Although these credits will appear on the undergraduate transcript, they will not count toward fulfilling undergraduate degree requirements. They will be posted as advanced standing credits on the graduate transcript.

Grade Point Average/Academic Probation

All students enrolled in master's degree programs are required to maintain a grade point average (GPA) of at least 3.000. The cumulative GPA is based on all course work taken after enrollment in the appropriate graduate program. A student is automatically placed on academic probation when the cumulative GPA after 6 credits or more, exclusive of transfer credits, falls below 3.00. Although the credits allowed for acceptable work completed elsewhere by students enrolled in the School of Education count toward the total number of credits required for the graduate degree, the grades earned in such courses are not included in GPA computations.

While on probation students are limited to registering only for courses in which a letter grade is given. To be removed from probation status, a student must achieve a 3.50 GPA in 6 credits or more. A student can only be placed on academic probation status once during their program of study. Students placed on academic probation status will receive notification in the form of a letter from the School of Education, and they will be recommended to seek guidance from their academic advisor.

Ordinarily, students are required to terminate graduate study after two terms on probation. A student who does not meet the GPA or credit requirements will be dismissed from the School of Education, unless serious extenuating circumstances exist. The request for continuation must include a recommendation made by the Department Chair (or designated faculty member) and the academic advisor, with the recommendation approved by the Dean of the school.

Statute of Limitations

All requirements for a master's degree must be completed within a period of four consecutive calendar years from the student's initial registration for master's study in an MA or MS degree program or within five years in an MAT or MEd program.

Under certain conditions, the dean/associate dean may grant an extension of a student's statute of limitations. The request for extension must include a recommendation made by the academic advisor, with the recommendation approved by the Dean of the school. The statute of limitations can only be extended once.

Leave of Absence

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

Academic Integrity Policy

Students have the right to be treated by faculty in a fair and conscientious manner in accordance with the ethical standards generally recognized within the academic community (as well as those recognized within the profession). Students have the responsibility to be honest and to conduct themselves in an ethical manner while pursuing academic studies. Should a student be accused of a breach of academic integrity or have questions regarding faculty responsibilities, procedural safeguards including provisions of due process have been designed to protect student rights. These general procedures may be found in Guidelines on Academic Integrity: Student and Faculty Obligations and Hearing Procedures at www.provost.pitt.edu. The School of Education has its own academic integrity policies, posted on the School of Education website. Students are encouraged to review these school-specific guidelines as well.

Plan of Studies

Before completion of 15 credits, students, in consultation with their academic advisor, should complete a Plan of Studies that conforms to program requirements. The plan of studies, approved by the academic advisor and the program coordinator, is filed in the Office of Admissions and Enrollment Services.

Any changes in the Plan of Studies must be approved by the academic advisor and the program coordinator, conform to program requirements, and be filed in the Office of Admissions and Enrollment Services. At the time of graduation, completed courses must comply with the approved Plan of Studies.

Basic Areas of Education Requirement

All master's degrees conferred by the School of Education require a minimum of 9 credits of study from the Basic Areas of Education (BAE), 3 credits each from courses offered in the content areas of psychological perspectives on education, social and cultural perspectives on education, and research methods. A maximum of 6 credit hours of BAE courses may be taken from those offered within a single department. The courses in each

area that may be used to meet this requirement are listed below. See also individual program curricula for exceptions to how their master's degree programs meet the Basic Areas of Education Requirement.

Psychological Perspectives on Education

- EDUC 2000 - PSYCHOLOGY OF LEARNING AND DEVELOPMENT FOR EDUCATION
- EDUC 2007 - HUMAN LEARNING
- EDUC 2008 - CONCEPTION TO EARLY CHILDHOOD
- EDUC 2009 - DEVELOPMENT: MIDDLE CHILDHOOD/ADOLESCENCE

Social and Cultural Perspectives on Education

- EDUC 2100 - EDUCATION AND SOCIETY
- EDUC 2102 - HISTORY OF EDUCATION
- EDUC 2103 - RACE AND RACISM IN EDUCATION AND SOCIETY
- EDUC 2104 - LEADERSHIP IN SERVICE LEARNING
- EDUC 2105 - SOCIOLOGY OF EDUCATION
- EDUC 2106 - EDUCATION AND CULTURE
- EDUC 2107 - EVIDENCE BASED HEALTH PROGRAM PLANNING
- EDUC 2108 - STATE/NATIONAL POLITICS OF EDUCATION
- EDUC 2109 - GENDER IN EDUCATION
- EDUC 2110 - GENDER AND EDUCATION
- EDUC 2111 - CONTEMPORARY PHILOSOPHY OF EDUCATION
- EDUC 2112 - POLITICS AND HISTORY OF HIGHER EDUCATION

Research Methods

- EDUC 2200 - DISCIPLINED INQUIRY *
- EDUC 2201 - INTRODUCTION TO RESEARCH METHODOLOGY
- EDUC 2202 - EDUCATIONAL/PSYCHOLOGICAL MEASUREMENT
- EDUC 2205 - FIELD METHODS

*Enrollment limited to MAT students

Additional Requirements

Master's Comprehensive Examination

The School of Education requires a comprehensive examination for all master's degrees. The comprehensive examination is designed to assess the student's mastery of the general field of graduate study. The comprehensive examination is constructed, administered, and scored by the program or department to which the student has been admitted. Procedures and schedules of administration are available from the program or department. *The student must be enrolled to take the comprehensive examination.

**See also Comprehensive Examination under Regulations Pertaining to Master of Arts and Master of Science Degrees. The University-wide regulations on comprehensive examinations detailed there apply to all School of Education master's programs.*

Thesis, Thesis Equivalent, and Research Paper Requirements

Some MA and MS degree programs within the School of Education are offered with a thesis requirement while others are offered with the option of completing either a thesis or a thesis equivalent. All MAT degree programs and some MEd programs require the completion of a research paper.

Master's Degree with Thesis

The master's degree with thesis is intended for graduate students who have pursued advanced graduate study in at least one field of education specialization and have demonstrated through the master's thesis the capability to plan and carry through a project of original research. The plan of studies should include at least 6 credits in thesis work.

Thesis Overview

The thesis overview is a written proposal for the thesis. The overview is presented to the master's committee, which consists of a minimum of three faculty members (at least one from another program or department) selected in consultation with the student by the research advisor and approved by the department. The student must submit a form for approval of the thesis committee. A student must be registered in the term during which the thesis overview meeting is scheduled. A unanimous vote of the master's committee is required for approval of the overview. The outcome of the overview meeting is submitted on the appropriate form along with a corrected copy of the overview to the Office of Admissions and Enrollment Services.

Approval of Research with Human Subjects

If the research proposed in the overview involves human subjects, the proposed research must be approved by the University Institutional Review Board (IRB) for the Protection of Human Subjects before it may be carried out. Information on materials that must be submitted and the procedures that must be followed for an IRB review are available in departmental offices and the Office of Admissions and Enrollment Services.

Advancement to Master's Candidacy

To be advanced to candidacy for the master's degree with thesis a student must:

- be admitted to full graduate status;
- have a minimum grade point average of 3.00 (transfer credits not considered);
- have an approved plan of studies on file in the Office of Admissions and Enrollment Services;
- have passed the comprehensive examination;
- have an approved overview on file in the Office of Admissions and Enrollment Services; and
- if the proposed research involves human subjects, have a letter on file in the Office of Admissions and Enrollment Services from the IRB approving the proposed research.

Thesis Preparation

The thesis research is completed and the thesis is prepared under the direction of the research advisor according to the approved overview. In preparing the thesis, the student must follow the University's ETD Format Guidelines, and specific departmental or program requirements.

Final Oral Examination

The completed thesis is submitted to the master's committee for the final oral examination. The student must be registered in the term during which the final oral examination is scheduled. The final oral examination is devoted primarily to the thesis, and an affirmative vote by a majority of the committee members is required to pass the examination. One corrected copy of the thesis as approved by the master's committee must be filed, along with one copy of a research advisor approved abstract and the form showing a passed final oral examination, no later than one week before the end of the term during which the student expects to graduate. The dean/associate dean must approve any exception to this requirement.

Master's Degree with Thesis Equivalent Option/Research Paper

Master's degrees with the thesis equivalent option or research paper requirement are intended for graduate students who have pursued advanced study in at least one field of educational specialization and have demonstrated capability of presenting information relevant to an issue or problem in

education. The plan of studies should include at least 3 credits in a research seminar, supervised research, or directed study involving research in the student's focus area.

Research Paper Requirements

Each candidate for the master's degree with the thesis equivalent option or research paper requirement must complete, in acceptable form, a research paper that demonstrates the ability to locate, organize, and summarize information bearing on an issue or problem in education. This project is usually initiated and completed in the research seminar of the student's major. For certain majors, this requirement may be met by other means, such as successful exhibits or demonstrations.

Master of Education Degree

The MEd degree is a professional degree for individuals wishing to pursue advanced study in the field of teaching and learning foreign languages combined with trends, issues, and research in education in general. This option is tailored to the needs of foreign language teachers who wish to learn about recent developments in the field of foreign language education. This degree is also suitable for international students who wish to learn more about foreign language instruction (e.g., English as a foreign language). Some course work in a particular foreign language at the graduate level is also possible within this option. This option does not provide courses or clinical experiences for initial teacher certification. The degree consists of a minimum of 36 credit hours and may be completed on a part-time basis. International students are required to provide an assessment of English language proficiency at the time of application. A minimum score of 550 on the paper based TOEFL or a score of 80 on the internet-based TOEFL is required for admission. The International English Language Testing System (IELTS) may also be submitted as evidence of English language proficiency. A minimum score of 6.5 is necessary on IELTS for admission.

Curriculum: Students starting Fall 2016 (2171) and later

A Comprehensive Exam must be taken in the Fall or Spring of the second year of study.

- IL 2255 - TECHNQ/PROCDR FOREIGN LANG TCH
- ADMPS 2106 - INTERNATIONAL AND GLOBAL EDUCATION
- IL 2256 - ISSUES IN FOREIGN LANGUAGE ED
- EDUC 2000 - PSYCHOLOGY OF LEARNING AND DEVELOPMENT FOR EDUCATION
- IL 2722 - PRACTICUM IN FOREIGN LANGUAGE
- IL 2405 - INTRODUCTION TO ACTION RESEARCH METHODS
- IL 2253 - PRIN/PRA FRGN LANG TESTNG ASSMNT
- IL 2702 - ADVANCED PRACTICUM IN FOREIGN LANGUAGE
- IL 2290 - RESEARCH SEMINR FOR MED STUDENTS
- IL 2251 - INTRODUCTION TO FOREIGN LANGUAGE EDUCATION

Electives

Choose 6.0 credits from the following courses

- IL 2250 - TECHNOLOGY IN FOREIGN LANGUAGE EDUCATION
- IL 2257 - TEACHING ENGLISH LANGUAGE LEARNERS
- IL 2711 - SPECIAL TOPICS - FOREIGN LANGUAGE EDUCATION

General Special Education, MEd

The MEd in General Special Education requires a minimum of 36 credits meeting School of Education requirements for Basic Areas of Education courses, a three-credit research seminar, and elective courses in Special Education. Students will work with a faculty advisor to develop a curricular plan that combines work in Special Education and related studies in education. Students must pass a comprehensive exam prior to receiving the M.Ed. degree.

Special Education Program Studies

The 12 credits in Special Education may be chosen from within or across the following specialty areas of Special Education: Applied Behavior Analysis, Students with Visual Impairments, Early Intervention for Children with Disabilities, or Supervisor of Special Education Certificate

Electives

Choose 12 credits of elective courses from special education, other program areas within the Department of Instruction and Learning, other departments within the School of Education, or other schools at the University of Pittsburgh offering coursework relevant to the student's specialty area.

Research Methods

Choose 3.0 credits from the following courses:

- ADMPS 2356 - FIELD METHODS
- EDUC 2200 - DISCIPLINED INQUIRY
- EDUC 2201 - INTRODUCTION TO RESEARCH METHODOLOGY
- EDUC 2202 - EDUCATIONAL/PSYCHOLOGICAL MEASUREMENT
- EDUC 2205 - FIELD METHODS
- PSYED 2001 - INTRODUCTION TO RESEARCH METHODOLOGY
- PSYED 2072 - EDUCATIONAL AND PSYCHOLOGICAL MEASUREMENT
- PSYED 2519 - QUALITATIVE METHODS: PARTICIPANT OBSERVATION

Research Seminar

- IL 2590 - RESEARCH SEMINAR IN SP ED

Psychological Perspectives on Education

Choose 3.0 credits from the following 7 courses:

- EDUC 2000 - PSYCHOLOGY OF LEARNING AND DEVELOPMENT FOR EDUCATION
- EDUC 2007 - HUMAN LEARNING
- EDUC 2008 - CONCEPTION TO EARLY CHILDHOOD
- EDUC 2009 - DEVELOPMENT: MIDDLE CHILDHOOD/ADOLESCENCE
- PSYED 2127 - HUMAN LEARNING
- PSYED 2503 - DEVELOPMENT: CONCEPTION THROUGH EARLY CHILDHOOD
- PSYED 2504 - DVLP: MIDDLE CHLHD/ADOLESCENCE

Social and Cultural Perspectives on Education

Choose 3.0 credits from the following courses:

- ADMPS 2050 - RACE AND RACISM IN EDUCATION AND SOCIETY
- ADMPS 2133 - GENDER AND EDUCATION
- ADMPS 2302 - STATE/NATIONAL POLITICS OF EDUCATION
- ADMPS 2305 - SOCIOLOGY OF EDUCATION
- ADMPS 2306 - HISTORY OF EDUCATION
- ADMPS 2307 - POLITICS AND HISTORY OF HIGHER EDUCATION

- ADMPS 2310 - CONTEMPORARY PHILOSOPHY OF EDUCATION
- ADMPS 2342 - EDUCATION AND CULTURE
- ADMPS 2344 - LEADERSHIP IN SERVICE LEARNING
- ADMPS 2352 - ANTHROPOLOGY OF EDUCATION
- EDUC 2100 - EDUCATION AND SOCIETY
- EDUC 2102 - HISTORY OF EDUCATION
- EDUC 2103 - RACE AND RACISM IN EDUCATION AND SOCIETY
- EDUC 2104 - LEADERSHIP IN SERVICE LEARNING
- EDUC 2105 - SOCIOLOGY OF EDUCATION
- EDUC 2106 - EDUCATION AND CULTURE
- EDUC 2107 - EVIDENCE BASED HEALTH PROGRAM PLANNING
- EDUC 2108 - STATE/NATIONAL POLITICS OF EDUCATION
- EDUC 2109 - GENDER IN EDUCATION
- EDUC 2110 - GENDER AND EDUCATION
- EDUC 2111 - CONTEMPORARY PHILOSOPHY OF EDUCATION
- EDUC 2112 - POLITICS AND HISTORY OF HIGHER EDUCATION
- HPA 2322 - EVIDENCE BASED HEALTH PROGRAM PLANNING

Master of Education (MEd) with Special Education 7-12 Certificate

Requirements

- IL 2575 - TRANSITION PROCESSES AND SPECIAL EDUCATION PROCEDURES
- IL 2509 - APPLD BHVR ANAL/POSTV BHVR SUPRT
- IL 2513 - INSTRNL METH-HIGH INCIDNC DISABS
- IL 2511 - CURR PRG DVLP-LOW INCDNC DISABS
- IL 2861 - PRACTICUM IN SECONDARY SPECIAL EDUCATION - SPECIAL EDUCATION TEACHER PREPARATION
- EDUC 2009 - DEVELOPMENT: MIDDLE CHILDHOOD/ADOLESCENCE
- EDUC 2201 - INTRODUCTION TO RESEARCH METHODOLOGY
- IL 2552 - STUDENT TEACHING-SPECIAL EDUCATION IN SECONDARY SCHOOLS
- IL 2512 - ASSMNT INSTRUC-HIGH INCDNC DISAB
- IL 2522 - ED STDNT EMOTIONAL DISTURBANCE
- IL 2590 - RESEARCH SEMINAR IN SP ED

Specialization Course Options

Choose 6.0 credits from the following courses

Additional special education, pre-approved graduate level courses may be taken as offered. Pre-approved content area course in Math, Science, Social Studies, or English Education.

- IL 2505 - AUTISM: CHARACTERISTICS AND INTERVENTIONS
- IL 2506 - SOCIAL AND COMMUNICATIVE INTERVENTIONS: AUTISM
- IL 2525 - TECHNOLOGY FOR CHILDREN WITH VI
- IL 2529 - BRAILLE
- IL 2530 - INTRODUCTION TO THE EYE AND LOW VISION
- IL 2531 - EDUCATION OF CHILDREN WITH VI I
- IL 2532 - EARLY INTERVENTION FOR CHILDREN WITH VI
- IL 2548 - SPECIAL TOPICS SPECIAL EDUCATION
- IL 2707 - FIELD SEMINAR IN EARLY CHILDHOOD EDUCATION
- IL 3542 - WEB CURRNT ISSUES & TRENDS SP ED

Master of Education (MEd) with Special Education Pre-K - 8 Teacher Certificate

The Special Education Teacher Preparation PreK-8 (SETP PreK-8) specialization is a post baccalaureate program with two paths for completion. One option combines special education teacher certification with a Master of Education (MEd) degree. The other option is for special education teacher certification only.

Students pursuing a Master of Education degree (MEd) specializing in Special Education PreK-8 are required to complete a minimum of 39 credits beyond the prerequisite course work. MEd students will develop advanced knowledge in the fields of educational research, learning theory, and child development to enhance their teaching practice.

Most MEd candidates complete the program in twelve months of full-time study. Each year a new cohort of students begins the program together starting in the summer and finishing in early June of the following summer. With the exception of the first summer term, special education courses are offered in the evening. A few of the MEd required courses are also available in an online format.

During the fall term students are required to spend one day per week in each school to which they are assigned for student teaching in preparation for student teaching in the spring. Students complete two different full-time student teaching experiences in the spring, each of eight weeks duration. During the student teaching experiences, teacher candidates are closely supervised by both a university supervisor and an experienced mentor teacher. The School of Education Office of Placement Services and Clinical Practices will arrange field placements for students.

The MEd program requires students to successfully complete the Special Education Comprehensive Exam. The Comprehensive Exam is a proctored, three-hour written exam based on the student's area of concentration and is completed near the end of their MEd degree program.

Admission follows successful completion of an initial teacher certification program (Elementary, PreK-4, Grades 4-8, Reading Specialist), an undergraduate degree, and selected prerequisite courses. Students enter the Special Education Pre-K-8 specialization on a full-time basis.

Requirements

- EDUC 2201 - INTRODUCTION TO RESEARCH METHODOLOGY
- IL 2590 - RESEARCH SEMINAR IN SP ED
- IL 2509 - APPLD BHVR ANAL/POSTV BHVR SUPRT
- IL 2511 - CURR PRG DVLP-LOW INCDNC DISABS
- IL 2512 - ASSMNT INSTRUC-HIGH INCDNC DISAB
- IL 2513 - INSTRNL METH-HIGH INCDNC DISABS
- IL 2522 - ED STDNT EMOTIONAL DISTURBANCE
- IL 2591 - LITERACY TUTORING
- IL 2751 - METHODS AND MANAGEMENT IN SP ED
- IL 2853 - STUDENT TEACHING - STUDENTS WITH HIGH INCIDENCE OF DISABILITIES
- IL 2854 - STUDENT TEACHING WITH LOW INCIDENCE OF DISABILITIES
- IL 2858 - STUDENT TEACHING SEMINAR - SPECIAL EDUCATION TEACHER PREPARATION

Specialization Course

Choose 3.0 credits from the following courses

Students may also choose a content area course in Math, Science, Social Studies, or English Education as approved by their advisor.

- IL 2505 - AUTISM: CHARACTERISTICS AND INTERVENTIONS
- IL 2506 - SOCIAL AND COMMUNICATIVE INTERVENTIONS: AUTISM
- IL 2525 - TECHNOLOGY FOR CHILDREN WITH VI
- IL 2562 - ASESMNT YOUNG CHLDRN DISABLT
- IL 2707 - FIELD SEMINAR IN EARLY CHILDHOOD EDUCATION

BAE Course

Choose 3.0 credits from the following courses

- EDUC 2000 - PSYCHOLOGY OF LEARNING AND DEVELOPMENT FOR EDUCATION
- EDUC 2007 - HUMAN LEARNING
- EDUC 2008 - CONCEPTION TO EARLY CHILDHOOD
- EDUC 2009 - DEVELOPMENT: MIDDLE CHILDHOOD/ADOLESCENCE

Master of Special Education with Academic Instruction Certificate (MOSAIC)

MOSAIC Curriculum

- IL 2575 - TRANSITION PROCESSES AND SPECIAL EDUCATION PROCEDURES
- IL 2509 - APPLD BHVR ANAL/POSTV BHVR SUPRT
- IL 2513 - INSTRNL METH-HIGH INCIDNC DISABS
- IL 2511 - CURR PRG DVLP-LOW INCDNC DISABS

Teaching and Learning in Secondary Content Areas I

- IL 2230 - TEACHING AND LEARNING IN SECONDARY ENGLISH 1
- IL 2252 - TEACHING AND LEARNING IN K-12 FOREIGN LANGUAGE 1
- IL 2476 - TEACHING AND LEARNING IN SECONDARY MATH 1
- IL 2430 - TEACHING & LEARNING IN SECONDARY SCIENCE 1
- IL 2260 - TEACHING & LEARNING IN SECONDARY SOCIAL STUDIES 1

Teaching and Learning in Secondary Content Areas II

Course based on subject area (English, Foreign Language, Mathematics, Science, or Social Studies)

- IL 2245 - TEACHING & LEARNING IN SECONDARY ENGLISH 2
- IL 2258 - TEACHING & LEARNING IN SECONDARY FOREIGN LANGUAGE 2
- IL 2477 - TEACHING AND LEARNING IN SECONDARY MATH 2
- IL 2431 - TEACHING & LEARNING IN SECONDARY SCIENCE 2
- IL 2262 - TEACHING & LEARNING IN SECONDARY SOCIAL STUDIES 2
- IL 2860 - PRACTICUM IN SECONDARY SPECIAL EDUCATION

Practicum in Secondary Content

Course based on subject area (English, Foreign Language, Mathematics, Science, or Social Studies)

- IL 2725 - PRACTICUM IN SECONDARY ENGLISH EDUCATION
- IL 2892 - PRACTICUM IN K-12 FOREIGN LANGUAGE
- IL 2740 - PRACTICUM IN SECONDARY MATHEMATICS
- IL 2723 - PRACTICUM IN SECONDARY SOCIAL STUDIES 1
- IL 2845 - PRACTICUM IN SECONDARY SCIENCE
- EDUC 2201 - INTRODUCTION TO RESEARCH METHODOLOGY
- IL 2522 - ED STDNT EMOTIONAL DISTURBANCE

- IL 2512 - ASSMNT INSTRUC-HIGH INCDNC DISAB
- IL 2503 - STUDENT TEACHING FOR DUAL CERTIFICATION IN SECONDARY SCHOOLS

Teaching and Learning in Secondary Content Areas III

- IL 2820 - TEACHING AND LEARNING IN SECONDARY ENGLISH 3
- IL 2254 - TEACHING & LEARNING IN K-12 FOREIGN LANGUAGE 3
- IL 2478 - TEACHING AND LEARNING IN SECONDARY MATH 3
- IL 2432 - TEACHING & LEARNING IN SECONDARY SCIENCE 3
- IL 2827 - TEACHING AND LEARNING IN SECONDARY SOCIAL STUDIES 3
- IL 2590 - RESEARCH SEMINAR IN SP ED
- PSYED 2504 - DVLP: MIDDLE CHLHD/ADOLESCENCE

Mathematics Education, MAT

The University of Pittsburgh, School of Education, offers a post-baccalaureate program for Mathematics teacher certification (grades 7-12), the Master of Arts in Teaching Program (MAT). Details of the MAT are outlined below:

- requires Teaching Interns to take and pass the Content Knowledge test (Praxis II) during the first semester of their program in order to obtain their Intern Certificate
- satisfies the requirements for a Pennsylvania Instructional I Certificate (pending passing scores on the national PRAXIS II Exam, successful completion of the PA Statewide Evaluation Form for Student Professional Knowledge and Practice (PDE 430), and satisfactory performance in courses and in the internship)
- is completed in three terms (fall, spring, summer 1 session) beginning in late August of the admission year and concluding in mid-June of the following year
- consists of 36 credits of graduate course work combined with a maximum 4.5 day per week internship in a local school district from September through June

Required Courses

- IL 2476 - TEACHING AND LEARNING IN SECONDARY MATH 1
- IL 2740 - PRACTICUM IN SECONDARY MATHEMATICS
- IL 2477 - TEACHING AND LEARNING IN SECONDARY MATH 2
- IL 2493 - PRACTICUM IN SECONDARY MATHEMATICS 1
- IL 2502 - STUDNT W/DISAB IN SECNDRY CLSSRM
- IL 2257 - TEACHING ENGLISH LANGUAGE LEARNERS
- EDUC 2200 - DISCIPLINED INQUIRY
- IL 2478 - TEACHING AND LEARNING IN SECONDARY MATH 3
- IL 2520 - LITERACY ASSESSMENT & INSTRUCTION FOR CHILDREN WITH DISABILITIES IN INCLUSIVE SETTINGS IN SEC CLSSRM
- IL 2495 - INTERNSHIP - MATH
- IL 2990 - RESEARCH SEMINAR FOR MAT INTERNS
- PSYED 2265 - ATTENTIONAL TEACHING PRACTICES 1
- PSYED 2266 - ATTENTIONAL TEACHING PRACTICES 2

Mathematics Education, MEd

Students complete a minimum of 36 credits.

Math Education Core Curriculum

18 Credits

- IL 2474 - PROPORTIONAL REASONING IN MIDDLE SCHOOL MATHEMATICS
- IL 2484 - MATH PROBLEM SOLVING K-12
- IL 2405 - INTRODUCTION TO ACTION RESEARCH METHODS
- IL 2290 - RESEARCH SEMINAR FOR MED STUDENTS
- IL 2451 - SPECIAL TOPICS: MATHEMATICS
(Assessment and Evaluation)
(Reasoning and Proving)

Electives

Choose 9 credits of elective courses from mathematics, mathematics education, statistics, and computer science, and from other programs in the School of Education chosen to support the program of studies.

Psychological Perspectives on Education

Choose 3.0 credits from the following 7 courses.

- EDUC 2000 - PSYCHOLOGY OF LEARNING AND DEVELOPMENT FOR EDUCATION
- EDUC 2007 - HUMAN LEARNING
- EDUC 2009 - DEVELOPMENT: MIDDLE CHILDHOOD/ADOLESCENCE
- PSYED 2127 - HUMAN LEARNING
- PSYED 2504 - DVLP: MIDDLE CHLHD/ADOLESCENCE

Research Methods

Choose 3.0 credits from the following 5 courses.

- ADMPS 2356 - FIELD METHODS
- EDUC 2201 - INTRODUCTION TO RESEARCH METHODOLOGY
- EDUC 2205 - FIELD METHODS
- PSYED 2001 - INTRODUCTION TO RESEARCH METHODOLOGY
- PSYED 2519 - QUALITATIVE METHODS: PARTICIPANT OBSERVATION

Social and Cultural Perspectives on Education

Choose 3.0 credits from the following courses.

- ADMPS 2050 - RACE AND RACISM IN EDUCATION AND SOCIETY
- ADMPS 2133 - GENDER AND EDUCATION
- ADMPS 2302 - STATE/NATIONAL POLITICS OF EDUCATION
- ADMPS 2305 - SOCIOLOGY OF EDUCATION
- ADMPS 2306 - HISTORY OF EDUCATION
- ADMPS 2310 - CONTEMPORARY PHILOSOPHY OF EDUCATION
- ADMPS 2342 - EDUCATION AND CULTURE
- ADMPS 2352 - ANTHROPOLOGY OF EDUCATION
- EDUC 2100 - EDUCATION AND SOCIETY
- EDUC 2102 - HISTORY OF EDUCATION
- EDUC 2103 - RACE AND RACISM IN EDUCATION AND SOCIETY
- EDUC 2105 - SOCIOLOGY OF EDUCATION
- EDUC 2106 - EDUCATION AND CULTURE
- EDUC 2108 - STATE/NATIONAL POLITICS OF EDUCATION

- EDUC 2109 - GENDER IN EDUCATION
- EDUC 2110 - GENDER AND EDUCATION
- EDUC 2111 - CONTEMPORARY PHILOSOPHY OF EDUCATION

Reading Education, MEd

At the master's degree level, students may emphasize study in the specialization of reading education.

Two master's degree options are offered in the reading education specialization. One is combined with Pennsylvania Reading Specialist Certification-the MEd plus Reading Specialist Certification, and this "general" Master's degree that does not include the Reading Specialist certification. This Master's degree may be selected by those who wish to have more choice in the development of their program. This program may be more appropriate for students whose native language is not English or who come from another country.

Master's Degree Requirements

The requirements presented in this section are school-wide requirements that have been established in addition to the University-wide requirements detailed under general academic regulations. Students should review the general academic regulations section in addition to the specific school information detailed below.

Common Requirements

All master's degrees awarded by the School of Education require the completion of an approved plan of studies consisting of a minimum of 36 credits (including 9 credits in Basic Areas of Education) and the passing of a comprehensive examination.

Acceptance of Transfer Credits

For University-wide rules, see Acceptance of Transfer Credits under General Academic Regulations. School-specific detail follows.

A maximum of 6 transfer credits may be counted toward an MA or MS degree. A maximum of 12 transfer credits may be counted toward an MAT or MEd degree. Only graduate courses taken as a graduate student may be transferred and applied toward a master's degree. The only exception are courses taken while an undergraduate student at the University of Pittsburgh during the final term of undergraduate study that meet the following requirements, as explained in the Graduate Catalog:

Undergraduate students who need fewer than 15 credits to complete requirements for the baccalaureate degree and who intend to continue study toward an advanced degree may be permitted during their final term to register for graduate courses that will later apply toward a graduate degree. The student must obtain written permission from the school of proposed graduate study that the courses may count when and if the student is admitted into the graduate degree program. This privilege should not be granted if the proposed total program exceeds a normal full-time load. Although these credits will appear on the undergraduate transcript, they will not count toward fulfilling undergraduate degree requirements. They will be posted as advanced standing credits on the graduate transcript.

Grade Point Average/Academic Probation

All students enrolled in master's degree programs are required to maintain a grade point average (GPA) of at least 3.000. The cumulative GPA is based on all course work taken after enrollment in the appropriate graduate program. A student is automatically placed on academic probation when the cumulative GPA after 6 credits or more, exclusive of transfer credits, falls below 3.00. Although the credits allowed for acceptable work completed elsewhere by students enrolled in the School of Education count toward the total number of credits required for the graduate degree, the grades earned in such courses are not included in GPA computations.

While on probation students are limited to registering only for courses in which a letter grade is given. To be removed from probation status, a student must achieve a 3.50 GPA in 6 credits or more. A student can only be placed on academic probation status once during their program of study. Students placed on academic probation status will receive notification in the form of a letter from the School of Education, and they will be recommended to seek guidance from their academic advisor.

Ordinarily, students are required to terminate graduate study after two terms on probation. A student who does not meet the GPA or credit requirements will be dismissed from the School of Education, unless serious extenuating circumstances exist. The request for continuation must include a recommendation made by the Department Chair (or designated faculty member) and the academic advisor, with the recommendation approved by the Dean of the school.

Statute of Limitations

All requirements for a master's degree must be completed within a period of four consecutive calendar years from the student's initial registration for master's study in an MA or MS degree program or within five years in an MAT or MEd program.

Under certain conditions, the dean/associate dean may grant an extension of a student's statute of limitations. The request for extension must include a recommendation made by the academic advisor, with the recommendation approved by the Dean of the school. The statute of limitations can only be extended once.

Leave of Absence

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

Academic Integrity Policy

Students have the right to be treated by faculty in a fair and conscientious manner in accordance with the ethical standards generally recognized within the academic community (as well as those recognized within the profession). Students have the responsibility to be honest and to conduct themselves in an ethical manner while pursuing academic studies. Should a student be accused of a breach of academic integrity or have questions regarding faculty responsibilities, procedural safeguards including provisions of due process have been designed to protect student rights. These general procedures may be found in Guidelines on Academic Integrity: Student and Faculty Obligations and Hearing Procedures at www.provost.pitt.edu. The School of Education has its own academic integrity policies, posted on the School of Education website. Students are encouraged to review these school-specific guidelines as well.

Plan of Studies

Before completion of 15 credits, students, in consultation with their academic advisor, should complete a Plan of Studies that conforms to program requirements. The plan of studies, approved by the academic advisor and the program coordinator, is filed in the Office of Admissions and Enrollment Services.

Any changes in the Plan of Studies must be approved by the academic advisor and the program coordinator, conform to program requirements, and be filed in the Office of Admissions and Enrollment Services. At the time of graduation, completed courses must comply with the approved Plan of Studies.

Basic Areas of Education Requirement

All master's degrees conferred by the School of Education require a minimum of 9 credits of study from the Basic Areas of Education (BAE), 3 credits each from courses offered in the content areas of psychological perspectives on education, social and cultural perspectives on education, and research methods. A maximum of 6 credit hours of BAE courses may be taken from those offered within a single department. The courses in each area that may be used to meet this requirement are listed below. See also individual program curricula for exceptions to how their master's degree programs meet the Basic Areas of Education Requirement.

Psychological Perspectives on Education

- EDUC 2000 - PSYCHOLOGY OF LEARNING AND DEVELOPMENT FOR EDUCATION
- EDUC 2007 - HUMAN LEARNING
- EDUC 2008 - CONCEPTION TO EARLY CHILDHOOD
- EDUC 2009 - DEVELOPMENT: MIDDLE CHILDHOOD/ADOLESCENCE

Social and Cultural Perspectives on Education

- EDUC 2100 - EDUCATION AND SOCIETY
- EDUC 2102 - HISTORY OF EDUCATION
- EDUC 2103 - RACE AND RACISM IN EDUCATION AND SOCIETY
- EDUC 2104 - LEADERSHIP IN SERVICE LEARNING
- EDUC 2105 - SOCIOLOGY OF EDUCATION
- EDUC 2106 - EDUCATION AND CULTURE
- EDUC 2107 - EVIDENCE BASED HEALTH PROGRAM PLANNING
- EDUC 2108 - STATE/NATIONAL POLITICS OF EDUCATION
- EDUC 2109 - GENDER IN EDUCATION
- EDUC 2110 - GENDER AND EDUCATION
- EDUC 2111 - CONTEMPORARY PHILOSOPHY OF EDUCATION
- EDUC 2112 - POLITICS AND HISTORY OF HIGHER EDUCATION

Research Methods

- EDUC 2200 - DISCIPLINED INQUIRY *
 - EDUC 2201 - INTRODUCTION TO RESEARCH METHODOLOGY
 - EDUC 2202 - EDUCATIONAL/PSYCHOLOGICAL MEASUREMENT
 - EDUC 2205 - FIELD METHODS
- *Enrollment limited to MAT students

Additional Requirements

Master's Comprehensive Examination

The School of Education requires a comprehensive examination for all master's degrees. The comprehensive examination is designed to assess the student's mastery of the general field of graduate study. The comprehensive examination is constructed, administered, and scored by the program or department to which the student has been admitted. Procedures and schedules of administration are available from the program or department. *The student must be enrolled to take the comprehensive examination.

**See also Comprehensive Examination under Regulations Pertaining to Master of Arts and Master of Science Degrees. The University-wide regulations on comprehensive examinations detailed there apply to all School of Education master's programs.*

Thesis, Thesis Equivalent, and Research Paper Requirements

Some MA and MS degree programs within the School of Education are offered with a thesis requirement while others are offered with the option of completing either a thesis or a thesis equivalent. All MAT degree programs and some MEd programs require the completion of a research paper.

Master's Degree with Thesis

The master's degree with thesis is intended for graduate students who have pursued advanced graduate study in at least one field of education specialization and have demonstrated through the master's thesis the capability to plan and carry through a project of original research. The plan of studies should include at least 6 credits in thesis work.

Thesis Overview

The thesis overview is a written proposal for the thesis. The overview is presented to the master's committee, which consists of a minimum of three faculty members (at least one from another program or department) selected in consultation with the student by the research advisor and approved by the department. The student must submit a form for approval of the thesis committee. A student must be registered in the term during which the thesis overview meeting is scheduled. A unanimous vote of the master's committee is required for approval of the overview. The outcome of the overview meeting is submitted on the appropriate form along with a corrected copy of the overview to the Office of Admissions and Enrollment Services.

Approval of Research with Human Subjects

If the research proposed in the overview involves human subjects, the proposed research must be approved by the University Institutional Review Board (IRB) for the Protection of Human Subjects before it may be carried out. Information on materials that must be submitted and the procedures that must be followed for an IRB review are available in departmental offices and the Office of Admissions and Enrollment Services.

Advancement to Master's Candidacy

To be advanced to candidacy for the master's degree with thesis a student must:

- be admitted to full graduate status;
- have a minimum grade point average of 3.00 (transfer credits not considered);
- have an approved plan of studies on file in the Office of Admissions and Enrollment Services;
- have passed the comprehensive examination;
- have an approved overview on file in the Office of Admissions and Enrollment Services; and
- if the proposed research involves human subjects, have a letter on file in the Office of Admissions and Enrollment Services from the IRB approving the proposed research.

Thesis Preparation

The thesis research is completed and the thesis is prepared under the direction of the research advisor according to the approved overview. In preparing the thesis, the student must follow the University's ETD Format Guidelines, and specific departmental or program requirements.

Final Oral Examination

The completed thesis is submitted to the master's committee for the final oral examination. The student must be registered in the term during which the final oral examination is scheduled. The final oral examination is devoted primarily to the thesis, and an affirmative vote by a majority of the committee members is required to pass the examination. One corrected copy of the thesis as approved by the master's committee must be filed, along with one copy of a research advisor approved abstract and the form showing a passed final oral examination, no later than one week before the end of the term during which the student expects to graduate. The dean/associate dean must approve any exception to this requirement.

Master's Degree with Thesis Equivalent Option/Research Paper

Master's degrees with the thesis equivalent option or research paper requirement are intended for graduate students who have pursued advanced study in at least one field of educational specialization and have demonstrated capability of presenting information relevant to an issue or problem in education. The plan of studies should include at least 3 credits in a research seminar, supervised research, or directed study involving research in the student's focus area.

Research Paper Requirements

Each candidate for the master's degree with the thesis equivalent option or research paper requirement must complete, in acceptable form, a research paper that demonstrates the ability to locate, organize, and summarize information bearing on an issue or problem in education. This project is usually initiated and completed in the research seminar of the student's major. For certain majors, this requirement may be met by other means, such as successful exhibits or demonstrations.

Psychological Perspectives on Education

Choose 3.0 credits from the following 11 courses:

- EDUC 2000 - PSYCHOLOGY OF LEARNING AND DEVELOPMENT FOR EDUCATION
- EDUC 2007 - HUMAN LEARNING
- EDUC 2008 - CONCEPTION TO EARLY CHILDHOOD
- EDUC 2009 - DEVELOPMENT: MIDDLE CHILDHOOD/ADOLESCENCE
- PSYED 2127 - HUMAN LEARNING
- PSYED 2503 - DEVELOPMENT: CONCEPTION THROUGH EARLY CHILDHOOD
- PSYED 2504 - DVLP: MIDDLE CHLHD/ADOLESCENCE

Research Methods

Choose 3.0 credits from the following 10 courses:

- ADMPS 2356 - FIELD METHODS
- EDUC 2200 - DISCIPLINED INQUIRY
- EDUC 2201 - INTRODUCTION TO RESEARCH METHODOLOGY
- EDUC 2202 - EDUCATIONAL/PSYCHOLOGICAL MEASUREMENT
- EDUC 2205 - FIELD METHODS
- IL 2405 - INTRODUCTION TO ACTION RESEARCH METHODS
- PSYED 2001 - INTRODUCTION TO RESEARCH METHODOLOGY
- PSYED 2072 - EDUCATIONAL AND PSYCHOLOGICAL MEASUREMENT
- PSYED 2519 - QUALITATIVE METHODS: PARTICIPANT OBSERVATION

Social and Cultural Perspectives on Education

Choose 3.0 credits from the following 23 courses:

- ADMPS 2050 - RACE AND RACISM IN EDUCATION AND SOCIETY
- ADMPS 2133 - GENDER AND EDUCATION
- ADMPS 2302 - STATE/NATIONAL POLITICS OF EDUCATION
- ADMPS 2305 - SOCIOLOGY OF EDUCATION
- ADMPS 2306 - HISTORY OF EDUCATION
- ADMPS 2307 - POLITICS AND HISTORY OF HIGHER EDUCATION
- ADMPS 2310 - CONTEMPORARY PHILOSOPHY OF EDUCATION
- ADMPS 2342 - EDUCATION AND CULTURE
- ADMPS 2344 - LEADERSHIP IN SERVICE LEARNING
- ADMPS 2352 - ANTHROPOLOGY OF EDUCATION
- EDUC 2100 - EDUCATION AND SOCIETY
- EDUC 2102 - HISTORY OF EDUCATION
- EDUC 2103 - RACE AND RACISM IN EDUCATION AND SOCIETY
- EDUC 2104 - LEADERSHIP IN SERVICE LEARNING

- EDUC 2105 - SOCIOLOGY OF EDUCATION
- EDUC 2106 - EDUCATION AND CULTURE
- EDUC 2107 - EVIDENCE BASED HEALTH PROGRAM PLANNING
- EDUC 2108 - STATE/NATIONAL POLITICS OF EDUCATION
- EDUC 2109 - GENDER IN EDUCATION
- EDUC 2110 - GENDER AND EDUCATION
- EDUC 2111 - CONTEMPORARY PHILOSOPHY OF EDUCATION
- EDUC 2112 - POLITICS AND HISTORY OF HIGHER EDUCATION
- HPA 2322 - EVIDENCE BASED HEALTH PROGRAM PLANNING

Major Field Studies

Choose 24 credits from the following 10 courses:

- IL 2203 - LANGUAGE AND LANGUAGE SYSTEMS
- IL 2211 - COMPREHENSION AND VOCABULARY
- IL 2216 - LITERACY ASSESSMENTS AND INTERVENTION MODELS
- IL 2219 - DISCIPLINARY LITERACY
- IL 2243 - THEORY & PRACTICE IN TEACHING WRITING
- IL 2246 - THEORY & PRACTICE: MULTI-CULTURAL LITERATURE
- IL 2257 - TEACHING ENGLISH LANGUAGE LEARNERS
- IL 2298 - DIRECTED STUDY - READING

Research Paper or Thesis Requirement

- IL 2290 - RESEARCH SEMINAR FOR MED STUDENTS

Science Education, MAT

The University of Pittsburgh, School of Education, offers a post-baccalaureate program for Science teacher certification (grades 7-12), the Master of Arts in Teaching Program (MAT). This program is appropriate for individuals with non-education backgrounds in their baccalaureate studies. A strong science background and educational methodology are the foci of studies. Professional development is stressed through the use of teaching portfolios showing content background, teaching competencies, and technology in the design of instruction. Certification studies are available in Biology, Chemistry, Physics, Earth and Space Science, and General Science. Details are below:

- requires Teaching Interns to take and pass the Content Knowledge test (Praxis II) during the first semester of their program in order to obtain their Intern Certificate
- satisfies the requirements for a Pennsylvania Instructional I Certificate (pending passing scores on the national PRAXIS II Exam, successful completion of the PA Statewide Evaluation Form for Student Professional Knowledge and Practice (PDE 430), and satisfactory performance in courses and in the internship)
- is completed in three terms (fall, spring, summer 1 session) beginning in late August of the admission year and concluding in mid-June of the following year
- consists of 36 credits of graduate course work combined with a maximum 4.5 day per week internship in a local school district from September through June

[Click through to read the Science Education Academic Checklist.](#)

*Discover more about our programs through the words of current students and alumni in a **Teacher Certification** video. In addition, find out more about the new **Urban Scholars** via videos that follow four students as they go through a full year of the program, which prepares preservice teachers to be successful in urban schools by pairing them with skilled mentors who help build positive relationships with students.*

Interested in finding out more about our teacher education programs? Admissions representatives can answer questions you have at an upcoming Teacher Education Information Session.

Master's Degree Requirements

The requirements presented in this section are school-wide requirements that have been established in addition to the University-wide requirements detailed under general academic regulations. Students should review the general academic regulations section in addition to the specific school information detailed below.

Common Requirements

All master's degrees awarded by the School of Education require the completion of an approved plan of studies consisting of a minimum of 36 credits (including 9 credits in Basic Areas of Education) and the passing of a comprehensive examination.

Acceptance of Transfer Credits

For University-wide rules, see Acceptance of Transfer Credits under General Academic Regulations. School-specific detail follows.

A maximum of 6 transfer credits may be counted toward an MA or MS degree. A maximum of 12 transfer credits may be counted toward an MAT or MEd degree. Only graduate courses taken as a graduate student may be transferred and applied toward a master's degree. The only exception are courses taken while an undergraduate student at the University of Pittsburgh during the final term of undergraduate study that meet the following requirements, as explained in the Graduate Catalog:

Undergraduate students who need fewer than 15 credits to complete requirements for the baccalaureate degree and who intend to continue study toward an advanced degree may be permitted during their final term to register for graduate courses that will later apply toward a graduate degree. The student must obtain written permission from the school of proposed graduate study that the courses may count when and if the student is admitted into the graduate degree program. This privilege should not be granted if the proposed total program exceeds a normal full-time load. Although these credits will appear on the undergraduate transcript, they will not count toward fulfilling undergraduate degree requirements. They will be posted as advanced standing credits on the graduate transcript.

Grade Point Average/Academic Probation

All students enrolled in master's degree programs are required to maintain a grade point average (GPA) of at least 3.000. The cumulative GPA is based on all course work taken after enrollment in the appropriate graduate program. A student is automatically placed on academic probation when the cumulative GPA after 6 credits or more, exclusive of transfer credits, falls below 3.00. Although the credits allowed for acceptable work completed elsewhere by students enrolled in the School of Education count toward the total number of credits required for the graduate degree, the grades earned in such courses are not included in GPA computations.

While on probation students are limited to registering only for courses in which a letter grade is given. To be removed from probation status, a student must achieve a 3.50 GPA in 6 credits or more. A student can only be placed on academic probation status once during their program of study. Students placed on academic probation status will receive notification in the form of a letter from the School of Education, and they will be recommended to seek guidance from their academic advisor.

Ordinarily, students are required to terminate graduate study after two terms on probation. A student who does not meet the GPA or credit requirements will be dismissed from the School of Education, unless serious extenuating circumstances exist. The request for continuation must include a recommendation made by the Department Chair (or designated faculty member) and the academic advisor, with the recommendation approved by the Dean of the school.

Statute of Limitations

All requirements for a master's degree must be completed within a period of four consecutive calendar years from the student's initial registration for master's study in an MA or MS degree program or within five years in an MAT or MEd program.

Under certain conditions, the dean/associate dean may grant an extension of a student's statute of limitations. The request for extension must include a recommendation made by the academic advisor, with the recommendation approved by the Dean of the school. The statute of limitations can only be extended once.

Leave of Absence

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

Academic Integrity Policy

Students have the right to be treated by faculty in a fair and conscientious manner in accordance with the ethical standards generally recognized within the academic community (as well as those recognized within the profession). Students have the responsibility to be honest and to conduct themselves in an ethical manner while pursuing academic studies. Should a student be accused of a breach of academic integrity or have questions regarding faculty responsibilities, procedural safeguards including provisions of due process have been designed to protect student rights. These general procedures may be found in Guidelines on Academic Integrity: Student and Faculty Obligations and Hearing Procedures at www.provost.pitt.edu. The School of Education has its own academic integrity policies, posted on the School of Education website. Students are encouraged to review these school-specific guidelines as well.

Plan of Studies

Before completion of 15 credits, students, in consultation with their academic advisor, should complete a Plan of Studies that conforms to program requirements. The plan of studies, approved by the academic advisor and the program coordinator, is filed in the Office of Admissions and Enrollment Services.

Any changes in the Plan of Studies must be approved by the academic advisor and the program coordinator, conform to program requirements, and be filed in the Office of Admissions and Enrollment Services. At the time of graduation, completed courses must comply with the approved Plan of Studies.

Basic Areas of Education Requirement

All master's degrees conferred by the School of Education require a minimum of 9 credits of study from the Basic Areas of Education (BAE), 3 credits each from courses offered in the content areas of psychological perspectives on education, social and cultural perspectives on education, and research methods. A maximum of 6 credit hours of BAE courses may be taken from those offered within a single department. The courses in each area that may be used to meet this requirement are listed below. See also individual program curricula for exceptions to how their master's degree programs meet the Basic Areas of Education Requirement.

Psychological Perspectives on Education

- EDUC 2000 - PSYCHOLOGY OF LEARNING AND DEVELOPMENT FOR EDUCATION
- EDUC 2007 - HUMAN LEARNING
- EDUC 2008 - CONCEPTION TO EARLY CHILDHOOD
- EDUC 2009 - DEVELOPMENT: MIDDLE CHILDHOOD/ADOLESCENCE

Social and Cultural Perspectives on Education

- EDUC 2100 - EDUCATION AND SOCIETY
- EDUC 2102 - HISTORY OF EDUCATION
- EDUC 2103 - RACE AND RACISM IN EDUCATION AND SOCIETY
- EDUC 2104 - LEADERSHIP IN SERVICE LEARNING
- EDUC 2105 - SOCIOLOGY OF EDUCATION
- EDUC 2106 - EDUCATION AND CULTURE

- EDUC 2107 - EVIDENCE BASED HEALTH PROGRAM PLANNING
- EDUC 2108 - STATE/NATIONAL POLITICS OF EDUCATION
- EDUC 2109 - GENDER IN EDUCATION
- EDUC 2110 - GENDER AND EDUCATION
- EDUC 2111 - CONTEMPORARY PHILOSOPHY OF EDUCATION
- EDUC 2112 - POLITICS AND HISTORY OF HIGHER EDUCATION

Research Methods

- EDUC 2200 - DISCIPLINED INQUIRY *
- EDUC 2201 - INTRODUCTION TO RESEARCH METHODOLOGY
- EDUC 2202 - EDUCATIONAL/PSYCHOLOGICAL MEASUREMENT
- EDUC 2205 - FIELD METHODS

*Enrollment limited to MAT students

Additional Requirements

Master's Comprehensive Examination

The School of Education requires a comprehensive examination for all master's degrees. The comprehensive examination is designed to assess the student's mastery of the general field of graduate study. The comprehensive examination is constructed, administered, and scored by the program or department to which the student has been admitted. Procedures and schedules of administration are available from the program or department. *The student must be enrolled to take the comprehensive examination.

**See also Comprehensive Examination under Regulations Pertaining to Master of Arts and Master of Science Degrees. The University-wide regulations on comprehensive examinations detailed there apply to all School of Education master's programs.*

Thesis, Thesis Equivalent, and Research Paper Requirements

Some MA and MS degree programs within the School of Education are offered with a thesis requirement while others are offered with the option of completing either a thesis or a thesis equivalent. All MAT degree programs and some MEd programs require the completion of a research paper.

Master's Degree with Thesis

The master's degree with thesis is intended for graduate students who have pursued advanced graduate study in at least one field of education specialization and have demonstrated through the master's thesis the capability to plan and carry through a project of original research. The plan of studies should include at least 6 credits in thesis work.

Thesis Overview

The thesis overview is a written proposal for the thesis. The overview is presented to the master's committee, which consists of a minimum of three faculty members (at least one from another program or department) selected in consultation with the student by the research advisor and approved by the department. The student must submit a form for approval of the thesis committee. A student must be registered in the term during which the thesis overview meeting is scheduled. A unanimous vote of the master's committee is required for approval of the overview. The outcome of the overview meeting is submitted on the appropriate form along with a corrected copy of the overview to the Office of Admissions and Enrollment Services.

Approval of Research with Human Subjects

If the research proposed in the overview involves human subjects, the proposed research must be approved by the University Institutional Review Board (IRB) for the Protection of Human Subjects before it may be carried out. Information on materials that must be submitted and the procedures that must be followed for an IRB review are available in departmental offices and the Office of Admissions and Enrollment Services.

Advancement to Master's Candidacy

To be advanced to candidacy for the master's degree with thesis a student must:

- be admitted to full graduate status;
- have a minimum grade point average of 3.00 (transfer credits not considered);
- have an approved plan of studies on file in the Office of Admissions and Enrollment Services;
- have passed the comprehensive examination;
- have an approved overview on file in the Office of Admissions and Enrollment Services; and
- if the proposed research involves human subjects, have a letter on file in the Office of Admissions and Enrollment Services from the IRB approving the proposed research.

Thesis Preparation

The thesis research is completed and the thesis is prepared under the direction of the research advisor according to the approved overview. In preparing the thesis, the student must follow the University's ETD Format Guidelines, and specific departmental or program requirements.

Final Oral Examination

The completed thesis is submitted to the master's committee for the final oral examination. The student must be registered in the term during which the final oral examination is scheduled. The final oral examination is devoted primarily to the thesis, and an affirmative vote by a majority of the committee members is required to pass the examination. One corrected copy of the thesis as approved by the master's committee must be filed, along with one copy of a research advisor approved abstract and the form showing a passed final oral examination, no later than one week before the end of the term during which the student expects to graduate. The dean/associate dean must approve any exception to this requirement.

Master's Degree with Thesis Equivalent Option/Research Paper

Master's degrees with the thesis equivalent option or research paper requirement are intended for graduate students who have pursued advanced study in at least one field of educational specialization and have demonstrated capability of presenting information relevant to an issue or problem in education. The plan of studies should include at least 3 credits in a research seminar, supervised research, or directed study involving research in the student's focus area.

Research Paper Requirements

Each candidate for the master's degree with the thesis equivalent option or research paper requirement must complete, in acceptable form, a research paper that demonstrates the ability to locate, organize, and summarize information bearing on an issue or problem in education. This project is usually initiated and completed in the research seminar of the student's major. For certain majors, this requirement may be met by other means, such as successful exhibits or demonstrations.

Master of Arts in Teaching Degree

This option provides a comprehensive teacher preparation program for qualified science area graduates who want to coordinate certification study with advanced-level studies in education. Applicants must have completed or be able to complete prerequisite academic course work before beginning MAT studies. This 36-credit program for full-time students involves 10 consecutive months of study (September - June).

Jumpstart

Weeks 1-2; 40 hours

- IL 2430 - TEACHING & LEARNING IN SECONDARY SCIENCE 1
- IL 2741 - PRACTICUM IN SECONDARY SCIENCE 1
- IL 2845 - PRACTICUM IN SECONDARY SCIENCE
- IL 2431 - TEACHING & LEARNING IN SECONDARY SCIENCE 2
- IL 2502 - STUDENT W/DISAB IN SECNDRY CLSSRM
- IL 2257 - TEACHING ENGLISH LANGUAGE LEARNERS
- EDUC 2200 - DISCIPLINED INQUIRY
- IL 2432 - TEACHING & LEARNING IN SECONDARY SCIENCE 3
- IL 2520 - LITERACY ASSESSMENT & INSTRUCTION FOR CHILDREN WITH DISABILITIES IN INCLUSIVE SETTINGS IN SEC CLSSRM
- IL 2496 - INTERNSHIP - SCIENCE
 - 4 credits
 - 3 credits
- IL 2843 - STUDENT TEACHING SEM - SCIENCE
- IL 2990 - RESEARCH SEMINAR FOR MAT INTERNS
- PSYED 2265 - ATTENTIONAL TEACHING PRACTICES 1
- PSYED 2266 - ATTENTIONAL TEACHING PRACTICES 2

Social Studies Education, MAT

The University of Pittsburgh, School of Education, offers a post-baccalaureate program for Secondary Social Studies certification (grades 7-12), the Master of Arts in Teaching (MAT) Program. Details of the MAT program are outlined below:

- requires Teaching Interns to take and pass the Content Knowledge test (Praxis II) during the first semester of their program in order to obtain their Intern Certificate
- satisfies the requirements for a Pennsylvania Instructional I Certificate (pending passing scores on the national PRAXIS II Exam, successful completion of the PA Statewide Evaluation Form for Student Professional Knowledge and Practice (PDE 430), and satisfactory performance in courses and in the internship)
- is completed in three terms (fall, spring, summer 1 session) beginning in late August of the admission year and concluding in mid-June of the following year
- consists of 36 credits of graduate course work combined with a maximum 4.5 day per week internship in a local school district from September through June

Master's Degree Requirements

The requirements presented in this section are school-wide requirements that have been established in addition to the University-wide requirements detailed under general academic regulations. Students should review the general academic regulations section in addition to the specific school information detailed below.

Common Requirements

All master's degrees awarded by the School of Education require the completion of an approved plan of studies consisting of a minimum of 36 credits (including 9 credits in Basic Areas of Education) and the passing of a comprehensive examination.

Acceptance of Transfer Credits

For University-wide rules, see Acceptance of Transfer Credits under General Academic Regulations. School-specific detail follows.

A maximum of 6 transfer credits may be counted toward an MA or MS degree. A maximum of 12 transfer credits may be counted toward an MAT or MEd degree. Only graduate courses taken as a graduate student may be transferred and applied toward a master's degree. The only exception are courses taken while an undergraduate student at the University of Pittsburgh during the final term of undergraduate study that meet the following requirements, as explained in the Graduate Catalog:

Undergraduate students who need fewer than 15 credits to complete requirements for the baccalaureate degree and who intend to continue study toward an advanced degree may be permitted during their final term to register for graduate courses that will later apply toward a graduate degree. The student must obtain written permission from the school of proposed graduate study that the courses may count when and if the student is admitted into the graduate degree program. This privilege should not be granted if the proposed total program exceeds a normal full-time load. Although these credits will appear on the undergraduate transcript, they will not count toward fulfilling undergraduate degree requirements. They will be posted as advanced standing credits on the graduate transcript.

Grade Point Average/Academic Probation

All students enrolled in master's degree programs are required to maintain a grade point average (GPA) of at least 3.000. The cumulative GPA is based on all course work taken after enrollment in the appropriate graduate program. A student is automatically placed on academic probation when the cumulative GPA after 6 credits or more, exclusive of transfer credits, falls below 3.00. Although the credits allowed for acceptable work completed elsewhere by students enrolled in the School of Education count toward the total number of credits required for the graduate degree, the grades earned in such courses are not included in GPA computations.

While on probation students are limited to registering only for courses in which a letter grade is given. To be removed from probation status, a student must achieve a 3.50 GPA in 6 credits or more. A student can only be placed on academic probation status once during their program of study. Students placed on academic probation status will receive notification in the form of a letter from the School of Education, and they will be recommended to seek guidance from their academic advisor.

Ordinarily, students are required to terminate graduate study after two terms on probation. A student who does not meet the GPA or credit requirements will be dismissed from the School of Education, unless serious extenuating circumstances exist. The request for continuation must include a recommendation made by the Department Chair (or designated faculty member) and the academic advisor, with the recommendation approved by the Dean of the school.

Statute of Limitations

All requirements for a master's degree must be completed within a period of four consecutive calendar years from the student's initial registration for master's study in an MA or MS degree program or within five years in an MAT or MEd program.

Under certain conditions, the dean/associate dean may grant an extension of a student's statute of limitations. The request for extension must include a recommendation made by the academic advisor, with the recommendation approved by the Dean of the school. The statute of limitations can only be extended once.

Leave of Absence

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

Academic Integrity Policy

Students have the right to be treated by faculty in a fair and conscientious manner in accordance with the ethical standards generally recognized within the academic community (as well as those recognized within the profession). Students have the responsibility to be honest and to conduct themselves in an ethical manner while pursuing academic studies. Should a student be accused of a breach of academic integrity or have questions regarding faculty responsibilities, procedural safeguards including provisions of due process have been designed to protect student rights. These general procedures may be found in Guidelines on Academic Integrity: Student and Faculty Obligations and Hearing Procedures

at www.provost.pitt.edu. The School of Education has its own academic integrity policies, posted on the School of Education website. Students are encouraged to review these school-specific guidelines as well.

Plan of Studies

Before completion of 15 credits, students, in consultation with their academic advisor, should complete a Plan of Studies that conforms to program requirements. The plan of studies, approved by the academic advisor and the program coordinator, is filed in the Office of Admissions and Enrollment Services.

Any changes in the Plan of Studies must be approved by the academic advisor and the program coordinator, conform to program requirements, and be filed in the Office of Admissions and Enrollment Services. At the time of graduation, completed courses must comply with the approved Plan of Studies.

Basic Areas of Education Requirement

All master's degrees conferred by the School of Education require a minimum of 9 credits of study from the Basic Areas of Education (BAE), 3 credits each from courses offered in the content areas of psychological perspectives on education, social and cultural perspectives on education, and research methods. A maximum of 6 credit hours of BAE courses may be taken from those offered within a single department. The courses in each area that may be used to meet this requirement are listed below. See also individual program curricula for exceptions to how their master's degree programs meet the Basic Areas of Education Requirement.

Psychological Perspectives on Education

- EDUC 2000 - PSYCHOLOGY OF LEARNING AND DEVELOPMENT FOR EDUCATION
- EDUC 2007 - HUMAN LEARNING
- EDUC 2008 - CONCEPTION TO EARLY CHILDHOOD
- EDUC 2009 - DEVELOPMENT: MIDDLE CHILDHOOD/ADOLESCENCE

Social and Cultural Perspectives on Education

- EDUC 2100 - EDUCATION AND SOCIETY
- EDUC 2102 - HISTORY OF EDUCATION
- EDUC 2103 - RACE AND RACISM IN EDUCATION AND SOCIETY
- EDUC 2104 - LEADERSHIP IN SERVICE LEARNING
- EDUC 2105 - SOCIOLOGY OF EDUCATION
- EDUC 2106 - EDUCATION AND CULTURE
- EDUC 2107 - EVIDENCE BASED HEALTH PROGRAM PLANNING
- EDUC 2108 - STATE/NATIONAL POLITICS OF EDUCATION
- EDUC 2109 - GENDER IN EDUCATION
- EDUC 2110 - GENDER AND EDUCATION
- EDUC 2111 - CONTEMPORARY PHILOSOPHY OF EDUCATION
- EDUC 2112 - POLITICS AND HISTORY OF HIGHER EDUCATION

Research Methods

- EDUC 2200 - DISCIPLINED INQUIRY *
- EDUC 2201 - INTRODUCTION TO RESEARCH METHODOLOGY
- EDUC 2202 - EDUCATIONAL/PSYCHOLOGICAL MEASUREMENT
- EDUC 2205 - FIELD METHODS

*Enrollment limited to MAT students

Additional Requirements

Master's Comprehensive Examination

The School of Education requires a comprehensive examination for all master's degrees. The comprehensive examination is designed to assess the student's mastery of the general field of graduate study. The comprehensive examination is constructed, administered, and scored by the program or department to which the student has been admitted. Procedures and schedules of administration are available from the program or department. *The student must be enrolled to take the comprehensive examination.

**See also Comprehensive Examination under Regulations Pertaining to Master of Arts and Master of Science Degrees. The University-wide regulations on comprehensive examinations detailed there apply to all School of Education master's programs.*

Thesis, Thesis Equivalent, and Research Paper Requirements

Some MA and MS degree programs within the School of Education are offered with a thesis requirement while others are offered with the option of completing either a thesis or a thesis equivalent. All MAT degree programs and some MEd programs require the completion of a research paper.

Master's Degree with Thesis

The master's degree with thesis is intended for graduate students who have pursued advanced graduate study in at least one field of education specialization and have demonstrated through the master's thesis the capability to plan and carry through a project of original research. The plan of studies should include at least 6 credits in thesis work.

Thesis Overview

The thesis overview is a written proposal for the thesis. The overview is presented to the master's committee, which consists of a minimum of three faculty members (at least one from another program or department) selected in consultation with the student by the research advisor and approved by the department. The student must submit a form for approval of the thesis committee. A student must be registered in the term during which the thesis overview meeting is scheduled. A unanimous vote of the master's committee is required for approval of the overview. The outcome of the overview meeting is submitted on the appropriate form along with a corrected copy of the overview to the Office of Admissions and Enrollment Services.

Approval of Research with Human Subjects

If the research proposed in the overview involves human subjects, the proposed research must be approved by the University Institutional Review Board (IRB) for the Protection of Human Subjects before it may be carried out. Information on materials that must be submitted and the procedures that must be followed for an IRB review are available in departmental offices and the Office of Admissions and Enrollment Services.

Advancement to Master's Candidacy

To be advanced to candidacy for the master's degree with thesis a student must:

- be admitted to full graduate status;
- have a minimum grade point average of 3.00 (transfer credits not considered);
- have an approved plan of studies on file in the Office of Admissions and Enrollment Services;
- have passed the comprehensive examination;
- have an approved overview on file in the Office of Admissions and Enrollment Services; and
- if the proposed research involves human subjects, have a letter on file in the Office of Admissions and Enrollment Services from the IRB approving the proposed research.

Thesis Preparation

The thesis research is completed and the thesis is prepared under the direction of the research advisor according to the approved overview. In preparing the thesis, the student must follow the University's ETD Format Guidelines, and specific departmental or program requirements.

Final Oral Examination

The completed thesis is submitted to the master's committee for the final oral examination. The student must be registered in the term during which the final oral examination is scheduled. The final oral examination is devoted primarily to the thesis, and an affirmative vote by a majority of the committee members is required to pass the examination. One corrected copy of the thesis as approved by the master's committee must be filed, along with one copy of a research advisor approved abstract and the form showing a passed final oral examination, no later than one week before the end of the term during which the student expects to graduate. The dean/associate dean must approve any exception to this requirement.

Master's Degree with Thesis Equivalent Option/Research Paper

Master's degrees with the thesis equivalent option or research paper requirement are intended for graduate students who have pursued advanced study in at least one field of educational specialization and have demonstrated capability of presenting information relevant to an issue or problem in education. The plan of studies should include at least 3 credits in a research seminar, supervised research, or directed study involving research in the student's focus area.

Research Paper Requirements

Each candidate for the master's degree with the thesis equivalent option or research paper requirement must complete, in acceptable form, a research paper that demonstrates the ability to locate, organize, and summarize information bearing on an issue or problem in education. This project is usually initiated and completed in the research seminar of the student's major. For certain majors, this requirement may be met by other means, such as successful exhibits or demonstrations.

Master of Arts in Teaching Degree

This option provides qualified graduates in the social science disciplines with the opportunity to obtain Instructional I teacher certification in social studies education for grades seven through 12 and the MAT degree. All applicants are required to have completed 30 credits in one of the social science disciplines along with another 18-30 credits across the other six disciplines in addition to general arts and sciences prerequisites. The MAT option requires 36 credits.

- IL 2260 - TEACHING & LEARNING IN SECONDARY SOCIAL STUDIES 1
- IL 2262 - TEACHING & LEARNING IN SECONDARY SOCIAL STUDIES 2
- IL 2278 - PRACTICUM IN SECONDARY SOCIAL STUDIES
- IL 2502 - STUDENT W/DISAB IN SECNDRY CLSSRM
- IL 2257 - TEACHING ENGLISH LANGUAGE LEARNERS
- EDUC 2200 - DISCIPLINED INQUIRY
- IL 2827 - TEACHING AND LEARNING IN SECONDARY SOCIAL STUDIES 3
- IL 2520 - LITERACY ASSESSMENT & INSTRUCTION FOR CHILDREN WITH DISABILITIES IN INCLUSIVE SETTINGS IN SEC CLSSRM
- IL 2883 - INTERNSHIP - SOCIAL STUDIES
- IL 2828 - STUDENT TEACHING SEMINAR-SOCIAL STUDIES
- IL 2990 - RESEARCH SEMINAR FOR MAT INTERNS
- PSYED 2265 - ATTENTIONAL TEACHING PRACTICES 1
- PSYED 2266 - ATTENTIONAL TEACHING PRACTICES 2

Social Studies Education, MEd

The structure for the online social studies MEd is divided into six distinct academic areas. Each area is made up of content, knowledge, and skills critical to the development of graduate-level practitioners and scholars. The program requires a minimum of 36 credits for completion. Degree requirements include:

- 15 credits (5 courses) in Social Studies-specific Pedagogy;
- 3 credits (1 course) in Psychological Perspectives on Education;
- 3 credits (1 course) in Social and Cultural Perspectives on Education;
- 3 credits (1 course) in MEd Research Seminar;
- 3 credits (1 course) in MEd Research Methods;
- 9 credits (3 courses) in approved electives; and
- a written comprehensive exam.

Social Studies Theory and Pedagogy

Choose 15.0 credits from the following 6 courses:

- IL 2219 - DISCIPLINARY LITERACY
- IL 2265 - ISSUES IN HISTORY EDUCATION
- IL 2269 - SPECIAL TOPICS: SOCIAL STUDIES
- IL 2277 - COMPARATIVE AND GLOBAL PERSPECTIVES ON EDUCATION
- IL 2710 - ADVANCED SOCIAL STUDIES METHODS
- IL 2712 - HISTORICAL THINKING AND HISTORIOGRAPHY: SECONDARY SOCIAL STUDIES CLASSROOM

Psychological Perspectives on Education

- EDUC 2000 - PSYCHOLOGY OF LEARNING AND DEVELOPMENT FOR EDUCATION

Social and Cultural Perspectives on Education

- EDUC 2100 - EDUCATION AND SOCIETY

Research Seminar

- IL 2290 - RESEARCH SEMINR FOR MED STUDENTS

Research Methods

Choose 3.0 credits from the following courses

- EDUC 2201 - INTRODUCTION TO RESEARCH METHODOLOGY
- IL 2405 - INTRODUCTION TO ACTION RESEARCH METHODS
- PSYED 2001 - INTRODUCTION TO RESEARCH METHODOLOGY

Electives

Choose 9 credits from the following options:

- Advisor-approved 2000-level or above ADMPS, EDUC, or IL courses;
- Advisor-approved 2000-level Arts and Sciences (history, political science, geography, psychology, sociology, anthropology, or economics) courses

Vision Studies Special Education - Vision Education Certification, MEd

The School of Education at the University of Pittsburgh requires all students pursuing a Master's of Education degree (MEd) to complete a minimum of 36-credits, 12 of which are the required graduate-level general education courses listed.

Applicants may choose to pursue the MEd degree through a variety of options (with or without certification):

- MEd degree with single certification as a Teacher of Students with Visual Impairments (TVI)
- MEd degree with single certification as an Orientation and Mobility (O&M) Specialist
- MEd degree with dual certification (TVI and O&M)
- MEd degree without certification but with a Vision Studies Area of Concentration

Students pairing the degree in combination with any certification option will complete additional credits hours to fulfill program requirements.

Additionally, the MEd program requires students to successfully complete the Vision Studies Comprehensive Exam. The Comprehensive Exam is a proctored three-hour exam based on the student's area of concentration and is completed towards the end of their MEd degree program.

MEd Vision Studies Required Courses

- EDUC 2201 - INTRODUCTION TO RESEARCH METHODOLOGY
- EDUC 2100 - EDUCATION AND SOCIETY
- EDUC 2000 - PSYCHOLOGY OF LEARNING AND DEVELOPMENT FOR EDUCATION
- IL 2690 - RESEARCH SEMINAR ONLINE

PhD

Early Intervention, PhD

PhD Core Curriculum

Methods Courses

Preparing students to tackle problems of practice and policy, and create innovative research agendas, requires intentionality in the methods coursework that supports students' development of independent projects, meaningful contributions to advisors' research, and critical analysis of past research. To help ensure that students develop the necessary analytic competencies, students across the areas of concentration (ARCOs) for the PhD in the School of Education are required to complete **a minimum of 5 methods courses**: Quantitative 1 (EDUC 2100) and 2 (EDUC 3100); Qualitative 1 (EDUC 3104); and 2 seminars in advanced quantitative or qualitative methods, determined by the student and their advisor.

- EDUC 3100 - INTRODUCTION TO QUAN METHODS: DESCRIPTIVE AND INFERENTIAL STATISTICS
- EDUC 3103 - QUANTITATIVE METHODS 2
- EDUC 3104 - INTRODUCTION TO QUALITATIVE METHODS

First Year Seminar

To further support students' research competencies, PhD students also participate in a school wide first year seminar (EDUC 3102) and EDUC 3105). This seminar meets every other week (1 credit in fall and 2 credits in spring, taken over and above the typical 9 credit course load) and focuses on familiarizing students with practical and ethical issues in research (e.g., necessary clearances for working in schools, resolving questions of authorship and authorship order, human subjects guidelines), and supporting students work on their pre-dissertation proposal (e.g., developing innovative research questions, conducting a literature review).

- EDUC 3102 - FIRST YEAR SEMINAR 1
- EDUC 3105 - FIRST YEAR SEMINAR 2

Additionally, PhD students enroll in writing seminar courses taken over and above the typical 9-credit course load beginning in the second year of study. These credits are above and beyond the 90 credits required for graduation.

Requirements

- IL 3509 - ADV SEMINAR: EARLY INTERVENTION

Note:

The remaining major field area courses are chosen according to the interests and background of the candidate.

Research Methodology and Practicum (18 credits)

- Approved courses in Research Methodology: 12 credits
- Approved Research Practicum: 6 credits

Supporting Field (9-18 credits)

Nine credits are taken outside of the School of Education if the student's bachelor's degree is in an academic discipline or the equivalent. Eighteen credits are taken outside the School of Education if the degree is not in an academic discipline.

Electives

Electives are chosen to bring breadth and/or depth to the program of study. Because of the broad areas of specialty within the field of Special Education, these courses may be taken within the School or from across the University. Electives are taken as-needed to complete a minimum of 90 credits for the degree.

Dissertation (18 credits)

Vision Studies, PhD

Blindness/Vision Impairment/Orientation and Mobility, Doctor of Philosophy (PhD)

Total of 90 credits minimum (maximum of 30 credits from master's degree)

Major Field (DIL) Studies

30-36 credits with at least 18 credits at the 3000 level with a minimum of 15 credits at the University of Pittsburgh

- IL 3590 - RESEARCH SEMINAR IN SPECIAL EDUCATION

Research Methodology (12 credits minimum)

Approved courses in Research Methodology - 12 credits

Research Practicum Courses (6 credits)

Approved Research Practicum - 6 credits

Academic Area (9-18 credits)

Nine credits are taken outside of the School of Education if the student's bachelor's degree is in an academic discipline or the equivalent. Eighteen credits are taken outside the School of Education if the degree is not in an academic discipline. 9-18 credits

Electives (Credits variable)

Electives are chosen to bring breadth and/or depth to the program of study. Because of the broad areas of specialty within the field of Special Education, these courses may be taken within the School or from across the University.

Dissertation (18 credits)

Dissertation - 18 credits

Department of Psychology in Education

Programs within the Department of Psychology in Education prepare graduates for professional careers in teaching, research, and professional practice. Doctoral studies are offered with areas of concentration in applied developmental psychology and in research methodology. Graduates receiving doctoral degrees serve in academic and research capacities in universities, government agencies, public and private research, and testing centers.

Master's degrees are offered with areas of concentration in applied developmental psychology and research methodology. Master's study in research methodology prepares personnel for positions in testing and research. Master's study in applied developmental psychology prepares students for professional roles as program administrators, directors, and supervisors, child development specialists, child and youth workers, child life specialists, behavior/developmental specialists, mobile therapists, and research associates.

The department offers the following degrees in psychology in education:

- Master of Arts (MA)
- Master of Science (MS)
- Master of Education (MEd)
- Doctor of Philosophy (PhD)

Program Information

Applied Developmental Psychology Program

Applied Developmental Psychology helps students gain the expertise for recognizing how the development, implementation, and evaluation of programs directly correspond with the progression of children, youth, and their families.

This program offers:

- Bachelor of Science (BS) degree
- Master's degree (MS)
- Doctoral degree (PhD)

Infant Mental Health Program

The program offers a Certificate and track within the MS in Applied Developmental Psychology program for students to gain specialized skills and knowledge for working with very young children (0 to 3-years of age) and their families. The training will be aligned with the recently purchased IMH Competency Guidelines and will prepare IMH students to be "ready" for IMH Endorsement through the process to be determined by the state of Pennsylvania. Students with IMH concentration and/or those who pursue IMH Endorsement will have unique qualifications that may improve employment opportunities and qualification to work in various settings. Among the unique skills students will learn are culturally-informed methods for infant observation, neurobehavioral assessment, transdisciplinary evaluation of infant development, promotion of caregiver-infant relationships, family engagement, relationship observation and assessment, system coordination, and an understanding of evidence-based interventions including Child Parent Psychotherapy, Circle of Security, Seeing is Believing, Healthy Families America, and more. Students will have unique learning opportunities with the continued collaboration between the concentration in IMH and various local agencies and offices.

Research Methodology Program

The Research Methodology Program prepares professionals in the areas of psychometrics and test design, and scholars who contribute to the study of the quantitative methods used in empirical studies. Graduate students of the research methodology program acquire skills in the interrelated areas of measurement, research design, and statistical methods. Graduates are prepared for positions in colleges, universities, research centers, testing agencies, school systems, ministries of education and other government agencies, and industry.

This program offers:

- Master of Education (MEd)
- Master of Arts (MA)
- Doctor of Philosophy (PhD) in Psychology in Education with an area of concentration in research methodology
- Minor in quantitative research methodology

Certificate

Infant Mental Health Certificate

Curriculum

All students must complete 18 course credits for this School of Education Post-Baccalaureate Certificate in Infant Mental Health within the Department of Applied Developmental Psychology. Students may complete two optional credits in Reflective Supervision/Consultation to meet requirements for IMH Endorsement.

All courses are 3 credits unless otherwise specified.

- PSYED 2007 - FOUNDATIONS OF INFANT MENTAL HEALTH 1
- PSYED 2008 - FOUNDATIONS OF INFANT MENTAL HEALTH 2
- PSYED 2006 - INFANT MENTAL HEALTH INTERVENTIONS I
- IL 2562 - ASSESSMENT YOUNG CHILDREN DISABILITY

One of the following two courses:

- PSYED 2005 - INFANT DEVELOPMENT
- PSYED 2503 - DEVELOPMENT: CONCEPTION THROUGH EARLY CHILDHOOD

OPTIONAL

- PSYED 2003 - REFLECTIVE CONSULTATION (Optional - 1 credit per semester. This course meets the supervision requirements for IMH Endorsement)

Doctoral

Applied Developmental Psychology, PhD

PhD Applied Developmental Psychology Curriculum

The PhD degree requires 90 credits distributed as follows: 27 credits in core developmental course work, 9 credits in professional practice course work, 18 credits in research methodology, and 9 credits in a supporting field of study. The program also requires two terms of supervised research, a research project, a practicum in college teaching, and a dissertation.

- PSY 2330 - DEVELM PSYCH: COGNITV DEVELP
- PSY 2325 - DVLPMNTL PSY: SOCIAL DEVELOPMENT
- PSYED 3190 - RES SEM IN PSYCHOLOGY IN EDUC
- PSYED 3417 - STRUCTURAL EQUATION MODELING
- PSYED 3450 - INTRO TO EDUCATIONAL EVALUATION
- PSYED 3591 - SUPERVISED RESEARCH IN APPLIED DEVELOPMENTAL PSYCHOLOGY
- PSYED 3592 - PRACTICUM IN COLLEGE TEACHING
- PSYED 3599 - DISSERTATION RESEARCH IN APPLIED DEVELOPMENTAL PSYCHOLOGY
- PSYED 2416 - APPLIED MULTIVARIATE ANALYSIS
- PSYED 3419 - MEANING-CENTERED APPROACHES TO STUDYING DEVELOPMENT: PARTICIPATION OBSERVATION IN THE FIELD
- PSYED 3632 - APPLIED RESEARCH DESIGN
- PSYED 2510 - ASSESSMENT OF CHILDREN'S DEVELOPMENT IN REAL WORLD CONTEXTS
- PSYED 2072 - EDUCATIONAL AND PSYCHOLOGICAL MEASUREMENT
- PSYED 2073 - CONSTR ACHIEV/ABILITY TESTS
- PSYED 3471 - CONSTRUCTING QUESTIONNAIRES AND CONDUCTING SURVEYS
- IL 3003 - RESEARCH INTERVIEWING
- EDUC 3595 - SPECIAL TOPICS - LSAP
- ADMPS 3012 - QUALATATIVE DATA MANAGEMENT ANALSYS AND PRESENTATION

Development in Context

12 Credits - Select at least 4 from the following (other options available with advisor consent):

- PSYED 3589 - SPECIAL TOPICS
- PSYED 3531 - FAMILY INFLUENCE ON CHILD DEVELOPMENT
- PSYED 3535 - CULTURE AND COGNITION
- PSYED 2588 - SPECIAL TOPICS
- EDUC 3595 - SPECIAL TOPICS - LSAP

Years 2-3

Select at least 4 from the following (any sequence):

- PSYED 3417 - STRUCTURAL EQUATION MODELING
- PSYED 3419 - MEANING-CENTERED APPROACHES TO STUDYING DEVELOPMENT: PARTICIPATION OBSERVATION IN THE FIELD
- PSYED 3450 - INTRO TO EDUCATIONAL EVALUATION
- PSYED 2416 - APPLIED MULTIVARIATE ANALYSIS
- ADMPS 3012 - QUALATATIVE DATA MANAGEMENT ANALSYS AND PRESENTATION
- IL 3003 - RESEARCH INTERVIEWING

- LSAP 3595 - SPECIAL TOPICS

Area of Concentration

15 Credits

With you advisor, develop a coherent set of courses for your scholarly development.

Courses may be drawn from outside the School of Education or University of Pittsburgh.

Research, Teaching Practicum, and Dissertation Courses

All courses are 3 credits unless otherwise specified.

- PSYED 3591 - SUPERVISED RESEARCH IN APPLIED DEVELOPMENTAL PSYCHOLOGY
- PSYED 3592 - PRACTICUM IN COLLEGE TEACHING
- PSYED 3599 - DISSERTATION RESEARCH IN APPLIED DEVELOPMENTAL PSYCHOLOGY

PhD Core Curriculum

Methods Courses

Preparing students to tackle problems of practice and policy, and create innovative research agendas, requires intentionality in the methods coursework that supports students' development of independent projects, meaningful contributions to advisors' research, and critical analysis of past research. To help ensure that students develop the necessary analytic competencies, students across the areas of concentration (ARCOs) for the PhD in the School of Education are required to complete **a minimum of 5 methods courses**: Quantitative 1 (EDUC 2100) and 2 (EDUC 3100); Qualitative 1 (EDUC 3104); and 2 seminars in advanced quantitative or qualitative methods, determined by the student and their advisor.

- EDUC 3100 - INTRODUCTION TO QUAN METHODS: DESCRIPTIVE AND INFERENTIAL STATISTICS
- EDUC 3103 - QUANTITATIVE METHODS 2
- EDUC 3104 - INTRODUCTION TO QUALITATIVE METHODS

First Year Seminar

To further support students' research competencies, PhD students also participate in a school wide first year seminar (EDUC 3102) and EDUC 3105). This seminar meets every other week (1 credit in fall and 2 credits in spring, taken over and above the typical 9 credit course load) and focuses on familiarizing students with practical and ethical issues in research (e.g., necessary clearances for working in schools, resolving questions of authorship and authorship order, human subjects guidelines), and supporting students work on their pre-dissertation proposal (e.g., developing innovative research questions, conducting a literature review).

- EDUC 3102 - FIRST YEAR SEMINAR 1
- EDUC 3105 - FIRST YEAR SEMINAR 2

Additionally, PhD students enroll in writing seminar courses taken over and above the typical 9-credit course load beginning in the second year of study. These credits are above and beyond the 90 credits required for graduation.

Research Methodology, PhD

Doctor of Philosophy Degree

Degree Requirements: The PhD degree requires a minimum of 90 credits and a dissertation.

A redesigned Doctor of Philosophy degree starts Fall 2014. For additional degree information, refer to the introductory school section on Doctoral Degree.

- PSYED 2001 - INTRODUCTION TO RESEARCH METHODOLOGY
- PSYED 2018 - STATISTICS 1: DESCRIPTIVE AND INFERENTIAL STATISTICS
- PSYED 2019 - STATISTICS 2: ANALYSIS OF VARIANCE
- PSYED 2030 - EXPERIMENTAL DESIGN
- PSYED 2072 - EDUCATIONAL AND PSYCHOLOGICAL MEASUREMENT
- PSYED 2073 - CONSTR ACHIEV/ABILITY TESTS
- PSYED 2410 - APPLIED REGRESSION ANALYSIS
- PSYED 2416 - APPLIED MULTIVARIATE ANALYSIS
- PSYED 2422 - DATA ANALYSIS USING COMPUTER PACKAGES
- PSYED 3408 - HIERARCHICAL LINEAR MODELING
- PSYED 3410 - REGRESSION ANALYSIS
- PSYED 3416 - MULTIVARIATE STATISTICS
- PSYED 3417 - STRUCTURAL EQUATION MODELING
- PSYED 3420 - COMPUTER APPLICATIONS TO RESEARCH METHODOLOGY
- PSYED 3471 - CONSTRUCTING QUESTIONNAIRES AND CONDUCTING SURVEYS
- PSYED 3475 - PSYCHOMETRIC THEORY
- PSYED 3477 - ITEM RESPONSE THEORY
- PSYED 3484 - ADV TOPICS IN MEASUREMENT
- PSYED 3491 - SUPERVISED RESEARCH IN RES METH
- PSYED 3495 - TEACHING INTERNSHIP IN RES METH
- PSYED 3499 - DISSERTATION RESEARCH IN RESEARCH METHODOLOGY

PhD Core Curriculum

Methods Courses

Preparing students to tackle problems of practice and policy, and create innovative research agendas, requires intentionality in the methods coursework that supports students' development of independent projects, meaningful contributions to advisors' research, and critical analysis of past research. To help ensure that students develop the necessary analytic competencies, students across the areas of concentration (ARCOs) for the PhD in the School of Education are required to complete **a minimum of 5 methods courses**: Quantitative 1 (EDUC 2100) and 2 (EDUC 3100); Qualitative 1 (EDUC 3104); and 2 seminars in advanced quantitative or qualitative methods, determined by the student and their advisor.

- EDUC 3100 - INTRODUCTION TO QUAN METHODS: DESCRIPTIVE AND INFERENTIAL STATISTICS
- EDUC 3103 - QUANTITATIVE METHODS 2
- EDUC 3104 - INTRODUCTION TO QUALITATIVE METHODS

First Year Seminar

To further support students' research competencies, PhD students also participate in a school wide first year seminar (EDUC 3102) and EDUC 3105). This seminar meets every other week (1 credit in fall and 2 credits in spring, taken over and above the typical 9 credit course load) and focuses on familiarizing students with practical and ethical issues in research (e.g., necessary clearances for working in schools, resolving questions of authorship and authorship order, human subjects guidelines), and supporting students work on their pre-dissertation proposal (e.g., developing innovative research questions, conducting a literature review).

- EDUC 3102 - FIRST YEAR SEMINAR 1
- EDUC 3105 - FIRST YEAR SEMINAR 2

Additionally, PhD students enroll in writing seminar courses taken over and above the typical 9-credit course load beginning in the second year of study. These credits are above and beyond the 90 credits required for graduation.

Master's

Applied Developmental Psychology, MS

The Master of Science degree requires 36 credits distributed as follows: Applied Developmental Psychology (ADP) Core courses (18 credits), Specialization courses (12 credits), and Community-Based Practice Learning (with capstone project) courses (6 credits).

Core Courses

All full-time students in the 36-credit Master of Science (MS) program in Applied Developmental Psychology (ADP) complete a common set (18 credits) of core, foundational courses in their first year.

- PSYED 2503 - DEVELOPMENT: CONCEPTION THROUGH EARLY CHILDHOOD
- PSYED 2504 - DVLP: MIDDLE CHLHD/ADOLESCENCE
- PSYED 2510 - ASSESSMENT OF CHILDREN'S DEVELOPMENT IN REAL WORLD CONTEXTS
- PSYED 2530 - APPLIED DEVELOPMENTAL PSYCHOLOGY (ADP): PROFESSIONAL IDENTITY AND LEADERSHIP
- PSYED 2542 - EVIDENCE-BASED INTERVENTIONS IN REAL WORLD CONTEXTS I
- PSYED 2543 - EVIDENCE-BASED INTERVENTIONS IN REAL WORLD CONTEXTS 2

Specialization Courses

(Other courses may be chosen based on specialization with advisor approval)

Choose 18.0 credits from the following courses:

In the second year of the program, students complete in-depth study and training in courses aligned with their chosen concentration/specialization area, as well as complete a community-based practice learning experience that consists of a field placement and development of the Master's capstone project. ADP MS students presently may select from five concentrations; ARMO, BHSC, CHSCN, CYD, and IMH, or, they may design their own course of study with advisor approval. See typical course offering by concentration below. ADP MS options include completion of the Applied Behavior Analysis Certificate, Study Abroad, and taking additional elective courses. **View Course Options**

- PSYED 2018 - STATISTICS 1: DESCRIPTIVE AND INFERENTIAL STATISTICS
- PSYED 2113 - DEVELOPMENTAL PSYCHOPATHOLOGY
- PSYED 2141 - CHILD AND YOUTH WORK 1 - INTRODUCTION
- IL 2505 - AUTISM: CHARACTERISTICS AND INTERVENTIONS
- PSYED 2632 - APPLIED RESEARCH DESIGN
- PSYED 2532 - PSYCHOSOCIAL ASPECTS OF ILLNESS
- PSYED 2520 - INTRODUCTION TO COUNSELING
- PSYED 2521 - THEORY, MEANING AND PRACTICE OF PLAY AND ACTIVITY
- PSYED 2349 - CHILD LIFE PRACTICE IN HOSPITALS
- PSYED 2524 - BEHAVIORAL ASSESSMENT AND INTERVENTION
- PSYED 2003 - REFLECTIVE CONSULTATION
- PSYED 2005 - INFANT DEVELOPMENT
- PSYED 2006 - INFANT MENTAL HEALTH INTERVENTIONS I
- PSYED 2007 - FOUNDATIONS OF INFANT MENTAL HEALTH 1

Research Methodology, MA

The Master of Education degree requires 39 credits of coursework and a research project.

Core Curriculum

- PSYED 2001 - INTRODUCTION TO RESEARCH METHODOLOGY
- PSYED 2018 - STATISTICS 1: DESCRIPTIVE AND INFERENTIAL STATISTICS
- PSYED 2019 - STATISTICS 2: ANALYSIS OF VARIANCE
- PSYED 2030 - EXPERIMENTAL DESIGN
- PSYED 2072 - EDUCATIONAL AND PSYCHOLOGICAL MEASUREMENT
- PSYED 2073 - CONSTR ACHIEV/ABILITY TESTS

Additional Research Methods Courses

Choose 9.0 credits from the following 4 courses

Other courses may be approved by the student's advisor.

- PSYED 2422 - DATA ANALYSIS USING COMPUTER PACKAGES
- PSYED 2410 - APPLIED REGRESSION ANALYSIS
- PSYED 2416 - APPLIED MULTIVARIATE ANALYSIS
- PSYED 3471 - CONSTRUCTING QUESTIONNAIRES AND CONDUCTING SURVEYS

Psychological Perspectives on Education

Choose 3.0 credits from the following courses

- EDUC 2007 - HUMAN LEARNING
- EDUC 2008 - CONCEPTION TO EARLY CHILDHOOD
- EDUC 2009 - DEVELOPMENT: MIDDLE CHILDHOOD/ADOLESCENCE
- PSYED 2127 - HUMAN LEARNING
- PSYED 2503 - DEVELOPMENT: CONCEPTION THROUGH EARLY CHILDHOOD
- PSYED 2504 - DVLP: MIDDLE CHLHD/ADOLESCENCE

Social and Cultural Perspectives on Education

Choose 3.0 credits from the following courses

- ADMPS 2302 - STATE/NATIONAL POLITICS OF EDUCATION
- ADMPS 2305 - SOCIOLOGY OF EDUCATION
- ADMPS 2306 - HISTORY OF EDUCATION
- ADMPS 2307 - POLITICS AND HISTORY OF HIGHER EDUCATION
- ADMPS 2310 - CONTEMPORARY PHILOSOPHY OF EDUCATION
- ADMPS 2342 - EDUCATION AND CULTURE
- ADMPS 2344 - LEADERSHIP IN SERVICE LEARNING
- ADMPS 2352 - ANTHROPOLOGY OF EDUCATION
- ADMPS 2133 - GENDER AND EDUCATION
- ADMPS 2050 - RACE AND RACISM IN EDUCATION AND SOCIETY
- EDUC 2111 - CONTEMPORARY PHILOSOPHY OF EDUCATION
- EDUC 2112 - POLITICS AND HISTORY OF HIGHER EDUCATION
- EDUC 2102 - HISTORY OF EDUCATION
- EDUC 2103 - RACE AND RACISM IN EDUCATION AND SOCIETY

- EDUC 2104 - LEADERSHIP IN SERVICE LEARNING
- EDUC 2105 - SOCIOLOGY OF EDUCATION
- EDUC 2106 - EDUCATION AND CULTURE
- EDUC 2107 - EVIDENCE BASED HEALTH PROGRAM PLANNING
- EDUC 2108 - STATE/NATIONAL POLITICS OF EDUCATION
- EDUC 2109 - GENDER IN EDUCATION
- EDUC 2110 - GENDER AND EDUCATION
- EDUC 2100 - EDUCATION AND SOCIETY
- HPA 2322 - EVIDENCE BASED HEALTH PROGRAM PLANNING

Research Requirements

Choose 6.0 credits from the following 3 courses

- Option 1: Thesis - 6 total credits of PSYED 2499 over 2 terms;
- Option 2: Supervised Research Project Thesis Equivalent - 3 credits of PSYED 2491 and 3 credits of PSYED 2494;
- Option 3: Supervised Research Project and Literature Review - 3 credits of PSYED 2491 and 3 credits of 2494
- PSYED 2491 - SUPERVISED RESEARCH IN RES METH
- PSYED 2494 - M.A. PROJECT IN RSRCH METHODOLOGY
- PSYED 2499 - THESIS RES IN RSRCH METHODOLOGY

Master's Comprehensive Examination

Master's Comprehensive Examination consists of three 100-item multiple-choice tests, one each in the areas of measurement, research design, and statistics.

For the Master's Comprehensive Examination, a student must attain a score of 60 on each of the three area tests. The students must take each of the three area tests until a score of 60 is attained. Before retaking a test, however, the advisor and the students should make plans for removal of any knowledge deficiency identified from the results of the previous administration. The advisor's approval for retaking any part of the examination should be obtained. There is no limit on the number of times a master's student may take the comprehensive examination in order to obtain a passing score at the master's level. Students cannot retake an examination for at least a month unless the advisor agrees.

Research Methodology, MEd

Core Curriculum

Degree Requirements: The MA degree requires 39 credits of coursework and completion of a thesis option.

- PSYED 2018 - STATISTICS 1: DESCRIPTIVE AND INFERENTIAL STATISTICS
- PSYED 2019 - STATISTICS 2: ANALYSIS OF VARIANCE
- PSYED 2030 - EXPERIMENTAL DESIGN
- PSYED 2072 - EDUCATIONAL AND PSYCHOLOGICAL MEASUREMENT
- PSYED 2073 - CONSTR ACHIEV/ABILITY TESTS
- PSYED 2001 - INTRODUCTION TO RESEARCH METHODOLOGY
- PSYED 2491 - SUPERVISED RESEARCH IN RES METH

The student participates in a supervised research activity that involves data collection. Usually, students register for three credits of PSYED 2491 in each of two terms. A report that describes the activities completed each term is written by the student. The written report prepared for the supervised research experience does not satisfy the pre-dissertation research project requirement in the doctoral program.

Additional Research Methods Courses

Choose 9.0 credits from the following 4 courses

Other courses may be approved by the student's advisor.

- PSYED 2410 - APPLIED REGRESSION ANALYSIS
- PSYED 2416 - APPLIED MULTIVARIATE ANALYSIS
- PSYED 3471 - CONSTRUCTING QUESTIONNAIRES AND CONDUCTING SURVEYS
- PSYED 2422 - DATA ANALYSIS USING COMPUTER PACKAGES

Psychological Perspectives on Education

Choose 3.0 credits from the following courses.

- EDUC 2007 - HUMAN LEARNING
- EDUC 2008 - CONCEPTION TO EARLY CHILDHOOD
- EDUC 2009 - DEVELOPMENT: MIDDLE CHILDHOOD/ADOLESCENCE
- PSYED 2504 - DVLP: MIDDLE CHLHD/ADOLESCENCE
- PSYED 2503 - DEVELOPMENT: CONCEPTION THROUGH EARLY CHILDHOOD
- PSYED 2127 - HUMAN LEARNING

Social and Cultural Perspectives on Education

Choose 3 credits from the following courses.

- ADMPS 2050 - RACE AND RACISM IN EDUCATION AND SOCIETY
- ADMPS 2133 - GENDER AND EDUCATION
- ADMPS 2302 - STATE/NATIONAL POLITICS OF EDUCATION
- ADMPS 2305 - SOCIOLOGY OF EDUCATION
- ADMPS 2306 - HISTORY OF EDUCATION
- ADMPS 2307 - POLITICS AND HISTORY OF HIGHER EDUCATION
- ADMPS 2310 - CONTEMPORARY PHILOSOPHY OF EDUCATION
- ADMPS 2342 - EDUCATION AND CULTURE
- ADMPS 2344 - LEADERSHIP IN SERVICE LEARNING
- ADMPS 2352 - ANTHROPOLOGY OF EDUCATION
- EDUC 2111 - CONTEMPORARY PHILOSOPHY OF EDUCATION
- EDUC 2112 - POLITICS AND HISTORY OF HIGHER EDUCATION
- EDUC 2102 - HISTORY OF EDUCATION
- EDUC 2103 - RACE AND RACISM IN EDUCATION AND SOCIETY
- EDUC 2104 - LEADERSHIP IN SERVICE LEARNING
- EDUC 2105 - SOCIOLOGY OF EDUCATION
- EDUC 2106 - EDUCATION AND CULTURE
- EDUC 2107 - EVIDENCE BASED HEALTH PROGRAM PLANNING
- EDUC 2108 - STATE/NATIONAL POLITICS OF EDUCATION
- EDUC 2109 - GENDER IN EDUCATION
- EDUC 2110 - GENDER AND EDUCATION
- EDUC 2100 - EDUCATION AND SOCIETY
- HPA 2322 - EVIDENCE BASED HEALTH PROGRAM PLANNING

Master's Comprehensive Examination

Master's Comprehensive Examination consists of three 100-item multiple-choice tests, one each in the areas of measurement, research design, and statistics.

For the Master's Comprehensive Examination, a student must attain a score of 60 on each of the three area tests. The students must take each of the three area tests until a score of 60 is attained. Before retaking a test, however, the advisor and the students should make plans for removal of any knowledge deficiency identified from the results of the previous administration. The advisor's approval for retaking any part of the examination should be obtained. There is no limit on the number of times a master's student may take the comprehensive examination in order to obtain a passing score at the master's level. Students cannot retake an examination for at least a month unless the advisor agrees.

Minor

Quantitative Research Methodology Minor

Requirements

A minor in Quantitative Research Methodology is awarded to students who successfully complete a minimum of 18 credits in intermediate and advanced quantitative research methodology course work in the Department of Psychology in Education with a minimum grade point average of 3.25.

The course work must be distributed as follows:

- A minimum of 6 credits in statistical methods.
- A minimum of 3 credits in measurement.
- A minimum of 3 credits in research design.

Statistical Methods Courses

Minimum of 6 credits chosen from:

- PSYED 2018 - STATISTICS 1: DESCRIPTIVE AND INFERENTIAL STATISTICS
- EDUC 3100 - INTRODUCTION TO QUAN METHODS: DESCRIPTIVE AND INFERENTIAL STATISTICS
- PSYED 2019 - STATISTICS 2: ANALYSIS OF VARIANCE
- PSYED 2410 - APPLIED REGRESSION ANALYSIS
- EDUC 3103 - QUANTITATIVE METHODS 2

Measurements Courses

Minimum of 3 credits chosen from:

- PSYED 2072 - EDUCATIONAL AND PSYCHOLOGICAL MEASUREMENT
- PSYED 2073 - CONSTR ACHIEV/ABILITY TESTS
- PSYED 3471 - CONSTRUCTING QUESTIONNAIRES AND CONDUCTING SURVEYS

Research Design Courses

Required course - 3 credits:

- PSYED 2030 - EXPERIMENTAL DESIGN

Learning Sciences and Policy Program

The Learning Sciences and Policy program is based on the belief that understanding learning, teaching, and organizations is best undertaken as an interactive system, and that an integrated and coordinated interdisciplinary approach is best suited to understand, design and implement educational change. The program combines disciplines in learning sciences, teaching in the content disciplines, and organization and policy studies with the goal of improving instruction at scale, and is predicated on the idea that successful policy solutions will require learning on the part of educational professionals at all levels of the system.

• Learning Science and Policy (LSAP) PhD

The Learning Sciences and Policy (LSAP) PhD program brings three groups of faculty expertise together into a collaborative research and training environment: learning sciences in education; content-based educational research; and education policy and organizational change. The goal for the new program is to produce a yearly cohort of 5 to 8 nationally-competitive research scholars who have the training, track-record, and vision to become leaders in understanding and promoting educational change.

Our program is based on the belief that understanding learning, teaching, and organizations is best undertaken as an interactive system, and that an integrated and coordinated interdisciplinary approach is best suited to understand, design, and implement educational change. The program combines disciplines in learning sciences, teaching in the content disciplines, and organization and policy studies with the goal of improving instruction at scale, and is predicated on the idea that successful policy solutions will require learning on the part of educational professionals at all levels of the system.

Innovative features of the LSAP PhD Program:

- Students will be immersed in **rigorous interdisciplinary research and training** experiences from their first day in the program.
- The University of Pittsburgh Learning Policy Center will serve as a vehicle for dissemination of LSAP faculty and student research as well as a location for policy internships.
- Access to Pittsburgh's rich **talent pool of analysts and research in education policy and learning** including research scientists at Learning Research and Development Center (LRDC), policy specialists at the RAND Corporation, research methodologists at Carnegie Mellon, and education reform specialists at the Institute for Learning.
- Admitted students will be guaranteed **full funding** (for three years) through research assistantships that will allow them to work alongside active researchers on funded research programs.
- Students will participate in a year of **field placement** or a semester of field placement and a semester of teaching practicum at the college level. Field placements provide experiences outside the university (e.g., museums, school districts, community centers, and research centers).
- **Policy and design internships** with projects including the Institute for Learning, the Learning Policy Center, University of Pittsburgh's Center for Out-of-School Learning Environments (UPCLOSE), Pittsburgh Science of Learning Center (PSLC), SWoRD, the Design-based Learning Project.
- Active involvement in ongoing **research projects**.
- **Integrated** coursework that covers the fields of Learning Sciences, Learning Policy and Organizations, and Content Area Learning.
- Rigorous training in **quantitative, qualitative, and mixed research methods**.

• Out-of-School Learning EdD

The EdD Area of Concentration (ARCO) in Out-of-School Learning is intended for experienced professionals who aspire to be transformational leaders in out-of-school learning. Prospective applicants might currently work in museums, out-of-school time (OST) settings, libraries, digital media/technology, university outreach/extension, policy groups and think tanks, life-long learning programs, parks, environmental centers, arts-based organizations, community settings, youth development, or the many other areas where we explore learning environments that exist outside of classrooms. Program faculty are expert in connecting research and practice and have experience across a wide range of out-of-school settings, audiences, and learning arrangements.

Out-of-School Learning students are part of a larger, multidisciplinary EdD cohort of students from eight different specializations in education, offering rich opportunities for collaboration and broad learning about education. The core EdD curriculum covers educational foundations and methods of practitioner inquiry, while the specialized out-of-school learning curriculum focuses on informal learning theory, organizational processes, applied life-long learning, and evidence-based change and evaluation.

In addition to online work, most students in the EdD program come to Pittsburgh for occasional Saturday sessions with the entire EdD cohort. Students in the out-of-school learning program can opt for this online/face-to-face model or could choose a predominately online model. Students who do not live in Pennsylvania can apply for merit-based scholarships to help offset the cost of out-of-state tuition.

Contact Information

Program Chair, Kevin Crowley
 Learning Sciences and Policy
 LRDC 827
 E-mail: crowleyk@pitt.edu
 Phone: 412-624-7677
 Fax: 412-624-7439

Concentration

Out-of-School Learning, EdD

EdD Curriculum

The EdD program is a three-year 90-credit program, including 30 credits transferred from relevant graduate work. Students are required to transfer 30 credits of graduate work into the EdD program.

The EdD curriculum is delivered in several stages, through a variety methods:

- **Orientation:** The EdD cohort participates in a full-day, on campus, orientation in the spring before the summer start of the program. The day includes a welcome from the Dean of the School of Education, EdD program information, and cohort-building activities as well as an introductory session with other students in your Area of Concentration. Orientation typically takes place in April.
- **One-week intensive on ramp:** The EdD cohort will participate in a full-week, on campus, experience that includes intense work focused on understanding enduring problems of practice in education, health, and human development. This one-week experience, known as the "on-ramp", will be your first foundations course on framing, identifying, and investigating problems of practice. The on-ramp typically takes place in June.
- **Hybrid seminars:** You will experience a hybrid model of education through online course experiences and in-person, once per month (typically on Saturdays) sessions on the Pittsburgh campus. Attendance at in-person, on campus sessions is *required*.

SCHEDULE

Year 1: Summer	Year 1: Fall	Year 1: Spring	Year 1: Summer
EDUC 3002 Foundation 1: Becoming a Leader Scholar Practitioner (3 credits) <i>ON-RAMP</i>	EDUC 3003 Foundation 2: Leadership in Groups and Organizations (3 credits)	EDUC 3004 Foundation 3: Education Contexts (3 credits)	EDUC 3005 Foundation 4: Investigating Policy as a Lever for Change (3 credits)
EDUC 3001 Practitioner Inquiry 1 (3 credits)	ARCO: Course 1 (3 credits)	ARCO: Course 2 (3 credits)	Practitioner Inquiry 2 (3 credits)
Year 2: Fall	Year 2: Spring	Year 2: Summer	
EDUC 3009 Supervised Practitioner Inquiry (3 credits)	EDUC 3007 Practitioner Inquiry 3 (3 credits)	EDUC 3008 Practitioner Inquiry 4 (3 credits)	
ARCO: Course 3 (3 credits)	ARCO: Course 4 (3 credits)	EDUC 3012 Laboratory of Practice (3 credits)	
Year 3: Fall	Year 3: Spring	Year 3: Summer	

EDUC 3099 Guidance in Scholarly Practice (6 credits)	EDUC 3099 Guidance in Scholarly Practice (6 credits)	EDUC 3099 Guidance in Scholarly Practice (6 credits)
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CORE COURSES Credits / Units: 24 Total

Foundation Courses

- EDUC 3002 - FOUNDATIONS 1:
- EDUC 3003 - FOUNDATIONS 2: LEADERSHIP IN GROUPS AND ORGANIZATIONS
- EDUC 3004 - FOUNDATIONS 3: CONTEXTS OF EDUCATION
- EDUC 3005 - FOUNDATIONS 4: POLICY AS A LEVER FOR CHANGE

Practitioner Inquiry Courses

- EDUC 3001 - PRACTITIONER INQUIRY 1
- EDUC 3006 - PRACTITIONER INQUIRY 2
- EDUC 3007 - PRACTITIONER INQUIRY 3
- EDUC 3008 - PRACTITIONER INQUIRY 4: APPLYING DISCIPLINED INQUIRY

SUPERVISED PRACTITIONER INQUIRY

Students will identify, review and synthesize relevant scholarship that supports as inquiry into a problem of practice.

- EDUC 3009 - SUPERVISED PRACTITIONER INQUIRY

LABORATORY OF PRACTICE

Students will complete a Laboratory of Practice, a setting where theory and practice inform and enrich each other and facilitate transformative and generative learning that is measured by the development of scholarly expertise and implementation of practice (Carnegie Project on the Education Doctorate, 2010). Students choose from three types of experiences: job embedded, aspirant, or global.

- EDUC 3012 - SUPERVISED INTERNSHIP

GUIDANCE IN SCHOLARLY PRACTICE

Guidance in Scholarly Practice: Based on research interests, the students will be required to write a manuscript that reports on the improvement science process.

Portfolio of Scholarly Practice: The portfolio of scholarly practice will provide evidence of learning and success in foundations, inquiry, and ARCO experiences.

- EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE

Out-of-School Learning ARCO Curriculum

Out-of-School Learning ARCO Courses

- LSAP 3015 - INFORMAL LEARNING: THEORY AND FOUNDATION
- Evaluation Assessing Impact and Evidence for Decision Making
- The Future of Out-of-School Learning
- Lifelong Learning for Diverse Audiences

Doctoral

Learning Sciences and Policy, PhD

Degree Requirements

Doctoral students in the Learning Sciences and Policy program who enter the program without a master's degree in a relevant field are required to take six core courses, a minimum of six research methods courses, and eight advanced seminars in an area of specialization. Students also participate as part of a faculty member's research team throughout their time in the program. As part of that research team, students engage in every phase of the research process, apprenticing under the active mentoring of the faculty member. Additionally, doctoral students are expected complete at least two independent research projects under the supervision of the faculty. Students are required to take two one-semester practica/internships, the purposes of which are to expose students to a range of kinds and forms of research and build students' professional skills. Students with a Masters degree in a related field can transfer credits toward the PhD with approval by the LSAP faculty.

Requirement	Classes	Credits
A. Core Courses	4	12
- Learning Sciences	(1)	
- Education Policy	(1)	
- Organizational Perspectives on Educational Improvement	(1)	
- Design	(1)	
- First Year Seminar (EDUC 3102 and 3105) ¹	2	3
- Writing Seminar ²	8	8
B. Research Methods	6	18
- Required coursework in year 1 includes Quantitative 1 (EDUC 3100) and 2 (EDUC 3103); Qualitative 1 (EDUC 3104)	(3)	
C. Advanced Seminars/Directed Studies in Area of Specialization ³	12	36
- Supervised Research	(2)	
D. Internship	2	6
E. Doctoral Dissertation Research	6	18
Total		90

¹ First Year Seminar meets every other week, with 1 credit in fall and 2 credits in spring, taken over and above the typical 9-credits course load. These credits are above and beyond the 90 credits required for graduation.

² Writing Seminar taken over and above the typical 9-credit course load beginning in the second year of study. These credits are above and beyond the 90 credits required for graduation.

³ This includes courses taken outside the School of Education.

- LSAP 3095 - ORGANIZATIONAL PERSPECTIVES ON EDUCATIONAL IMPROVEMENT
- LSAP 3096 - CURRICULUM ISSUES IN MATHEMATICS AND SCIENCE EDUCATION
- LSAP 3097 - SUPERVISED RESEARCH
- LSAP 3098 - DIRECTED STUDIES - LSAP
- LSAP 3099 - DOCTORAL DISSERTATION RESEARCH IN LSAP
- LSAP 3540 - DESIGN OF EDUCATIONAL SYSTEMS

- LSAP 3595 - SPECIAL TOPICS

PhD Core Curriculum

Methods Courses

Preparing students to tackle problems of practice and policy, and create innovative research agendas, requires intentionality in the methods coursework that supports students' development of independent projects, meaningful contributions to advisors' research, and critical analysis of past research. To help ensure that students develop the necessary analytic competencies, students across the areas of concentration (ARCOs) for the PhD in the School of Education are required to complete **a minimum of 5 methods courses**: Quantitative 1 (EDUC 2100) and 2 (EDUC 3100); Qualitative 1 (EDUC 3104); and 2 seminars in advanced quantitative or qualitative methods, determined by the student and their advisor.

- EDUC 3100 - INTRODUCTION TO QUAN METHODS: DESCRIPTIVE AND INFERENTIAL STATISTICS
- EDUC 3103 - QUANTITATIVE METHODS 2
- EDUC 3104 - INTRODUCTION TO QUALITATIVE METHODS

First Year Seminar

To further support students' research competencies, PhD students also participate in a school wide first year seminar (EDUC 3102) and EDUC 3105). This seminar meets every other week (1 credit in fall and 2 credits in spring, taken over and above the typical 9 credit course load) and focuses on familiarizing students with practical and ethical issues in research (e.g., necessary clearances for working in schools, resolving questions of authorship and authorship order, human subjects guidelines), and supporting students work on their pre-dissertation proposal (e.g., developing innovative research questions, conducting a literature review).

- EDUC 3102 - FIRST YEAR SEMINAR 1
- EDUC 3105 - FIRST YEAR SEMINAR 2

Additionally, PhD students enroll in writing seminar courses taken over and above the typical 9-credit course load beginning in the second year of study. These credits are above and beyond the 90 credits required for graduation.

John A. Swanson School of Engineering

Graduate study in engineering at the Swanson School is designed for those professionals who wish to further develop the ability to apply engineering principles to the solution of modern society's problems. The programs are flexible and can be used by those interested in research, design, management, and related technical positions in both the public and private sectors. PhD programs are also designed for those individuals interested in an academic or research career.

The Swanson School of Engineering offers graduate education leading to the Master of Science degree in bioengineering, chemical engineering, computer engineering, civil engineering, electrical engineering, industrial engineering, materials science and engineering, mechanical engineering, petroleum engineering, and sustainable engineering. Swanson School of Engineering MS degree programs have two tracks: a professional track and a research track. The school offers PhD degrees in chemical engineering, civil engineering, computer engineering, electrical engineering, industrial engineering, materials science and engineering, and mechanical engineering as well as computational modeling and simulation. Also offered is a MD/PhD Program with the School of Medicine and several certificate programs.

Contact Information

The Swanson School of Engineering is housed in the Michael L. Benedum Hall of Engineering. Inquiries and correspondence concerning graduate study should be addressed to the graduate coordinator of the appropriate department or program. Inquiries of a general nature can be sent to:

University of Pittsburgh
Associate Dean for Academic Affairs
152 Benedum Engineering Hall
Swanson School of Engineering

University of Pittsburgh
Pittsburgh, PA 15261
E-mail: deanssoe@pitt.edu
www.engineering.pitt.edu

Admissions

All applicants will be judged on their own merits. For recent graduates of an ABET-accredited program, admission will be based primarily on the undergraduate academic record. Typically a B average (cumulative grade point average of 3.0 on a 4.0 scale) or better is required for admission, and most programs require the Graduate Record Examination (GRE). Applicants should check each program's specific requirements.

Applicants from non-ABET accredited programs also are considered on an individual basis with emphasis given to academic achievement, area of study, career orientation, and work experience. Depending on the program, applicants who do not have an engineering degree may have to take certain prerequisite courses before beginning their graduate engineering degree program. Applicants may be admitted provisionally until specified prerequisites are completed and/or a 3.000 grade point average is achieved. Undergraduate courses cannot be used to satisfy graduate degree requirements.

Graduate Special Student - A student not currently enrolled at the University of Pittsburgh will be granted temporary admission typically only for one term but at most for a total of six credits. Students in this classification cannot earn credits toward the completion of degree requirements at the University of Pittsburgh with the following exception: Students who are unable to meet the deadline for filing an official application for admission may be granted temporary admission status by the appropriate graduate coordinator. Regular admission must be granted within the first term of registration as a Special Student. Graduate credits earned during temporary admission period can be applied toward the degree. Approval from the appropriate graduate coordinator is required.

Admissions Procedures

1. U.S. citizens or permanent residents should:
 1. See the Swanson School of Engineering Web site for the online application. A fee is associated with the application and is not refundable. Exceptions may exist; please contact the graduate recruitment director if you have questions.

2. Ask the registrars of all undergraduate and graduate schools attended to send transcripts of records to the University of Pittsburgh; Swanson School of Engineering Office of Administration; 151 Benedum Engineering Hall; Pittsburgh, PA 15261. An official transcript of the undergraduate record is required unless the applicant is a graduate of the University of Pittsburgh.

Once all application materials, including the application fee and complete transcripts, are received, the application will be reviewed. As application deadlines vary by department, please review the information found here: <https://www.engineering.pitt.edu/Graduate/>. All applications for financial assistance should be received by February 1 for admission the following fall term.

Please see Graduate Admissions of International Students in the front section of this bulletin for University regulations on admissions of international students.

2. International Students: In addition to academic review by the Swanson School of Engineering, the admissions officer, Office of International Services (OIS) will also process international student applications for non-academic qualifications. The document needed to apply for a non-immigrant visa will be issued only after the applicant has been admitted and has provided evidence of adequate financial support and English language proficiency. The procedure for international applicants is as follows:
 1. Preliminary inquiries concerning graduate programs, research, and financial aid may be directed to the departmental graduate coordinator. Applications for graduate study are available from www.engineering.pitt.edu, the graduate coordinator, or the University of Pittsburgh, Swanson School of Engineering, Office of Administration, 151 Benedum Hall, Pittsburgh, PA 15261. The non-refundable application fee for international students is \$50.
 2. Following review (and acceptance) by the department based upon the applicant's academic qualifications, the international student admissions officer will review the applicant's financial and language qualifications to determine eligibility for a visa document.
 3. Prior to completion of registration, entering engineering graduate students with TOEFL scores of less than 100 on the iBT (or equivalent) must take an additional test of English language proficiency administered by the English Language Institute (ELI). International students who are citizens of countries where English is the official language, international students who have completed degrees at regionally accredited institutions in the U.S., and international students who have results on the TOEFL above 100 on the iBT (or equivalent) may be exempted from taking the additional test of English language proficiency by the student's academic department.

This procedure applies also to international applicants who are already in the United States.

The University reserves the right, even after the arrival and enrollment of a student from another country, to require, at the student's expense, individual curricular adjustments whenever particular deficiencies or needs are found. This may include enrollment without credit in English as a Foreign Language or other prerequisite courses. New international students are encouraged to use the services of OIS for help in adjusting to the United States and to facilitate their total educational experience.

Financial Aid

The Swanson School of Engineering provides a considerable amount of financial assistance to highly qualified, full-time graduate students. Applicants interested in being considered for financial assistance including teaching and research assistantships must also complete a graduate assistantship application available at <http://www.engineering.pitt.edu/graduate> and should check with the department of their choice for any additional information concerning applications for assistantships. All applications for financial assistance should be received by February 1 for admission the following fall term.

Financial aid includes:

1. Fellowships awarded to students of outstanding ability, usually as an unrestricted grant.
2. Traineeships awarded to students for training in selected areas.
3. Teaching assistantships and teaching fellowships awarded to exceptionally well-prepared students in return for assistance in laboratories, recitation sections, and other instructional duties. Partial to full tuition scholarships are provided with these assistantships.
4. Research assistantships awarded to students for assistance on research programs. Partial to full tuition scholarships are provided as part of the assistantship.

Advisors

Three types of advisors are primarily responsible for guiding engineering students through their program:

Graduate Coordinator

The graduate coordinator is the faculty member responsible for the operation of the department's graduate program. The coordinator supervises the operations of admissions, registration, course scheduling, assignment of advisors, graduation, and academic disciplinary procedures. The graduate coordinator generally is the best source of information and advice when questions arise or problems are encountered during graduate study.

Faculty Advisor

Each student is assigned a faculty advisor when admitted into a graduate program. This advisor assists the student in planning a course of study and is responsible for approving the student's registration and all course changes. Once the student begins thesis or dissertation research, the duties of the faculty advisor are assumed by the student's major research advisor.

Major Research Advisor(s)

The major research advisor (or advisors if joint advisors are designated) is the graduate faculty member who directs the student's research and supervises the preparation of the thesis or dissertation. Generally, the major advisor also serves as the chair of the final oral examination (defense) committee for the student's thesis or dissertation.

Responsibility for Academic Progress

It is the responsibility of students to check their academic progress by contacting either the departmental graduate coordinator or their faculty advisor. The student should also become familiar with the program degree requirements and pertinent academic regulations.

Academic Integrity and Code of Conduct

The integrity of the academic process requires fair and impartial evaluation on the part of faculty and honest academic conduct on the part of students. Students are expected to conduct themselves with a high level of responsibility in the fulfillment of their course of study and their conduct in and out of the classroom. It is the corresponding responsibility of faculty to make clear to students those standards by which they will be evaluated and the resources permissible for use by students during their course of study. The educational process is perceived as a joint faculty-student enterprise that will involve professional judgment by faculty and may involve, without penalty, reasoned exception by students to the data or views offered by faculty. Consistent with these considerations (and without limiting their scope and application in their entirety to the academic programs of the University), faculty and students are directed to observe established University of Pittsburgh and Swanson School of Engineering guidelines on academic integrity and code of conduct. The Swanson School of Engineering and the University of Pittsburgh Guidelines on Academic Integrity are available to faculty and students in the departmental offices of the Swanson School of Engineering and is also available by Policy Guidelines - SSOE. The University's student Code of Conduct is available at: http://www.studentaffairs.pitt.edu/wp-content/uploads/2016/11/2016_Code_of_Conduct_Nov4.pdf

Probation, Suspension and Dismissal

A graduate student whose cumulative GPA falls below 3.000 will be placed on academic probation for the following term. If the student's cumulative GPA remains below 3.000 for the next academic year term (i.e., the cumulative GPA is below 3.000 for two successive academy year terms), s/he will be dismissed. Students will normally be suspended for one calendar year; students who are dismissed will not be re-admitted to the Swanson School of Engineering. Students on probation are not eligible to take the PhD preliminary evaluation or the MS or PhD comprehensive examination, and will not be graduated.

Course Work for Graduate Credit

Only graduate courses will count for graduate credit (i.e., 2000 or 3000 level courses). Students may not use undergraduate courses taken at either the University of Pittsburgh, or another university to satisfy a graduate requirement.

Online courses:

Online courses are allowed with approval from the academic department graduate coordinator and the associate dean for academic affairs on a case by case basis. These course must be:

1. Offered by an appropriate academic graduate program.
2. Suitable for the student's academic program and typically not available on the University of Pittsburgh campus

Statute of Limitations Requirements

The Swanson School of Engineering adheres to the University of Pittsburgh statute of limitations for all MS, Professional MS (non-thesis), and PhD programs.

Master of Science Programs

All departments in the Swanson School of Engineering offer MS degree programs that have two tracks: a professional track and a research track. The differences are detailed below. Students may transfer no more than six credits of appropriate graduate course work from another graduate program at the discretion of the graduate coordinator in satisfying the course requirements of both the professional and research MS degrees.

Professional MS Track

The professional track consists of 30 credits (10 courses). The faculty of the degree-granting unit determines the actual course content and requirements. These programs typically have a set of required core courses. Students may have an opportunity for more in-depth study in a particular area of interest through a two- or three-course concentration. As a professional degree, while no thesis or comprehensive examination is required, the department may require a special projects course.

The professional MS programs are oriented toward full-time students seeking a career in industry, and part-time students currently working in industry. Certain programs may be offered off campus at industrial sites or online. Although students who have an undergraduate degree in a technical area (e.g., mathematics, physics, computer science, or chemistry) may be accepted, depending on the particular program, they may be required to take certain prerequisite courses. These undergraduate pre-requisite courses cannot be used to satisfy graduate course requirements. Interested students should contact the appropriate graduate coordinator for specific details.

Research MS Track

The research track is primarily for those students who wish to pursue the PhD. Students in this track will be advised to take courses best suited for a research degree. The MS research track requires a minimum of 24 course credits, depending on the selected option and six credits of thesis research. The department may also specify credit distribution requirements for courses in the major and related areas. The student should see his or her major advisor for detailed information. Students working under the MS research option are required to present a thesis that demonstrates marked attainment in some area of the student's major subject, as well as acquisition of the methods and techniques of scientific investigation. Certain programs may permit a project to be completed in place of the thesis. A comprehensive examination or equivalent is required. Normally the final oral exam for the thesis meets the requirements of the MS comprehensive exam.

A graduate student may commence MS thesis work only after obtaining full graduate status.

A graduate student should initiate preliminary thesis and research work as early as possible. Once research and thesis work has begun, the student must register for thesis credits of research in each succeeding term until successful completion of the thesis and the final oral examination. Exceptions to this rule can be made only upon the recommendation of the student's major advisor.

Only six credits of MS thesis may be used as partial fulfillment of the requirements for the MS degree. Before completion of the thesis, the student will receive a grade of I (incomplete) at the end of each term. After successful completion of the thesis and the final oral examination, all I grades will be changed to S grades.

MS Thesis Oral Examination (Defense)

The purpose of this examination is to evaluate the student's MS thesis and is part of the MS thesis requirements as specified by the program. For additional information on the thesis exam, see Thesis Option under Regulations Pertaining to Master of Arts and Master of Science Degrees.

Residency and Statute of Limitations Requirements

A graduate student may complete all requirements for the MS degree on a part-time basis. All degree requirements for the MS degree, however, must be fulfilled within a period of four calendar years after the student's first registration for graduate study.

Electronic Thesis and Dissertation (ETD)

<http://www.pitt.edu/~graduate/dissertation.html>

All graduate students preparing a thesis or dissertation must complete an Electronic Thesis and Dissertation participation form. The signed participation form and the necessary payment receipt documentation are to be submitted to the Swanson School of Engineering Office of Administration. After receiving approval the student will go to the ETD Online System and follow the instructions in the Format Guidelines Manual for submission of an ETD. Questions and problems can be addressed by contacting the School of Engineering Office of Administration, 151 Benedum Hall.

Joint MBA/MS Degree Program

The Swanson School of Engineering and the Joseph M. Katz Graduate School of Business have established joint MBA/MS programs with each of the seven engineering graduate degree programs. These programs are designed to meet the clear and growing need felt by various industry sectors for managers with sophisticated business and engineering skills. In today's environment, such cross-functional skills are essential in addressing multifaceted problems involving issues related to product development, quality, information systems, modeling and quantitative analysis, finance and accounting, international relations, and marketing.

Both full-time and part-time options are available. The full-time option can be completed in two academic years, whereas the part-time option may typically require a period of four to five years. The programs generally consist of 64.5 credits full time (or 69 credits part time). It is designed for students with undergraduate degrees in engineering and, in some cases, the physical sciences, preferably with industry work experience. Candidates must meet the admissions criteria of both the MBA program and the specific MS engineering program of interest.

Students accepted into the program will be expected to complete both degrees concurrently and pay full tuition. Courses will be scheduled in such a manner as to preclude students from receiving one degree before the other.

This program is only for those students seeking a professional MS engineering degree. Students interested in the research MS engineering degree track will not be admitted. Further, because of the high credit demand, students in the program will not be able to hold either research or teaching assistant positions. Students who enrolled in the joint degree program are expected to complete both degrees.

Full-time students will register for the program through the Joseph M. Katz Graduate School of Business for four semesters at the one-year MBA tuition rate. For more information see <http://www.business.pitt.edu/katz/mba/academics/programs/mba-msengineering.php>.

Doctor of Philosophy Programs

The general PhD requirements of the Swanson School of Engineering are listed below. Further information concerning degree requirements and options can be found under each program's description.

Entrance to the PhD Program

A graduate student who has received the Master of Science degree in one engineering program area or has equivalent preparation is eligible to enter a doctoral program in that same area. To be accepted for a doctoral program, a graduate student must have achieved a superior scholastic record and shown great promise for conducting independent research. A prospective doctoral student should have a cumulative graduate grade point average of at least 3.00 in graduate course work. Evidence of research aptitude, including favorable recommendations, is required. Exceptionally well-qualified students may be permitted to enter the PhD program without an MS degree according to the established criteria and qualifications set by each department. Admission to a doctoral program does not include any implication concerning admission to candidacy for the PhD degree.

Course and Dissertation Credit Requirements

An objective of the PhD program is to attain a high degree of competence in the student's chosen field of specialization. Completion of the PhD program requires a total of 72 credits, of which at least 18 must be for dissertation research. The graduate faculty determines the minimum course requirements for each PhD program. Typically each program has a core of well-coordinated courses followed by advanced course work in one or more specialty areas, with the number of course credits varying among programs. Additional course work may be prescribed in accord with the student's specific needs. However, all PhD students must take a minimum of 24 credits of graduate level didactic coursework (2000 or 3000 level). A student may further attain the required degree of competence beyond these 24 credits by other means including independent study under faculty supervision. Regardless of how the required competence is obtained, it must be certified by passing the appropriate series of examinations.

Students who have been formally admitted to PhD candidacy may register for dissertation research (3999). Preliminary dissertation research can be done as part of an appropriate 3997 departmental course. The number of dissertation credits for which a student registers should be commensurate with the independent research effort to be undertaken during the term. Minimum registration is three credits per term. Of the minimum 18 credits of dissertation research, at least 12 credits must be for the program's PhD dissertation research course (3999). These may be taken only after admission to candidacy; the other six credits may be in the department's pre-candidacy PhD research course. Students will be given an I grade for all research courses until the dissertation is successfully defended and submitted.

Doctoral students who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full time on their dissertations may register for Full-Time Dissertation Study (FTD), which carries no credits or letter grade but provides students full-time status. Students so enrolled are assessed a special tuition fee.

Once a student registers for dissertation research (3999), he or she must continue to register for dissertation research in successive terms (not including the summer term) until the final oral examination has been passed, unless the student is eligible to register for Full Time Dissertation credit. (In special cases the major advisor may request that this requirement be waived.) Upon successful completion of the final oral examination, all I grades will be changed to S grades.

Doctor of Philosophy Evaluation/Examinations

To complete the PhD program, students must pass the preliminary evaluation, comprehensive and final oral examinations. Students who have less than a 3.000 cumulative GPA for all courses that satisfy graduation requirements are considered to be on probation and will not be permitted to take any of these examinations.

Preliminary Evaluation (Qualifier)

See Preliminary Evaluation under Regulations Pertaining to Doctoral Degrees for an overview of the purpose of this examination, and then review the school-specific information below. This examination is usually taken within the first two to four terms of graduate study and is a first step towards the student's formal admission to candidacy for the Doctor of Philosophy degree. Each program determines the exact format and content of this examination, which may consist of written and oral components. Qualifier examinations are usually given once a year at a time specified by the program.

Comprehensive Examination

See Comprehensive Examination under Regulations Pertaining to Doctoral Degrees for an overview of the purpose and regulations regarding this examination, and then review the school-specific information below. The nature and timing of this examination is determined by the department; it

may be combined with students' formal presentation of their dissertation proposal. However, the Comprehensive Examination cannot be taken until at least one full term after successfully completing the Preliminary Examination. The formal thesis proposal should be scheduled as soon as the candidate is prepared to present his/her topic and research plan, since there must be at least two full terms between its successful completion and the Final Oral Examination.

Final Oral Examination (Defense)

See Final Oral Examination under Regulations Pertaining to Doctoral Degrees for an overview of the purpose and regulations regarding this examination, and then review the school-specific information below. The final oral examination determines the acceptability of a student's dissertation and his or her ability to comprehend, organize, and contribute to the chosen field of research. One copy of the dissertation must be submitted to each member of the doctoral committee at least two weeks before the date set for the final oral examination. Because a portion of the defense is open to the public, the student should ensure that the dissertation defense is formally announced on both the School's webpages and its videos monitors, at least two weeks prior to the defense date. Further, this examination cannot occur sooner than two full terms following the formal thesis proposal.

Admission to PhD Candidacy

See Admission to Candidacy for the Doctor of Philosophy Degree under Regulations Pertaining to Doctoral Degrees for the requirements for admission. An Application for Admission to Candidacy for the Doctoral Degree must be filed after these requirements have been met.

In order to have the dissertation topic approved, the student must prepare, in consultation with the major advisor, a dissertation proposal. A formal dissertation proposal conference will then be held in which the members of the doctoral committee will review the proposal and either accept, revise, or reject it. Depending on the department's procedure, this conference may be held in conjunction with the comprehensive examination. Approval of the proposal does not imply either the acceptance of a dissertation prepared in accord with the proposal or the restriction of the dissertation to this original proposal.

If the dissertation proposal is accepted by the doctoral committee, the student is formally admitted to candidacy for the Doctor of Philosophy degree. Such admittance to PhD candidacy must be accomplished at least two terms before the student plans to graduate.

Doctoral Committee

See Doctoral Committee under Regulations Pertaining to Doctoral Degrees for an overview of the committee's make up and responsibilities. In addition, the following school-specific rules apply in the School of Engineering:

Faculty who hold a secondary appointment and actively participate in the department will be considered as internal rather than external members of the doctoral committee. Hence, they may serve as the major advisor. Faculty members whose secondary appointment within the department is viewed as a courtesy appointment may be considered as an external committee member, but cannot serve as the student's sole committee chair (major advisor).

The composition of the Doctoral Committee must be approved by the department's graduate coordinator and either the Associate Dean for Academic Affairs or the Associate Dean for Research prior to the presentation of the formal dissertation proposal. A committee must consist of four or more persons, including at least one from another department within the University of Pittsburgh or from an appropriate graduate program at another academic institution, government agency or industry. The majority of the committee, including the major adviser, must be full or adjunct members of the Graduate Faculty. Typically the committee will consist of three internal (from the department) and one external members. In certain cases the graduate coordinator or associate dean may recommend one or more additional members of the committee if appropriate. Once the dissertation proposal is approved, the student is expected to meet at least annually with his/her Doctoral Committee.

If a committee member leaves the University, that member can continue to serve as an internal committee member provided that he/she has an adjunct appointment in the student's home department. If the major advisor (committee chair) leaves the University, then a new major advisor must be appointed by the graduate coordinator and approved by the associate dean for academic affairs. The new major advisor will typically be selected from among the remaining committee members. The former major advisor may remain on the committee as a member, but only if he/she has an adjunct appointment. The graduate coordinator and School administration must be informed of any proposed committee changes in the term they occur.

A major advisor has an obligation to assist the student to the successful completion of his/her dissertation. In those rare cases where the major advisor no longer feels that he/she can adequately work with the student, then it is incumbent on the department chair and graduate coordinator to meet with

the committee and, if it is decided that the student is able to complete the dissertation, then select a new major advisor, typically from among the remaining members of the committee, and a replacement committee member appointed.

PhD Dissertation

Each student must prepare a dissertation embodying an extended original, independent investigation of a problem of significance in the student's field of specialization. The dissertation must add to the general store of knowledge or understanding of that field. Dissertations must be written in English. It is highly recommended that the student use a plagiarism-detection software (e.g., iThenticate) to ensure that no plagiarism, which is considered research misconduct, has been committed, either overtly or covertly.

A dissertation submitted to the Swanson School of Engineering in partial fulfillment of the requirements for an advanced degree must be free from any restriction, other than the author's copyright, concerning its publication by any agency outside the University. Any publication of a dissertation must be with appropriate acknowledgment to the University of Pittsburgh. After the dissertation has been prepared and approved by the major advisor, the final oral examination can be held.

Departmental Requirements

The policies enumerated above represent minimum requirements. In certain cases, individual departments may have stricter requirements. It is the ultimate responsibility of the student to understand the policies/requirements of his/her graduate program.

Computational Modeling and Simulation PhD Program

The Computational Modeling and Simulation (CMS) PhD Program at the University of Pittsburgh provides its graduate students with an integrated program of creative, independent research, course work, and teaching. Our students pursue research in diverse areas of engineering and sciences with concentration on numerical methods and computational schemes. Coupled with the University Center for Research Computing (www.crc.pitt.edu), this program offers unparalleled opportunities for individualized training in high performance computing and physical modeling. An extensive seminar series exposes students and faculty alike to the world's leading scientists and their latest research. Pitt's outstanding research and placement resources, coupled with the university's commitment to being one of the top centers for computational research, uniquely positions us to help our PhD candidates to meet their objectives. For a review of our PhD Program in CMS, and application to this program, please see: www.cmsp.pitt.edu

Joint MD/PhD Degree Program/Medical Scientist Training Program

The Medical Scientist Training Program (MD/PhD) offers exceptionally talented individuals the opportunity to undertake a physician-scientist training program tailored to their specific research interests. This program is funded partly by the Medical Scientist Training Program of the National Institutes of Health. For students who have a clearly-defined interest in biomedical research, the MSTP serves as a bridge between the University of Pittsburgh School of Medicine and 20 graduate programs in basic sciences or engineering at either the University of Pittsburgh or Carnegie Mellon University. During a period of seven to eight years, these individuals meet the degree requirements of both a graduate school and the medical school, thus acquiring the knowledge, skills, and experience to begin careers in some of the most exciting areas of medical research. More information can be found here or by contacting MD/PhD program at 5585 Scaife Hall, 412-648-2324 for further information. <http://www.mdphd.pitt.edu/>

Cooperative Education

With the renewed emphasis on professional master degree programs and the development of such initiatives as the MS/MBA, and 3+1+1 (first three years at a home institution, a fourth year at the SSoE to earn the BS degree, and a fifth year at the SSoE to earn an MS degree) programs, there is a strong need to provide graduate students, including international graduate students with a work opportunity that is an essential part of their education. This also includes PhD students who desire to take a term off in order to obtain industrial experience and perspective. Not only does the program provide them with needed experience, but it enables them to earn a reasonable amount of money over a 15 week work rotation. For more information, please visit <http://www.engineering.pitt.edu/coop/>.

SSOE Diversity Initiatives

Alliances for Graduate Education and the Professoriate - Transition to the Doctorate by Adaptable Engagement (PITT - STRIVE)

The University of Pittsburgh Swanson School of Engineering Transition to the Doctorate by Adaptable Engagement (PITT- STRIVE) is funded by the National Science Foundation (NSF) Alliance for Graduate Education and the Professoriate-Knowledge Adoption and Translation (AGEP-KAT).

The primary goals of PITT-STRIVE are to (a) significantly increase the number of underrepresented minorities (i.e., African Americans, Hispanics, American Indians, Alaska Natives, and Native Hawaiians or other Pacific Islanders) obtaining graduate degrees in science, technology, engineering and mathematics (STEM), and (b) enhance the preparation of underrepresented minorities for faculty positions in academia.

The overarching goals of PITT-STRIVE at the University of Pittsburgh Swanson School of Engineering are to:

Improve the transition of URM (African/Black American, Hispanic/Latino Americans, Native Americans) students, who are US citizens, into doctoral engineering programs at the University of Pittsburgh; and

Create a systemic engineering culture and climate that ensures the success of URM transition to the doctorate through adoption/adaptation of evidence-based strategies for student and faculty engagement.

Student Objectives:

Adapt and implement evidence-based strategies with URM doctoral student participants in engineering, who are US citizens.

Enhance professional and educational skills of URM doctoral student participants in engineering, who are US citizens.

Increase the number of URM doctoral student participants, who are US citizens, to continue and maintain an interest in the engineering PhD program.

Faculty Objectives:

Improve faculty engagement with URM graduate students, who are US citizens in engineering.

Improve faculty awareness of the problems facing URM graduate students who are US citizens in engineering.

Develop a shared vision among vested faculty regarding the success of URM graduate students within the school of engineering.

Program Outcomes from Achieving the Goals:

The framework to accomplish these goals is built around four adaptable priorities with focus placed upon improving the role of faculty and academic culture/climate that support the success of URM PhDs in engineering to achieve the following outcomes: 1) Improve faculty engagement with URM students; 2) Improve faculty awareness of impediments to URM success in SSoE PhD program; and 3) Promote a shared vision among vested faculty regarding the success of URM students within our School of Engineering, and 4) achieve systemic inclusive academic culture and climate that support the success of URM doctoral students.

PITT-STRIVE scholars are recruited from universities across the U.S., and students must meet U.S. citizenship or permanent residency requirements. Qualified participants will have graduated from an accredited STEM undergraduate program with a 3.300 GPA and show strong motivation for entering a PhD program. All PITT - STRIVE Scholars must maintain a cumulative GPA of 3.300 to maintain the award. Activities associated with PITT-STRIVE include a mentor/mentee weekend retreat; the Discover Graduate Recruitment Weekend; faculty-student engagement training; and the faculty-student engagement training.

PITT-STRIVE is part of the National Science Foundation's Alliances for Graduate Education and the Professoriate (AGEP).

For more information on PITT STRIVE please visit <http://www.engineering.pitt.edu/diversity/agep/>

For more information contact:

University of Pittsburgh
Swanson School of Engineering
Engineering Office of Diversity
PITT STRIVE Program Coordinator

Graduate Diversity Workshop

Graduate Diversity Workshop is considered mandatory for all graduate students in their first year of the program. It discusses principles of intercultural communication and acceptable classroom and research group behaviors.

Approved Math Courses

- BIOENG 2001 - MATHEMATICAL METHODS IN BIOENGINEERING 1
- BIOST 2042 - INTRODUCTION TO STATISTICAL METHODS 2
- BIOST 2049 - APPLIED REGRESSION ANALYSIS
- CHE 2410 - MATHMTCL METHD IN CHEMCL ENGRG 1
- ECE 2521 - ANALYSIS STOCHASTIC PROCESSES
- ECE 2523 - DIGITAL SIGNAL PROCESSING
- ECE 2671 - OPTIMIZATION METHODS
- MATH 2070 - NUMERCL METH IN SCI COMPUTING 1
- MATH 2071 - NUMERCL MATH IN SCI COMPUTING 2
- MATH 2090 - NUMERICAL SOLUTN ORDNRY DE
- MATH 2370 - MATRICES AND LINEAR OPERATORS
- MATH 2371 - MATRICES & LINEAR OPERATORS 2
- MATH 2500 - ALGEBRA 1
- MATH 2700 - TOPOLOGY 1
- MATH 2800 - DIFFERENTIAL GEOMETRY 1
- MATH 2801 - DIFFERENTIAL GEOMETRY 2
- MATH 2950 - METHODS IN APPLIED MATHEMATICS
- MATH 3071 - NUMRC SOLUTN PARTL DIFFT EQUA
- MATH 3072 - FINITE ELEMENT METHOD
- MATH 3370 - MATHEMATICAL NEUROSCIENCE
- MATH 3375 - COMPUTATIONAL NEUROSCIENCE METHODS
- MATH 3380 - MATHEMATICAL BIOLOGY
- ME 2001 - DIFFERENTIAL EQUATIONS
- ME 2002 - LINEAR AND COMPLEX ANALYSIS
- STAT 2220 - APPLIED REGRESSION
- STAT 2661 - LINEAR MODELS THEORY 1

Approved Life Sciences Courses

- BIOENG 2520 - MOL CELL BIOLOGY & BIOPHYSC 1
- BIOENG 2620 - INTRODUCTION TO TISSUE ENGINEERING
- BIOENG 3735 - EXTRACELLULAR MATRIX IN TISSUE BIOLOGY AND BIOENGINEERING
- HRS 2004 - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN
- HRS 2306 - MOTOR LEARNING AND CONTROL OF MOVEMENT/HEALTH PROMOTION
- HRS 2307 - FALLS AND BALANCE DYSFUNCTION: PHYSICAL THERAPY MANAGEMENT AND INTERVENTION
- HRS 2356 - CONCEPTS AND PRINCIPLES RELATED TO SENSORY MOTOR CONTROL 1
- HRS 2771 - FUNCTIONAL ANATOMY AND KINESIOLOGY
- HRS 2772 - PATHOLOGY IN ORTHOTICS AND PROSTHETICS
- HRS 3898 - LAB TECHNIQUES SPORTS MEDICINE 1

- INTBP 2100 - BIOLOGY OF VISION
- MSCBIO 2030 - INTRODUCTION TO COMPUTATIONAL STRUCTURAL BIOLOGY
- MSCMP 2730 - MOLEC MECHS TIS GROWTH & DIFFRN
- MSCMP 2740 - MOLECULAR PATHOBIOLOGY
- MSCMP 3710 - CANCER BIOLOGY AND THERAPEUTICS
- MSCMP 3740 - STEM CELLS
- MSCMP 3750 - ANGIOGENESIS
- MSCMP 3770 - CELL THERAPY
- MSCMP 3780 - SYSTEMS APPROACH INFLAMMATION
- MSIMM 2210 - COMPREHENSIVE IMMUNOLOGY
- MSMBPH 2001 - MOLECULAR BIOPHYSICS 1: STRUCTURE
- MSMBPH 2002 - MOLECULAR BIOPHYSICS 2: THEORY AND SIMULATION
- MSMGDB 2525 - DEVELOPMENTAL MECHANISMS OF HUMAN DISEASE
- MSMPHL 3360 - MOLECULAR PHARMACOLOGY
- MSNBIO 2070 - HUMAN PHYSIOLOGY
- MSNBIO 2614 - NEUROPHARMACOLOGY
- NROSCI 2005 - COGNITIVE NEUROSCIENCE
- NROSCI 2011 - FUNCTIONAL NEUROANATOMY
- NROSCI 2100 - CELLULAR AND MOLECULAR NEUROBIOLOGY 1
- NROSCI 2102 - SYSTEMS NEUROBIOLOGY
- NROSCI 2112 - NEUROBIOLOGY OF DISEASE

Approved Statistics Courses

- BIOENG 2525 - APPLIED BIOSTATISTICS
- BIOINF 2118 - STATISTICAL FOUNDATIONS OF BIOMEDICAL INFORMATICS
- BIOST 2014 - INTRODUCTION TO BIOSTATISTICS FOR BIMEDICAL SCIENTIST
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- CLRES 2020 - BIOSTATISTICS
- CMU 36-746 - STATISTICAL METHODS FOR NEUROSCIENCE*
- CMU 36-759 - STATISTICAL MODELS OF THE BRAIN*
- PSY 2010 - STATISTICAL ANALYSIS 2
- STAT 2220 - APPLIED REGRESSION
- STAT 2221 - ADVANCED APPLIED MULTIVARIATE ANALYSIS

*Note that these courses will only count with prior approval from the BioE Graduate Coordinator as a statistics course for those students in the Neural Engineering track area provided those students have a formal background in statistics, via an undergraduate degree or other means. Any questions and requests for the required approval should be directed to the Graduate Coordinator.

Biomechanics Track

This graduate track has a specific menu of courses to satisfy the 9-credit "Track Courses" requirement for the Research M.S. , Ph.D. , or M.D./Ph.D.

At the University of Pittsburgh there are broad and extensive research activities in Biomechanics. Application areas include cardiovascular, musculoskeletal, ergonomic, occupational, rehabilitation, and urological. Our educational goal is to expand on the fundamental knowledge gained at the undergraduate level of both biomechanics and the biological sciences, and demonstrate how they can be applied to solve basic and applied biomedical problems. We believe that biomechanics concentration students should be exposed to all areas of biomechanics, and not just their area of specialty. Further, since many areas of biomechanics share similar background material, our courses should present fundamental material first, followed by application examples to give the students a feel for "theory and application" in biomechanics. The fundamental philosophy of the approach is multi-scale, wherein Biomechanics is taught as a means to solve biomedical problems, regardless of problem scale (cell to whole body).

Due to the wide breadth of student interests, we offer the following two sub-tracks:

Sub-track I - Biosolid-fluid mechanics/Biological materials
Sub-track II - Biodynamics/Rehabilitation and Human Movement

Each sub-track has a set of three required courses (see below), as well as special options for a second/third life science courses that would be relevant to their area of interest.

Required courses for the biological materials and biofluids sub-track option:

- BIOENG 2067 - MUSCULOSKELETAL BIOMECHANICS
- BIOENG 2633 - BIOMECHANICS 4: BIOMECHANICS OF ORGANS, TISSUES, AND CELLS
- BIOENG 2675 - FINITE ELASTICITY OF SOFT TISSUES

Required courses for the biodynamics/rehab sub-track option:

- BIOENG 2632 - BIOMECHANICS 3: BIODYNAMICS OF MOVEMENT
- BIOENG 2633 - BIOMECHANICS 4: BIOMECHANICS OF ORGANS, TISSUES, AND CELLS
- Choose one of the following two options:
- BIOENG 2067 - MUSCULOSKELETAL BIOMECHANICS
- An approved Human Movement/Rehabilitation course as listed below

For the third track course, choose one of following two options:

BIOENG 2067 - MUSCULOSKELETAL BIOMECHANICS

An approved Human Movement/Rehabilitation course as listed below:

Students may satisfy their life science course requirements for the PhD program with any of the courses from the BioE approved list of life science courses.

Recommended Engineering/Math/Related Courses:

ME (CMU) 759 - CELL MECHANICS

Cardiovascular:

BIOENG 2515 - CARDIO SYSTEM DYNAMICS & MODELING

Human Movement/Rehabilitation:

BIOENG 2061 - ERGONOMICS & OCCUPATIONAL BIOMECHANICS

BIOENG 2650 - LEARNING & CONTROL OF MOVEMENT

BIOENG 2704 - FUNDAMENTALS REHAB ENGINEERING AND TECHNOLOGY I

BIOENG 2725 - DESIGN FOR INJURY PREVENTION

Tissue engineering/Biomaterials:

BIOENG 2370 - COMPUTATIONAL SIMULATION IN MEDICAL DEVICE DESIGN

BIOENG 2810 - BIOMATERIALS & BIOCOMPATIBILITY

Medical Imaging:

BIOENG 2630 - METHODS IN IMAGE ANALYSIS

Mechanical Engineering/Civil Engineering:

CEN (CMU) 12775 - FINITE ELEMENTS IN MECHANICS

ME 2003 - INTRODUCTION TO CONTINUUM MECHANICS

ME 2027 - ADVANCED DYNAMICS

ME 2045 - LINEAR CONTROL SYSTEMS

ME 2047 - FINITE ELEMENT ANALYSIS

ME 2062 - ORTHOPAEDIC ENGINEERING

ME 2074 - ADVANCED FLUID MECHANICS 1

Math:

BIOST 2049 - APPLIED REGRESSION ANALYSIS

MATH 2070 - NUMERCL METH IN SCI COMPUTING 1

MATH 2071 - NUMERCL MATH IN SCI COMPUTING 2

MATH 2090 - NUMERICAL SOLUTN ORDINARY DE

MATH 2370 - MATRICES AND LINEAR OPERATORS

MATH 2371 - MATRICES & LINEAR OPERATORS 2

MATH 3380 - MATHEMATICAL BIOLOGY

MATH 2500 - ALGEBRA 1

MATH 2800 - DIFFERENTIAL GEOMETRY 1

MATH 2801 - DIFFERENTIAL GEOMETRY 2

MATH 2950 - METHODS IN APPLIED MATHEMATICS

MATH 3071 - NUMRC SOLUTN PARTL DIFFT EQUA

MATH 3072 - FINITE ELEMENT METHOD

MATH 3370 - MATHEMATICAL NEUROSCIENCE

MATH 2601 - ADVANCED SCIENTIFIC COMPUTING 1

MATH 2602 - ADVANCED SCIENTIFIC COMPUTING 2

MATH 2603 - ADVANCED SCIENTIFIC COMPUTING 3

MATH 2604 - ADVANCED SCIENTIFIC COMPUTING 4

MATH 2900 - PARTIAL DIFFERENTIAL EQUATIONS 1

MATH 2901 - PARTIAL DIFFERENTIAL EQUATIONS 2

MATH 2920 - ORDINARY DIFFERENTIAL EQUATNS 1

MATH 2921 - ORDINARY DIFFERENTIAL EQUATNS 2

ME 2001 - DIFFERENTIAL EQUATIONS

ME 2002 - LINEAR AND COMPLEX ANALYSIS

STAT 2220 - APPLIED REGRESSION

STAT 2661 - LINEAR MODELS THEORY 1

Electrical Engineering/Information Science:

ECE 2646 - LINEAR SYSTEM THEORY

ECE 2671 - OPTIMIZATION METHODS

ECE 3650 - OPTIMAL CONTROL

ECE 2521 - ANALYSIS STOCHASTIC PROCESSES

ECE 2523 - DIGITAL SIGNAL PROCESSING

ECE 3526 - MODERN SPECTRAL ESTIMATION

ECE 3528 - TIME-FREQUENCY SIGNAL ANALYSIS

INFSCI 2350 - HUMAN FACTORS IN SYSTEMS

School of Health and Rehabilitation Sciences:

HRS 2867 - PATHOKIN ORTHOPADC/ATHL INJURIES

HRS 3705 - WHEELCHAIR BIOMECHANICS

HRS 3897 - LAB TECHNIQUES SPORTS MEDICINE 2

HRS 3898 - LAB TECHNIQUES SPORTS MEDICINE 1

CMU Robotics:

CMU ROBOTICS INSTITUTE 16-711 - KINEMATICS, DYNAMIC SYSTEMS AND CONTROL

CMU ROBOTICS INSTITUTE 16-720 - COMPUTER VISION

CMU ROBOTICS INSTITUTE 16-721 - ADVANCED PERCEPTION

CMU ROBOTICS INSTITUTE 16-722 - SENSING AND SENSORS

CMU ROBOTICS INSTITUTE 16-741 - MECHANICS OF MANIPULATION

CMU ROBOTICS INSTITUTE 16-811 - MATHEMATICAL FUNDAMENTALS FOR ROBOTICS

CMU ROBOTICS INSTITUTE 16-862 - INTRODUCTION TO MOBILE ROBOT PROGRAMMING

CMU ROBOTICS INSTITUTE 16-684 - ROBOTIC MANIPULATION

CMU ROBOTICS INSTITUTE 16-701 - MACHINE LEARNING

Bioimaging and Signals Track

The Bioimaging and Signals track is geared towards students with interests in any of the following areas:

1. Development and application of imaging devices;
2. Signal and image processing methods;
3. Biological/biomedical signal acquisition and analysis;
4. Computational modeling of biomedical signals and systems;
5. Biological/biomedical control systems; and/or

6. Biologically inspired signal and image processing.

This track may be particularly attractive to students with undergraduate degrees in bioengineering/biomedical engineering; electrical engineering; computer science and engineering; math; and/or physics, but it is open to all bioengineering graduate students.

Students who have not had "signals and systems" and/or "linear systems" courses at the undergraduate level, similar to BIOENG 1320, ECE 1552 or MEMS 1014 offered at Pitt, may find that they lack the prerequisites for many of the track courses. Moreover, knowledge of the fundamentals of signals and systems provided in these courses will be required to pass the Preliminary Exam in the Bioimaging and Signals Track. Accordingly, students lacking this background are strongly encouraged to audit or take one of these three courses prior to taking the prelim exam in the late Spring of the 1st year. (Note that undergraduate courses do not fulfill graduate degree requirements.)

Students in the Bioimaging and Signals Track must complete 9 credits (3 different graduate level courses) in order to satisfy track requirements. At least one of these courses must be in the "bio-imaging" area, and at least one must be in the "signals and systems" area, as follows:

Signals and systems course requirements (choose at least one):

BIOENG 2005 - RADIOFREQUENCY MEDICAL DEVICES AND APPLICATIONS OF ELECTROMAGNETICS IN MEDICINE

ECE 2523 - DIGITAL SIGNAL PROCESSING

ECE 2646 - LINEAR SYSTEM THEORY

Bioimaging course requirements (choose at least one):

BIOENG 2330 - BIOMEDICAL IMAGING

BIOENG 2505 - MULTI MODAL BIOMEDICAL IMAGING TECHNOLOGIES: FUNCTIONAL, MOLECULAR AND HYBRID IMAGING TECHNIQUES

The third track course may be selected from the lists above, or from the list below of the variety of bioimaging and signals courses available through Pitt and CMU that fulfill track requirements. However, the list is by no means comprehensive, and students are free and encouraged to explore course offerings from other science and engineering departments, at Pitt and CMU, including Electrical and Computer Engineering; Computer Science; Physics; and Neuroscience. Coupled with two additional open electives, the track requirements provide flexibility for students, in consultation with their research mentor, to design an appropriate curriculum of graduate study to complement their research.

Possible courses for the 3rd required track course:

Note: courses not listed here require pre-approval by the Track Coordinators in order to fulfill track requirements:

BIOENG 2005 - RADIOFREQUENCY MEDICAL DEVICES AND APPLICATIONS OF ELECTROMAGNETICS IN MEDICINE

BIOENG 2045 - COMPUTATIONAL CASE STUDIES IN BIOMEDICAL ENGINEERING

BIOENG 2186 - NEURAL ENGINEERING

BIOENG 2330 - BIOMEDICAL IMAGING

BIOENG 2383 - BIOMEDICAL OPTICAL MICROSCOPY

BIOENG 2505 - MULTI MODAL BIOMEDICAL IMAGING TECHNOLOGIES: FUNCTIONAL, MOLECULAR AND HYBRID IMAGING TECHNIQUES

BIOENG 2515 - CARDIO SYSTEM DYNAMICS & MODELING

ECE 2372 - PATTERN RECOGNITION

ECE 2521 - ANALYSIS STOCHASTIC PROCESSES

ECE 2523 - DIGITAL SIGNAL PROCESSING

ECE 2646 - LINEAR SYSTEM THEORY

ECE 2647 - INTRODUCTION TO NONLINEAR CONTROL DESIGN

ECE 2654 - DIGITAL CONTROL SYSTEMS

ECE 2671 - OPTIMIZATION METHODS

ECE 3374 - APPLICATIONS OF WAVELET TRANSFORMS

ECE 3524 - DIGITAL SPEECH PROCESSING

ECE 3526 - MODERN SPECTRAL ESTIMATION

ECE 3528 - TIME-FREQUENCY SIGNAL ANALYSIS

ECE 3557 - STATISTICAL SIGNAL PROCESSING

ECE 3650 - OPTIMAL CONTROL

MATH 3375 - COMPUTATIONAL NEUROSCIENCE METHODS (can be used as one track course OR fulfill BioE Math requirement)

CMU 10-601 - MACHINE LEARNING

CMU 15-883 - COMPUTATIONAL MODELS OF NEURAL SYSTEMS

CMU 18-660 - NUMERICAL METHODS FOR ENGINEERING DESIGN AND OPTIMIZATION

CMU 18-697 - STATISTICAL DISCOVERY AND LEARNING

CMU 18-698 / 42-590 - NEURAL SIGNAL PROCESSING

CMU 18-781 - SPEECH RECOGNITION AND UNDERSTANDING

CMU 18-790 - WAVELETS AND MULTIREOLUTION TECHNIQUES

CMU 8-792 - ADVANCED DIGITAL SIGNAL PROCESSING

CMU 36-746 - STATISTICAL METHODS FOR NEUROSCIENCE (CAN BE USED AS A TRACK COURSE OR FULFILL THE BIOE STAT REQUIREMENT)

CMU 86-595 / 42-595 - NEURAL DATA ANALYSIS

Molecular, Cellular, and Systems Engineering (MCSE) Track

Faculty research interests in the Molecular, Cellular and Systems Engineering track are quite broad including but not limited to fundamental understanding of cellular processes (example: cell migration, cell adhesion, cell cycle control) in physiology and pathology (example: cancer, sickle cell disease), stem cell engineering, tissue morphogenesis, vascular engineering, modeling of signal transduction and cardiac mechanics. Students in this track are expected to have core competency in either cell biology or physiology and biomedical imaging. The following curriculum enables the students in this track to meet the core competency criteria and expand their knowledge in bioengineering, computational biology and molecular regulation or deregulation of biological events in physiology and pathology. *Note*

that in addition to the following category of courses, students in his track will need to satisfy their general requirements in math, statistics, ethics, and electives as mandated by the graduate program.

All listed courses are 3 credits unless specified otherwise

Life Science (6 credits): At least one cell biology or physiology course

- BIOENG 2520 - MOL CELL BIOLOGY & BIOPHYSC 1
- MSNBIO 2070 - HUMAN PHYSIOLOGY

Track Courses (9 credits):

Course #1 - Category 1: Bioimaging

- BIOENG 2383 - BIOMEDICAL OPTICAL MICROSCOPY
- BIOENG 2505 - MULTI MODAL BIOMEDICAL IMAGING TECHNOLOGIES: FUNCTIONAL, MOLECULAR AND HYBRID IMAGING TECHNIQUES
- MSCBMP 2860 - MULTIPARAMETRIC MICROSCPC IMAGNG
- MSCBMP 2885 - IMAGING CELL BIOLOGY IN LIVING SYSTEMS

Course #2 - Category 2: Analytical/ Engineering / Design Courses

- BIOENG 2040 - TRANSPORT PHENOMENA FOR BIOMEDICAL AND CHEMICAL ENGINEERS
- BIOENG 2515 - CARDIO SYSTM DYNAMICS & MODELING
- BIOENG 2810 - BIOMATERIALS & BIOCOMPATIBILITY
- CMU 02-730/MSCBIO /CMPBIO 2040 - CELLUAR AND SYSTEMS MODELING
- MSCBIO 2030/CMPBIO 2030 - INTRODUCTION TO COMPUTATIONAL STRUCTURAL BIOLOGY
- MSCMP 3780 - SYSTEMS APPROACH INFLAMMATION

Course #3 - Either one additional course from category 2 or one from the following list:

- BIOENG 2620 - INTRODUCTION TO TISSUE ENGINEERING
- MSCMP 2730 - MOLEC MECHS TIS GROWTH & DIFFRN
- MSCMP 3710 - CANCER BIOLOGY AND THERAPEUTICS
- MSCMP 3735 - EXTRACELLULAR MATRIX IN TISSUE BIOLOGY AND BIOENGINEERING
- MSCMP 3740 - STEM CELLS
- MSCMP 3750 - ANGIOGENESIS
- MSCMP 3770 - CELL THERAPY
- MSIMM 2210 - COMPREHENSIVE IMMUNOLOGY
- MSMPHL 2360 - BIOLOGY OF SIGNAL TRANSDUCTION

Tissue Engineering and Regenerative Medicine (TERM) Track

The PhD track in Tissue Engineering and Regenerative Medicine (TERM) prepares the students for a career in cutting edge research and development of cell- and biomaterial-based medical products. The MPE track introduces students to the use of cells, materials, biochemical and biomechanical factors in the development of functional substitutes that restore, maintain, or improve tissue or organ function. The students can expect to apply engineering principles to a diverse range of medical fields with the goal of solving critical clinical challenges.

Engineering Track Course - one of your required track courses must be taken from one of the courses below:

- BIOENG 2186 - NEURAL ENGINEERING
- BIOENG 2040 - TRANSPORT PHENOMENA FOR BIOMEDICAL AND CHEMICAL ENGINEERS
- CHE 2301 - FUNDAMNTL TRANSPORT PROCESSES 1 BIOENG 2633 - BIOMECHANICS 4: BIOMECHANICS OF ORGANS, TISSUES, AND CELLSBIOENG 2525 - APPLIED BIostatISTICS
- CMU 42624 - Biological Transport and Drug Delivery (this class is offered at Carnegie Mellon University and can be taken through the PCHE Cross-Registration process)

TERM track courses:

BIOENG 2016 - FUNDAMENTAL PRINCIPLES OF BIODEGRADABLE

BIOENG 2165 - MEDICAL PRODUCT ENTREPRENEURSHIP

BIOENG 2633 - BIOMECHANICS 4: BIOMECHANICS OF ORGANS, TISSUES, AND CELLS

BIOENG 2230 - CARDIO ORGAN REPLACEMENT

BIOENG 2250 - CARDIO CLINICAL INTERNSHIPS (Special Permission is required)

BIOENG 2040 - TRANSPORT PHENOMENA FOR BIOMEDICAL AND CHEMICAL ENGINEERS

BIOENG 2515 - CARDIO SYSTEM DYNAMICS & MODELING

BIOENG 2540 - NEURAL BIOMATERIALS AND TISSUE ENGINEERING

BIOENG 2620 - INTRODUCTION TO TISSUE ENGINEERING

BIOENG 2630 - METHODS IN IMAGE ANALYSIS

BIOENG 2810 - BIOMATERIALS & BIOCOMPATIBILITY

BIOENG 3020 - DESIGN AND SYNTHESIS OF BIOMEDICAL MATERIALS

MSCMP 2730 - MOLEC MECHS TIS GROWTH & DIFFRN

MSCMP 3740 - STEM CELLS

MSCMP 3750 - ANGIOGENESIS

MSCBMP 2860 - MULTIPARAMETRIC MICROSCPC IMAGNG

CHE 2754 - PRINCIPLES OF POLYMER ENGINEERING

CHEM 2600 - SYNTHESIS & CHARACTERIZATION OF POLYMERS

Neural Engineering (NE) Track

Neural engineering is an exciting new field, which applies engineering techniques to understand, repair, replace, enhance, or otherwise exploit the properties of neural systems. The neural engineering track is designed to prepare the students for the fundamental understanding of both neuroscience and engineering principles.

This graduate track has a specific menu of courses to satisfy the "Life Science" and "Track Courses" requirement for the Ph.D.

Life Science Requirements: neural track students are required to take one cellular level and one systems level neuroscience course to fulfill their life science requirement.

For molecular neuroscience, choose between 1) NROSCI 2100 and NROSCI 2101 (Cellular and Molecular Neurobiology I and II, 8 credits) and 2) CMU 03-762 (Advanced Cellular Neuroscience, 4 credits); both are offered in the Fall.

For systems neuroscience, choose between 1) NROSCI 2102 (Systems Neurobiology, 6 credits) and 2) CMU 03-763 (Systems Neuroscience, 4 credits); both are offered in the Spring.

These courses are typically taken at the first year. Students without a biology background will need to take remedial biology courses (e.g. BIOENG 2520, Fall) before taking NROSCI 2100, NROSCI 2101 and NROSCI 2102. Students who have taken graduate-level equivalent neuroscience courses can petition to take other more advanced life science courses.

Track Courses Requirement: please select at least three track courses from the following courses:

- BIOENG 2186 - NEURAL ENGINEERING
- BIOENG 2540 - NEURAL BIOMATERIALS AND TISSUE ENGINEERING

- BIOENG 2580 - BIOMD APPLC SIGNAL PROCESSING
- BIOENG 2615 - INTRODUCTION TO NEURAL ENGINEERING
- BIOENG 2630 - METHODS IN IMAGE ANALYSIS
- BIOENG 2650 - LEARNING & CONTROL OF MOVEMENT
- BIOENG 2810 - BIOMATERIALS & BIOCOMPATIBILITY
- NROSCI 2005 - COGNITIVE NEUROSCIENCE
- NROSCI 2011 - FUNCTIONAL NEUROANATOMY
- NROSCI 2012 - NEUROPHYSIOLOGY
- NROSCI 2039 - PROCESSING IN NEURAL CIRCUITS
- MSNBIO 2632 - ADVANCED NEUROPHYSIOLOGY
- ECE 2646 - LINEAR SYSTEM THEORY
- ECE 2695 - SPECIAL TOPICS: ADAPTIVE CONTROL
- ECE 3650 - OPTIMAL CONTROL
- CMU 36-759/MATH 3375 - COMPUTATIONAL NEUROSCIENCE METHODS (can be used as a track course, cannot be used to fulfill the math requirement, and can possibly be used to fulfill the statistics requirement. Please see the list of Approved Statistics Courses, and ask the Graduate Coordinator if you have any questions about this requirement.)
- CMU 10-601 - MACHINE LEARNING
- CMU 15-883 - COMPUTATIONAL MODELS OF NEURAL SYSTEMS
- CMU 42-590 / 18-699 - NEURAL SIGNAL PROCESSING
- CMU 36-746 - STATISTICAL METHODS FOR NEUROSCIENCE (Can be used as a track course and can possibly be used to fulfill the statistics requirement. Please see the list of Approved Statistics Courses, and ask the Graduate Coordinator if you have any questions about this requirement.)
- CMU 86-595 / 42-595 - NEURAL DATA ANALYSIS
- CMU 18-612 - NEURAL TECHNOLOGY: SENSING AND STIMULATION

For the life science requirements, there are two options for molecular neuroscience and two options for systems neuroscience.

For molecular neuroscience, students may choose between:

- NROSCI 2100 - CELLULAR AND MOLECULAR NEUROBIOLOGY 1 and NROSCI 2101 - CELLULAR & MOLECULAR NEUROBIOLOGY 2
- OR

- CMU 03-762 - ADVANCED CELLULAR NEUROSCIENCE (4 credits), both are offered in the Fall

For systems neuroscience, students may choose between:

- NROSCI 2102 - SYSTEMS NEUROBIOLOGY
- AND

- CMU 03-763 - SYSTEMS NEUROSCIENCE (4 credits), both are typically offered in the Spring

There are four different combinations of possibilities, as stated below:

- NROSCI 2100, NROSCI 2101 and NROSCI 2102, equaling 14 credits
- NROSCI 2100, NROSCI 2101 and CMU 03-763 (4 credits), equaling 12 credits
- CMU 03-762 (4 credits) and NROSCI 2102, equaling 10 credits
- CMU 03-762 (4 credits) and CMU 03-763 (4 credits), equaling 8 credits

Center for Neural Basis of Cognition (<http://www.cnbc.cmu.edu/>): the majority of NE track students are members of CNBC and participate in the CNBC graduate training program (<http://www.cnbc.cmu.edu/training/>). All three of the CNBC core courses can be considered track or elective courses. If you are in CNBC, you must satisfy both BIOENG and CNBC requirements before graduation.

For more information, please contact the Track Coordinator, Professor Tracy Cui. A list of faculty doing research in the area of neural engineering can be found at the Neural Engineering Program Web site (<http://www.engineering.pitt.edu/neuro/>).

Medical Product Engineering (MPE) - PhD Track

The PhD track in Medical Product Engineering (MPE) emphasizes preparation for an industrial or academic career in medical product research and development. The MPE track introduces students to principles of engineering innovation targeted to the identification of and the solution to important challenges and unmet clinical needs in health care technology and delivery. The program of study emphasizes education in medical product design and development, the development of advanced engineering skills, and knowledge of cellular and systems level physiology pertinent to the healthcare field in which the student is doing research.

Life Science Requirements (2 courses, 6 credits)

MPE track students are required to take one cellular level physiology course and one systems level physiology course to satisfy their Life Science Requirement. These courses should be chosen based on a student's interest and research from the following list:

Cellular Level

- BIOENG 2520 - MOL CELL BIOLOGY & BIOPHYSC 1

Systems Level

Any systems (organ) level physiology course. Must be approved by track coordinator. Some examples not requiring approval include:

- HRS 2771 - FUNCTIONAL ANATOMY AND KINESIOLOGY
- NROSCI 2011 - FUNCTIONAL NEUROANATOMY
- NROSCI 2070 - HUMAN PHYSIOLOGY
- NROSCI 2102 - SYSTEMS NEUROBIOLOGY

Track Courses Requirement (3 courses, 9 credits)

- BIOENG 2150 - MEDICAL PRODUCT IDEATION
- BIOENG 2151 - MEDICAL PRODUCT DEVELOPMENT

The third track course elective must be selected from the following list based on the student's interest and research:

- BIOENG 2630 - METHODS IN IMAGE ANALYSIS
- BIOENG 2633 - BIOMECHANICS 4: BIOMECHANICS OF ORGANS, TISSUES, AND CELLS
- BIOENG 2055 - BIOMEDICAL FLUIDS MECHANICS
- BIOENG 2230 - CARDIO ORGAN REPLACEMENT
- BIOENG 2330 - BIOMEDICAL IMAGING
- BIOENG 2515 - CARDIO SYSTM DYNAMICS & MODELING
- BIOENG 2186 - NEURAL ENGINEERING
- CHE 2301 - FUNDAMNTL TRANSPORT PROCESSES 1
- ECE 2523 - DIGITAL SIGNAL PROCESSING
- ECE 2654 - DIGITAL CONTROL SYSTEMS
- CMU 42 - 698C INTRODUCTION TO BIOMEDICAL SIGNAL PROCESSING
- CMU 42 - 624 BIOLOGICAL TRANSPORT AND DRUG DELIVERY

Electives (2 courses, 6 credits)

Students can take any two appropriate courses for their electives but the following courses are highly recommended:

Any track course elective above not already taken

- BIOENG 2165 - MEDICAL PRODUCT ENTREPRENEURSHIP
- BIOENG 2170 - CLINICAL BIOENGINEERING
- BIOENG 2171 - MEDICAL PRODUCT PROTOTYPING
- BIOENG 2230 - CARDIO ORGAN REPLACEMENT
- BIOENG 2810 - BIOMATERIALS & BIOCOMPATIBILITY BIOENG 3020 - DESIGN AND SYNTHESIS OF BIOMEDICAL MATERIALS

- BSEO 2531 - ENTREP & NEW VENTURE INITIATION
- BSPP 2111 - COMMERCIALIZING NEW TECHNOLOGIES
- ECE 2646 - LINEAR SYSTEM THEORY
- ENGR 2051 - PRODUCT REALIZATION
- ME 2045 - LINEAR CONTROL SYSTEMS
- IE 2003 - ENGINEERING MANAGEMENT
- IE 2006 - INTRO TO MANUFACTURING SYSTEMS
- IE 2012 - MANUFACTURE OF STRUCTURAL NANOMATERIALS
- IE 2039 - ENTREPRENEURSHIP FOR ENGINEERS
- IE 2076 - TOTAL QUALITY MANAGEMENT

Due Date Schedule

Notifications and Due Dates

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

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

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

Anesthesiology Clerkship (AC)

Course Director

Michael Mangione, MD

Associate Professor

Department of Anesthesiology

mangionemp@anes.upmc.edu

Approved Track List

Bioimaging and Signals Track

Biomechanics Track

Medical Product Engineering (MPE) - PhD Track

Molecular, Cellular, and Systems Engineering (MCSE) Track

Neural Engineering (NE) Track

Tissue Engineering and Regenerative Medicine (TERM) Track

Swanson School of Engineering Faculty

School of Engineering Faculty

Contact information and research interests of faculty members can be found on the Swanson School of Engineering faculty page.

Program and Course Offerings

Master's

Sustainable Engineering, MSSE

Overview

The Master of Science Degree in Sustainable Engineering (MS SE) is housed within the Mascaro Center for Sustainable Innovation (MCSI), with the degree granted from the Swanson School of Engineering. The 30-credit degree was designed to integrate with current MS programs in engineering, providing students with the opportunity to complete two MS degree programs with a limited time increase.

Program Objectives

- Provide advanced education to graduate students to identify and solve sustainability issues using systems approaches in the context of the triple bottom line of environmental, societal, and economic problems.
- Create a rigorous program with breadth and depth to propel graduate students to foster sustainable technologies, science, and practices in the U.S. and abroad.
- Create regional and nationally scalable sustainability solutions through service learning projects with a cohort of students.
- Provide students with experiences that enable them to communicate sustainability issues and solutions to multiple audiences.

Course Requirements

A total of 30 credits are required to earn the MS SE professional master's degree. The degree is structured so the participating student is required to take five core courses and five electives.

The five core courses are as follows:

- ENGR 2905 - CURRENT ISSUES IN SUSTAINABILITY
- CEE 2609 - LIFE CYCLE ASSESSMENT METHODS AND TOOLS
- CEE 2610 - ENGINEERING AND SUSTAINABLE DEVELOPMENT
- ENGR 2007 - SUSTAINABILITY CAPSTONE

Choose one of the following:

- PIA 2231 - CONTEMPORARY US ENERGY POLICY
- PIA 2115 - ENVIRONMENTAL ECONOMICS
- PIA 2164 - NATURAL RESOURCES GOVERNANCE AND MANAGEMENT

- BSPP 2328 - THE BUSINESS OF HUMANITY - STRATEGIC MANAGEMENT

Electives:

Students can choose five electives from the areas below. Related courses that are not listed below may be taken as an elective if it is approved by the program director.

Sustainable Built Environment & Infrastructure

- CEE 2370 - INTRODUCTION TO NONDESTRUCTIVE EVALUATION AND STRUCTURAL HEALTH MONITORING
- CEE 2340 - CONCRETE STRUCTURES 2
- CEE 2346 - REPAIR AND RETROFIT OF STRUCTURES
- CEE 2720 - URBAN TRANSPORTATION PLANNING

Energy

- ECE 2780 - RENEWABLE AND ALTERNATIVE ENERGY
- ECE 2781 - SMART GRID TECHNOLOGIES AND APPLICATIONS
- ECE 2795 - SPECIAL TOPICS POWER
- ECE 2250 - POWER ELECTRONICS
- ECE 2646 - LINEAR SYSTEM THEORY
- ECE 2774 - POWER SYSTEMS ANALYSIS 2

Environmental and Water Sustainability

- CEE 2410 - WATER RESOURCES ENGINEERING
- CEE 2416 - SEDIMENT TRANSPORT
- CEE 2500 - ENVRNMNTL ENGRG MICROBIOL
- CEE 2501 - ENVIRONMENTAL ENGINEERING CHEMISTRY
- CEE 2502 - PHYSICAL-CHEMICAL PRINCIPLES IN ENVIRONMENTAL ENGINEERING
- CEE 2511 - ENVIRONMENTAL ENGINEERING PROCESS LABORATORY
- CEE 2515 - WASTEWATER COLLECTION AND TREATMENT PLANT DESIGN

Green Computing

- ECE 2160 - EMBEDDED COMPUTER SYSTEM DESIGN
- ECE 2170 - EMERGING MEMORY TECHNOLOGIES AND SYSTEMS
- ECE 2161 - EMBEDDED COMPUTER SYSTEM DESIGN 2
- ECE 2192 - INTRODUCTION TO VLSI DESIGN
- ECE 2193 - ADVANCED VLSI DESIGN
- ECE 2162 - COMPUTER ARCHITECTURE 1
- ECE 3162 - ADVANCED COMPUTER MICROARCHITECTURE
- ECE 2140 - SYSTEMS-ON-A-CHIP DESIGN

Department of Bioengineering

Contact Information

Department Chair: Sanjeev Shroff, PhD
Main Office: 302F Benedum
412-624-6445
Fax: 412-383-8788
E-mail: sshroff@pitt.edu
<http://www.engineering.pitt.edu/bioengineering/>

Graduate Degree Programs

The Department of Bioengineering offers the degrees of Master of Science in Bioengineering, Doctor of Philosophy (PhD) in Bioengineering, and a Professional Masters in Medical Product Engineering. In addition, the department has a certificate program in Medical Product Innovation and participates in the MD/PhD program with the School of Medicine's Medical Scientist Training Program and the MBA/MS program with the Katz Graduate School of Business.

The graduate program in bioengineering incorporates five programmatic tracks:

Bioimaging and Signals
Biomechanics
Molecular, Cellular, and Systems Engineering
Neural Engineering
Medical Product Engineering*
Tissue Engineering and Regenerative Medicine

*(Please note this track has separate tracks for the MS and PhD).

The department has an active, interdisciplinary graduate bioengineering program in conjunction with faculty from the School of Medicine, the School of Health and Rehabilitation Sciences, the School of Dental Medicine, the clinicians at the University of Pittsburgh Medical Center hospitals, and other schools and departments at the University of Pittsburgh and Carnegie Mellon University.

The graduate program is directed toward engineering and life science education and research, with particular emphasis on the PhD. Its scope is broadly defined to incorporate the application of engineering principles, methods, and technology in two broad areas: (1) scientific queries into fundamental biological phenomena and (2) the development of instrumentation, materials, devices, and systems relative to application in the biological sciences and medicine. Thus, the bioengineering faculty are applying various forms of engineering principles, mathematics, computation, technology, and methodology to a broad variety of medical and life sciences problems.

Admissions

Applicants for admission are expected to have a minimum GPA of 3.5 from an accredited BS program. They must submit transcripts of all college-level work, three letters of recommendation, a statement of purpose, and scores on the verbal, quantitative, and analytical writing sections of the Graduate Record Examination. International applicants whose first language is not English are required to submit the TOEFL, administered by the Educational Testing Service, with a minimum score of 550 (213 computer-based, 80 internet-based). In addition to these basic requirements, evidence of significant research and/or industrial experience is very important as further evidence of ability to perform well at the graduate level.

Students with a non-engineering background may be admitted provisionally on a case-by-case basis, and often are required to take undergraduate engineering and math courses considered as prerequisite for graduate course work in these areas. These undergraduate courses do not count toward their graduate degree credit requirements. Likewise, an undergraduate knowledge of physiology and basic biology and chemistry is assumed. In addition to the above basic requirements, evidence of significant research and/or industrial experience is very important as further evidence of ability to perform well at the graduate level. These experiences should be detailed clearly in recommendation letters, as well as in the student's statement of purpose. Please note that incomplete applications will not be considered.

Financial Assistance

All doctoral students in the Department of Bioengineering are currently supported either by research or departmental funds. Financial assistance is typically arranged between a student and a faculty advisor. Students with exceptional qualifications will be considered for additional departmental support and fellowships.

Certificate

Bioengineering - Medical Product Innovation Certificate

Requirements

The Graduate Certificate in Medical Product Innovation (C-MPI), offered by the Department of Bioengineering in conjunction with Center for Medical Innovation (CMI) is multi-faceted, reflecting the multidisciplinary nature of medical innovation, with the objectives:

- To educate engineering graduate students at the MS and PhD levels in clinical, engineering, business, and legal aspects of the medical device design and development process;
- To educate students of the health sciences (residents, fellows and clinicians) in engineering, business, and legal methodologies in identifying and developing innovative solutions to their problems;
- To educate law students in engineering methodology, regulatory constraints, medical device intellectual property, and commercialization aspects of medical innovation;
- To educate business (MBA) students in clinical, engineering, regulatory, and legal aspects of medical innovation and entrepreneurship; and
- To train all of the above disciplines in the art of working in multi-disciplinary teams to accomplish the medical innovation process, from medical technology ideation, through development, to realization and commercialization.

Certificate candidates must complete a minimum of 5 courses (15 credits) drawn from the following areas:

Medical Product Innovation Core Curriculum - 6 credits

Per approval by program director

- BIOENG 2150 - MEDICAL PRODUCT IDEATION
- BIOENG 2151 - MEDICAL PRODUCT DEVELOPMENT

Electives - 9 credits

Select 3 credits from each of the following subgroups:

Medical Ethics

Per approval by program director - 3 credits

- BIOENG 2241 - SOCTL, POL & ETHCL ISS BIOTEC 1
- BIOENG 2242 - SOCTL, POL & ETHCL ISS BIOTEC 2
- BIOETH 2001 - ETHICS AND AGING
- BIOETH 2661 - THEORETICAL FOUNDATIONS
- BIOETH 2664 - BIOETHICS
- BIOETH 2698 - SPECIAL TOPICS IN BIOETHICS
- CMU 80245 - MEDICAL ETHICS
- LAW 5464 - BIOETHICS AND LAW
- LAW 5980 - ETHICAL ISSUES IN CLINICAL CARE

Entrepreneurship/Engineering Management

Per approval by program director - 3 credits

- BIOENG 2165 - MEDICAL PRODUCT ENTREPRENEURSHIP
- BIOENG 2166 - MANAGING MEDICAL PRODUCT RESEARCH AND DEVELOPMENT

- BIOENG 2175 - HUMAN FACTORS ENGINEERING IN MEDICAL DEVICES
- BSEO 2500 - BENCHTOP TO BEDSIDE
- BSEO 2531 - ENTREP & NEW VENTURE INITIATION
- BSPP 2111 - COMMERCIALIZING NEW TECHNOLOGIES
- CLRES 2730 - FROM BENCHTOP TO BEDSIDE
- IE 2003 - ENGINEERING MANAGEMENT
- IE 2039 - ENTREPRENEURSHIP FOR ENGINEERS
- IE 2076 - TOTAL QUALITY MANAGEMENT
- IE 2123 - PROJECT MANAGEMENT FOR ENGINEERS
- LAW 5135 - COMMERCIALIZING NEW TECS

Legal Aspects of Medical Product Engineering

Per approval by program director - 3 credits

- BSPP 2111 - COMMERCIALIZING NEW TECHNOLOGIES
- LAW 5135 - COMMERCIALIZING NEW TECS
- LAW 5210 - PATENT LAW
- LAW 5260 - INTELLECTUAL PROPERTY
- LAW 5631 - LAW AND ENTREPRENEURSHIP

Note:

Students currently enrolled in any graduate program in the University (MS, MBA, JD, PhD, etc.) are eligible to obtain the C-MPI upon completion of the Certificate requirements. No formal admissions process is required, but eligible students must submit their intent to graduate with the C-MPI Certificate.

Post-baccalaureate and post-professional students interested only in obtaining the C-MPI need to apply to the Department of Bioengineering for admission to the Certificate program.

Doctoral

Bioengineering, PhD

PhD Requirements

The course requirements for the PhD in Bioengineering include the following:

- Graduate Engineering Mathematics-3 credits (from an approved list of math courses)
- Statistics for Bioengineers-3 credits (from an approved list of statistics courses)
- Societal, Political, and Ethical Issues in Bioengineering-3 credits (either BIOENG 2241 or BIOENG 2242)
- Life Sciences-6 credits (from an approved list of life science courses)
- Teaching Practicum-2 credits (BIOENG 3003)
- Seminar-6 credits total, 4 credits must be the Bioengineering Seminar, which is BIOENG 2023 or BIOENG 2024. The other 2 credits may be from BIOENG 2023, BIOENG 2024 or any other seminars deemed appropriate by the Graduate Coordinator.
- Track Courses-9 credits (from a menu of courses for specific track, please see the links below)
 - Bioimaging and Signals Track
 - Biomechanics Track
 - Medical Product Engineering (MPE) - PhD Track
 - Molecular, Cellular, and Systems Engineering (MCSE) Track
 - Neural Engineering (NE) Track
 - Tissue Engineering and Regenerative Medicine (TERM) Track

- Graduate Electives-6 credits (These can be any courses in science or engineering that are deemed useful for the student's career with the approval of the Graduate Coordinator.)
- Grant Writing in Bioengineering-1 credit (BIOENG 2900)
- Doctoral Dissertation Research-33 credits* (Of these, 12 must be BIOENG 3999)

Total number of credit hours: 72 credits (plus the credits associated with the remedial courses, as applicable.) Students typically take the PhD preliminary exam after their first year in the program, and PhD proposal (comprehensive examination) is presented generally at the end of the second year. A final public PhD defense is made by each PhD candidate based on the student's research work. All students must maintain a 3.0 GPA at all times to remain in good standing in the program.

* Please note that the total of 33 credits is not necessarily the total number of credits of BIOENG 3997 that must be taken, as other courses/credits in other areas may be taken as long as the total number of credits adds up to 72 total. Students are required to take a minimum of 12 credits of BIOENG 3999 after their PhD proposal defense, as these credits cannot be taken before. Total number of credit hours: 72 credits.

Preliminary Exam

The PhD Preliminary Exam is given once a year, typically in early June, and is to be taken by students pursuing the PhD degree after their first two semesters of full time course work. A student is allowed no more than two opportunities to take the preliminary examination.

The purpose of the preliminary examination is to evaluate the student's ability to use fundamental principles of biomedical science and engineering approaches to investigate solutions to bioengineering problems. The basis of the examination is a specific research question (problem), chosen by the student to write a proposal on. The student may seek assistance from his/her advisor or any other faculty member for choosing the question. The examination will consist of an oral presentation and accompanying written proposal in NIH RO3 format. The written document and oral presentation should demonstrate the student's ability to think, present, and defend in an academic environment, as well as a sufficient background in the biomedical science and engineering aspects of the chosen problem.

The examinations will be coordinated within the current graduate tracks. They will typically take place at the end of the first year of graduate studies. The scheduling of the examinations will be handled by the track coordinators, who will also determine the suitability of the research question (problem) (having both engineering and biomedical science components). The student may get help from anyone in preparing the oral presentation, but must observe the usual strict standards on plagiarism in preparing the written document. Students are encouraged to focus on one to two experiments and note both alternatives and potential problems in each experiment. Proper referencing of sources is required for both the oral and written components. One important paper in the field must be identified in the references and made available to the reviewers, who may ask for an explanation or critique of any aspect of the paper. The research proposal may be supported by preliminary data, but this is not a requirement. In addition, students must provide a written statement, signed by their advisor, to state what the student's contribution to their research was in the proposal document.

Rather, the examination committee is expected to probe the student with challenging questions to establish the depth of his/her creative and analytical thinking, as well as knowledge in appropriate background areas.

The final result of the preliminary examination will be based on the combined evaluation of the written and oral components, with three possible outcomes: unconditional pass, conditional pass, and fail.

Committee Selection

Committees for PhD students should consist of the student's advisor (who will act as Chair of this committee,) at least two additional faculty members from within the Department of Bioengineering and at least one faculty member from outside the Department of Bioengineering. For MS students, the committee will need to consist of three faculty members total and at least two need to be member of the Bioengineering faculty. However, all three can be Bioengineering faculty as there is no requirement to have one member from outside of Bioengineering. Students are required to receive approval from the faculty Graduate Coordinator of the committee, ideally 1-2 months prior to the proposal defense. After this takes place, the student will need to obtain a "blue form" (admission to PhD candidacy form) from the Graduate Administrator, and obtain the necessary signatures at the student's proposal. After this occurs, the form will need to be returned to the Graduate Administrator for submission to the school for approval.

Formal admission to candidacy for the Doctor of Philosophy degree (typically in the 3rd year) constitutes a promotion of the student to the most advanced stage of graduate study and provides formal approval to devote essentially exclusive attention to the research and the writing of the dissertation. **Note that it is a departmental requirement that students complete their proposal by the end of their third full year in the program.** To qualify for admission to candidacy, students must have obtained full graduate status and have satisfied the requirement of the preliminary examination. Note that a student does not necessarily need to have all coursework completed before completing their proposal. The

student should submit the written proposal in NIH RO1 format to the committee at least two weeks in advance of the oral defense to the approved committee. The approval of the proposal and defense of it constitutes passing the proposal and Comprehensive Examination. The committee will meet at least once a year during the remainder of his or her PhD program culminating in the Dissertation Defense.

Once a student has completed the proposal and comprehensive exam, they may then register for 3999 credits, or "post-proposal" research credits. After the student completes 12 credits of 3999, which can easily be completed in one semester, they can then register for FTDH, or Full Time Dissertation Hours, up to and including the semester in which they graduate. Please note that no courses can be taken once a student registers for FTDH. It is important to note that students may switch into 3999 credits if they propose before the end of the add/drop period of the semester in which they complete their proposal.

Graduation info

Students are expected to be prepared to announce their dissertation defense date at least two weeks before their defense by emailing the information including the dissertation date, time, and location, the name and full title of their advisor, along with an abstract of no more than 400 words, to the Graduate Administrator, after which a notice will be sent out to the school. At the defense, the student is to prepare the ETD approval forms, the abstract, a copy of all publications (including journal articles, presentations, and proceedings,) and a copy of the PhD rubric form for each member of their dissertation committee.

Joint Degree

Bioengineering, MD/PhD

MD/PhD Requirements

The MD/PhD program supports well-integrated basic and clinical science pre-doctoral training program. The training program links 17 PhD programs in six graduate schools within the University of Pittsburgh and Carnegie Mellon University. It is important to keep in mind that MD/PhD students are working toward TWO degrees, not just "two for the price of one". However, it is recognized that some relaxation of the requirements is appropriate for these students. For example, students in the MD/PhD program exceed the basic life science requirements for the Bioengineering PhD program. However, MD/PhD students cannot use their MD courses to opt out of the advanced engineering/math course requirements for the PhD.

The course requirements for the MD/PhD in Bioengineering include the following:

- Graduate Engineering Mathematics (from a list of approved Math courses) - 3 credits
- Statistics for Bioengineers (from a list of approved Statistics courses) - 3 credits
- Track Courses (from a list of approved courses for specific tracks) - 9 credits
- Graduate Electives (can be most graduate level courses per approval of Graduate Coordinator) - 6 credits
- Teaching Practicum, BIOENG 3003 - 2 credits
- Bioengineering Seminar - 6 credits (4 credits must be the Bioengineering Seminar, BIOENG 2023)
- Grant Writing in Bioengineering, BIOENG 2900 - 1 credit
- Doctoral Dissertation Research, BIOENG 3997 and BIOENG 3999 - 12 credits of 3999 to be taken after the proposal - 42 credits

Total number of credit hours: 72 credits (plus the credits associated with the remedial courses, as applicable).

Bioengineering/Business Administration, MS/MBA

The Department of Bioengineering and the Katz Graduate School of Business (KGSB) offer a dual MBA/MS program, with the following requirements for the Professional MS in Bioengineering:

Candidates must complete a minimum of 11 courses (30 credits) [25.5 engineering credits] drawn from the following areas:

Graduate Engineering Math or Statistics - 3 credits

Per approval by program director

- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT

Medical Product Engineering Core Curriculum - 12 credits

Per approval by program director

- BIOENG 2150 - MEDICAL PRODUCT IDEATION
- BIOENG 2151 - MEDICAL PRODUCT DEVELOPMENT
- BIOENG 2170 - CLINICAL BIOENGINEERING
- BIOENG 2171 - MEDICAL PRODUCT PROTOTYPING

Graduate Engineering/Science Electives - 9 credits

Per approval by program director

- 1st Graduate Engineering/Science Elective
- 2nd Graduate Engineering/Science Elective
- 3rd Graduate Engineering/Science Elective

Medical Ethics - 3 credits

Per approval by program director

- BIOENG 2241 - SOCTL, POL & ETHCL ISS BIOTEC 1
- BIOENG 2242 - SOCTL, POL & ETHCL ISS BIOTEC 2

MBA/MS Project Courses - 3 credits

Per approval by program director

- BIND 2200 - INTEGRATED PROJECT FOR MBA/MS IN ENGINEERING PROGRAM
- BIOENG 2095 - GRADUATE PROJECTS

Note:

All students must maintain a 3.0 GPA at all times to remain in good standing in the program.

Master's

Bioengineering, MS

MS Requirements

The course requirements for the MS in Bioengineering include the following:

Research M.S. Program (Thesis)

The Research MS program requires a total of 31 credits, which includes:

Graduate Engineering Mathematics (from a list of approved Math courses) - 3 credits

Statistics for Bioengineers (from a list of approved Statistics courses) - 3 credits

Societal, Political and Ethical Issues in Bioengineering, BIOENG 2241 or BIOENG 2242 - 3 credits

Life Sciences (from a list of approved Life Science courses) - 3 credits

Track Courses (from a list of approved courses for specific tracks) - 9 credits

MS Thesis, BIOENG 2999 - 6 credits

Teaching Practicum, BIOENG 3003 - 1 credit

Bioengineering Seminar, BIOENG 2023 - 3 credits

Total - 31 credits

Other required courses may be tailored to the student's background and interests. Typically, completion of the Research MS program requires two years. Within the first year of enrollment (preferably within the first semester), the MS candidate is expected to finalize the general area in which he/she will write a thesis and an advisor who will guide the work. By the third semester of enrollment, the student is to prepare a Master's Thesis, following University requirements for Electronic Theses and Dissertations (ETDs.) The student (under the guidance of his/her advisor) selects a thesis committee of three or more persons. For MS students, the committee will need to consist of three faculty members total and at least two need to be member of the Bioengineering faculty. However, all three can be Bioengineering faculty, as there is no requirement to have one member from outside of Bioengineering. The committee should consist of the student's advisor (who will act as Chairman of this committee), at least one additional faculty member from within the Department of Bioengineering and at least one faculty member from outside the Department of Bioengineering. The committee meets at least once per year and oversees the Thesis Defense.

Department of Chemical and Petroleum Engineering

Contact Information

Vice Chair for Graduate Education

940 Benedum Engineering Hall

412-624-9646

Fax: 412-624-9639

E-mail: ril3@pitt.edu

<http://www.engineering.pitt.edu/chemical/>

Graduate Degree Programs

The Department of Chemical and Petroleum Engineering awards Master of Science degrees in chemical and petroleum engineering and the Doctor of Philosophy degree in chemical engineering; offers several dual degree programs; and participates in joint degree programs with the Katz Graduate School of Business and the School of Medicine. The general objective of all programs is to develop the ability of the chemical or petroleum engineer to carry out original research at advanced levels.

The aim of the doctoral program is to develop individuals for careers in academic and industrial research. The program is flexible. Its primary emphasis is on innovative and distinctive research on the cutting edge of engineering science. Students wishing to pursue the PhD should have an outstanding academic background and a desire and ability to carry out original research. PhD students here are given independence and responsibility. They are not only encouraged, but are expected, to develop research ideas, which they propose and defend. They work closely with their faculty research advisors and often participate in a research group addressing relevant engineering problems. To supplement their research, students take advanced courses in areas related to their research work. Candidates for the PhD achieve a high level of proficiency through this advanced course work and individual study in their research area and related areas.

The graduate program offers MS and PhD students the opportunity to pursue independent research in five research focus areas in which the department has developed national and international reputations: biotechnology, catalysis, multi-scale modeling, materials, and environment and energy. Additional research areas exist in programs that have exploited opportunities at the interface between disciplines. The department's recognized research activities impact the following boundaries between established disciplines: biotechnology/environment;

biology/medicine/engineering; energy/environment; polymer chemistry/physics; catalysis/chemistry/materials; catalysis/energy; and catalysis/environment.

Admissions

Chemical Engineering: For admission to full graduate status, students should have an undergraduate degree in chemical engineering with high academic standing from an ABET accredited curriculum.

Petroleum Engineering: For admission to full graduate status, students should have an undergraduate degree in engineering or geology and high academic standing.

Students from chemistry or from another engineering discipline who desire to pursue a graduate degree in chemical engineering must have a high grade point average and prepare for graduate course work by taking selected undergraduate courses in chemical engineering. See MS and PhD Requirements for Students with Non-Chemical Engineering BS Degree. Each case for admission will be evaluated individually, and applications are encouraged.

Interested students may apply online. Questions can be addressed as follows:

1. Send e-mail to che@engr.pitt.edu. Be sure to include your name and complete mailing address.
2. Send surface mail to:

University of Pittsburgh
Department of Chemical and Petroleum Engineering
Vice Chair for Graduate Education
940 Benedum Hall
Pittsburgh, PA 15260

Financial Assistance

While admission to the graduate program does not imply the granting of financial aid, most fulltime PhD students are supported. All students who qualify for financial assistance are awarded departmental fellowships. In addition, a select few top students receive supplementary dean's fellowships. An applicant interested in obtaining financial aid should request information directly from the department. Applications for admission and financial aid should be submitted by January 1 for the following fall term.

Doctoral

Chemical Engineering, PhD

The following special regulations pertain to the Department of Chemical and Petroleum Engineering. *For additional requirements, review the school-wide information in the Doctor of Philosophy Programs section as well as the Regulations Pertaining to Doctoral Degrees.*

Entry to the PhD Program

In order to enter the PhD program, a student must have completed an MS degree and passed the PhD oral qualifying preliminary examination. Especially well-prepared students, with consent of the department faculty, may be granted permission to obtain the PhD degree directly without obtaining an MS degree. This eliminates the required completion of the MS thesis. All MS-level course work is still required.

During the summer of the first year as a graduate student in the department, the student wishing to continue into the PhD program must take the oral preliminary examination. Failure to take this examination at this time will forfeit one of two opportunities to pass this examination. The structure and content of the PhD oral qualifying examination is subject to change in order to meet the requirements of the faculty and PhD program.

PhD Course Requirements

A student's course series will be designed by the student and his/her thesis advisor, approved by the PhD committee, and signed off by the graduate coordinator. This sequence should include courses in the student's research area as well as courses not related to his/her research area. Forty-two credits beyond the MS degree are required and must include the following courses:

- XX 2/3XXX Electives (Science, Math, or Engineering) 12 credits
- CHE 2982 - ISSUES IN RESEARCH AND TEACHING (if not taken at MS level)
- CHE 3990 - ADVANCED GRADUATE PROJECTS (18 credit minimum)
- CHE 3999 - PH.D. DISSERTATION (taken after PhD proposal defense), 12 credits (minimum)

Additional course requirements may include the following, if the student has not previously completed courses in these areas at the master's level:

- CHE 2101 - FUNDAMENTALS OF THERMODYNAMICS
- CHE 2201 - FUNDAMNTL OF REACTION PROCESSES
- CHE 2301 - FUNDAMNTL TRANSPORT PROCESSES 1
- CHE 2410 - MATHMTCL METHD IN CHEMCL ENGRG 1

Note:

Students must also register for one credit in PhD research methodology and one credit of CHE 3001 - GRADUATE SEMINAR each term. A minimum of 72 graduate credit hours, including MS courses and thesis credits, are required. All full-time students must fulfill a two-term teaching requirement during their course of study.

Dissertation Requirement

A dissertation topic should be selected after passing the PhD oral qualifying examination. This is done by submitting a formal request in writing to the departmental graduate faculty for appointment of a faculty advisor (or advisors). Preliminary work (at least 18 credits) can be done on the dissertation by registering for CHE 3990. After being admitted to PhD candidacy, the student should concentrate on the dissertation, registering for CHE 3999 (minimum 12 credits). Most students complete more than 30 credits of these courses.

PhD Comprehensive Examination and Proposal Conference

This is an oral examination covering chemical engineering at the PhD level and is based upon a written dissertation proposal. If this examination is passed, a doctoral committee will be officially appointed. This exam should be taken at least 18 months before completion of the dissertation and preferably within the first year beyond the MS.

PhD Final Oral Examination

A final review (defense) of the thesis must be conducted by the dissertation committee in order to determine the acceptability of the dissertation.

Off-Campus Research

Occasionally, a research program can be conducted at a government or industrial site. In those situations the student should submit a proposal for such research to the graduate coordinator for approval by the faculty. The faculty advisor must be actively involved in the research.

Joint Degree

Chemical and Petroleum Engineering Dual Degree, MS

Requirements

A program of study is available in which a student may pursue a dual degree between chemical engineering and petroleum engineering. In general, 48 credits are required, including the fundamental courses in the two areas. Both thesis and non-thesis options are possible. The required chemical engineering courses are:

- CHE 2101 - FUNDAMENTALS OF THERMODYNAMICS
 - CHE 2201 - FUNDAMNTL OF REACTION PROCESSES
 - CHE 2301 - FUNDAMNTL TRANSPORT PROCESSES 1
 - CHE 2410 - MATHMTCL METHD IN CHEMCL ENGRG 1
- and the required petroleum engineering courses are:
- PETE 2160 - PETROLEUM RESERVOIR ENGINEERING
 - PETE 2201 - RECOVERY OF OIL BY WATERFLOODING
 - PETE 2204 - ENHANCED OIL RECOVERY PROCESSES
 - PETE 2205 - PETROLEUM PRODUCTION ENGINEERING
 - PETE 2207 - PETROLEUM AND NATURAL GAS PROCESSING
 - PETE 2208 - PETROLEUM DRILLING AND WELL COMPLETION DESIGN
 - PETE 2209 - HYDRAULIC FRACTURING MECHANICS AND APPLICATIONS

Additional requirements for the Dual Degree MS, non-thesis options:

- CHE 2910 - SPECIAL PROJECTS
- 3 course credits in Chemical or Petroleum Engineering coursework
- 9 additional course credits from the approved list (as specified Master of Science in Petroleum Engineering) of graduate offerings in engineering or geology

Additional requirements for Dual Degree MS with thesis:

- 6 course credits from the approved list (as specified Master of Science in Petroleum Engineering) of graduate offerings in engineering or geology
- CHE 2982 - ISSUES IN RESEARCH AND TEACHING
- CHE 2999 - M.S. THESIS or PETE 2999 - M.S. THESIS
- Registration for one credit of CHE 2980 - MS RESEARCH METHODOLOGY or PETE 2980 - MS RESEARCH METHODOLOGY each fall and spring term until graduation
- Registration for CHE 3001 - GRADUATE SEMINAR each fall and spring term

MS Final Examination

A final review (oral defense) of the MS Thesis must be conducted by the thesis committee in order to determine the acceptability of the thesis. The committee consists of the student's major advisor and two (2) other members of the faculty.

Note:

No single course can be used to satisfy both a core requirement and elective requirement.

Students without a BS degree in engineering must take, in addition, either the online "bridging course" offered in Jan (1st class) and May (2nd class) by Michigan State University (See <http://www.egr.msu.edu/> for details about the bridging courses CHE 804 and 805) or CHE 0300 (sophomore-level) "Transport Phenomena" class offered during the Fall term. Neither of these classes can serve as an elective nor core course substitute in the MS in Petroleum Engineering required classes. Students are also required to take ChE 0613 (senior-level) "Systems Engineering 2: Process Design" prior to graduating with an MS degree.

Master's

Chemical Engineering (Professional Engineer Program), MSCHe

Students who wish to pursue advanced study in chemical engineering may apply for admission to the Professional Engineer Program. It differs from the regular MS program in two important respects:

1. Course work replaces the MS thesis requirement.
2. The student completes a 3-credit special project course, CHE 2910, during their last term in the program. This course could be satisfied, for example, by a project with a faculty member, or a project based on their professional work (for engineers currently working in industry) for which a faculty member agrees to serve as advisor. Submission of a term paper, which is completed under the advisement of a member of the faculty, is required.

A minimum of 31 credit hours of course work is required.

These must include the five core courses and elective courses listed below.

- CHE 2101 - FUNDAMENTALS OF THERMODYNAMICS
- CHE 2201 - FUNDAMNTL OF REACTION PROCESSES
- CHE 2301 - FUNDAMNTL TRANSPORT PROCESSES 1
- CHE 2410 - MATHMTCL METHD IN CHEMCL ENGRG 1
- CHE 2910 - SPECIAL PROJECTS
- ChE 2XXX - Chemical Engineering Elective (Graduate Level)
- ENGR 2/3XXX - Engineering Elective (Graduate Level)
- ENGR 2/3XXX - Engineering Elective (Graduate Level)
- XX 2/3XXX - Elective (Graduate Level)
- XX 2/3XXX - Elective (Graduate Level)

Note:

Up to 6 credit hours may be elected in approved graduate course offerings outside the department (denoted by XX, above). Students who wish to enter this program should first apply for admission to graduate study in chemical engineering. Once admitted, students can then request admission to the Professional Engineer Program.

No single course can be used to satisfy both a core requirement and elective requirement.

Students without a BS degree in engineering must take, in addition, either the online "bridging course" offered in Jan (1st class) and May (2nd class) by Michigan State University (See <http://www.egr.msu.edu/> for details about the bridging courses CHE 804 and 805) or CHE 0300 (sophomore-level) "Transport Phenomena" class offered during the Fall term. The Michigan State Bridging Program is strongly recommended. In addition, students must take ChE 0613 (senior-level) "Systems Engineering 2: Process Design" prior to graduating with the MS. Neither of these classes can serve as an elective nor core course substitute in the MS in Petroleum Engineering required classes.

Chemical Engineering (Research-Oriented Program), MSCHe

Requirements

The candidate for the Master of Science degree must demonstrate proficiency in basic chemical engineering subjects by successfully taking the following required courses:

- CHE 2101 - FUNDAMENTALS OF THERMODYNAMICS
- CHE 2201 - FUNDAMNTL OF REACTION PROCESSES
- CHE 2301 - FUNDAMNTL TRANSPORT PROCESSES 1

- CHE 2410 - MATHMTCL METHD IN CHEMCL ENGRG 1
- CHE 2982 - ISSUES IN RESEARCH AND TEACHING

In addition to these 15 credits, the student must satisfactorily complete the following courses:

- At least 9 additional credits of graduate-level course work, at least 3 of which must be in chemical engineering. Approved courses can be taken outside the department.
- Six credits of CHE 2999 - M.S. THESIS must also be taken.
- Three credits of Research Methodology (see below).

A full-time student will normally take 30 credits.

Full-time students are required to register each term for Research Methodology, a 1-credit course. In Research Methodology, a letter grade will be given each term based upon the student's research performance. Full-time students are also required to register for CHE 3001 - GRADUATE SEMINAR during the fall and spring terms. It should be emphasized that the preceding course requirements are minimum requirements, and additional work may be necessary for an individual student, especially if the student's undergraduate degree is not in chemical engineering.

A student who does not maintain a B (3.00 GPA) average in all MS-level courses is put on academic probation. The graduate faculty of the Department of Chemical and Petroleum Engineering will review all cases of probation each term and determine whether the student will be permitted to continue to pursue graduate study. Should a student receive a grade lower than B- in a required MS course, the student will be required to repeat that course and receive a B- grade or better before being permitted to graduate.

A student with full-time status should discuss possible thesis topics with at least three members of the departmental faculty and then submit a written request to the faculty for assignment of a thesis advisor. After the faculty assigns an advisor, the student can begin the thesis. The MS thesis oral examination is given at the completion of the thesis. All full-time master's students must participate in teaching a course during one term as a master's student.

Students wishing to continue into the PhD program after the MS degree must have a B or better grade in each of the five core required courses and should take the oral qualifying examination after their first year in residence. Failure to do so will forfeit one of two opportunities to pass this examination.

Note:

No single course can be used to satisfy both a core requirement and elective requirement.

Students without a BS degree in engineering must take, in addition, either the online "bridging course" offered in Jan (1st class) and May (2nd class) by Michigan State University (See <http://www.egr.msu.edu/> for details about the bridging courses CHE 804 and 805) or CHE 0300 (sophomore-level) "Transport Phenomena" class offered during the Fall term. The Michigan State Bridging Program is strongly recommended. Neither of these classes can serve as an elective nor core course substitute in the MS required classes. Students are also required to take ChE 0613 (senior-level) "Systems Engineering 2: Process Design" prior to graduating with an MS degree. This requirement is waived for students who complete a PhD in Chemical Engineering.

Petroleum Engineering, MSPE

The candidate for the degree of non-thesis Master of Science in Petroleum Engineering must demonstrate proficiency in petroleum engineering by passing the following:

Mandatory Courses:

- PETE 2160 - PETROLEUM RESERVOIR ENGINEERING
- PETE 2201 - RECOVERY OF OIL BY WATERFLOODING
- PETE 2204 - ENHANCED OIL RECOVERY PROCESSES
- PETE 2205 - PETROLEUM PRODUCTION ENGINEERING
- PETE 2207 - PETROLEUM AND NATURAL GAS PROCESSING
- PETE 2208 - PETROLEUM DRILLING AND WELL COMPLETION DESIGN

- PETE 2209 - HYDRAULIC FRACTURING MECHANICS AND APPLICATIONS
- CHE 2410 - MATHMTCL METHD IN CHEMCL ENGRG 1

Note:

In addition to these 24 credits, the student must satisfactorily complete two other courses from the accepted electives list in order to fulfill the 30 credits required for the MS degree.

Accepted Electives:

- GEOL 2110 - PLATE TECTONICS
- GEOL 2151 - GROUNDWATER GEOLOGY
- GEOL 2449 - GIS, GPS, AND COMPUTER METHODS
- GEOL 2640 - ADV GEOHAZARDS & RISK MGMNT
- ME 2055 - COMPUTR ANAL TRANSPORT PHENOMENA
- ME 2060 - NUMERICAL METHODS
- CEE 2501 - ENVIRONMENTAL ENGINEERING CHEMISTRY
- CEE 2502 - PHYSICAL-CHEMICAL PRINCIPLES IN ENVIRONMENTAL ENGINEERING
- CEE 2717 - COMPONENTS, PROPERTIES AND DESIGN OF PORTLAND CEMENT CONCRETE
- CEE 2800 - ENGINEERING GEOLOGY
- CEE 3501 - ENVRNMTL ENGRG PROCESSES 1
- CEE 3502 - ENVRNMTL ENGRG PROCESSES 2
- CEE 3805 - ROCK MECHANICS
- ENGR 2632 - SUSTAINABLE DEVELOPMENT AND THE MINERAL INDUSTRY
- ENGR 2637 - STRATA CONTROL ENGINEERING
- ENGR 2638 - MINING HEALTH AND SAFETY
- PETE 2211 - RESERVOIR SIMULATION
- PETE 2910 - SPECIAL PROJECTS

Note:

No single course can be used to satisfy both a core requirement and elective requirement.

Students without a BS degree in engineering must take, in addition, either the online "bridging course" offered in Jan (1st class) and May (2nd class) by Michigan State University (See <http://www.egr.msu.edu/> for details about the bridging courses CHE 804 and 805) or CHE 0300 (sophomore-level) "Transport Phenomena" class offered during the Fall term. We strongly recommend the Michigan State Bridging Program. Neither of these classes can serve as an elective nor core course substitute in the MS in Petroleum Engineering required classes.

Department of Civil and Environmental Engineering

Contact Information

Department Chair: Radisav D. Vidic
 Main Office: 742 Benedum Hall
 412-624-9870
 Fax: 412-624-0135
 E-mail: vidic@pitt.edu
<http://www.engineering.pitt.edu/Civil/>

Graduate Degree Programs

The Department of Civil and Environmental Engineering offers graduate study and research leading to the Master of Science in Civil Engineering and Doctor of Philosophy degrees. Also offered is a joint degree program resulting in a second Master of Science degree in mathematics, and a joint degree program with the Katz Graduate School of Business resulting in a MBA degree. The MS in Civil Engineering and the PhD in engineering may be pursued in one of the following areas:

The Master of Science degree in Civil and Environmental Engineering is primarily designed for students with an undergraduate degree in engineering, although students with other backgrounds can be accommodated with specially designed programs. An MS degree can be pursued by either a full-time or part-time student in one of the following areas:

- Construction Management
- Environmental Engineering
- Geotechnical and Pavement Engineering
- Structural Engineering and Mechanics
- Sustainable Engineering
- Transportation Engineering
- Water Resources Engineering

The areas of study for the Ph.D. in Civil Engineering in the Department of Civil and Environmental Engineering within the Swanson School of Engineering are divided into two integrated research areas and sub-component specialty areas as follows:

- **Sustainability and Environmental Engineering (SEE):**
 - Environmental Engineering;
 - Sustainable Engineering; and
 - Water Resources Engineering
- **Advanced Infrastructure Systems (AIS):**
 - Geotechnical and Pavement Engineering;
 - Structural Engineering and Mechanics; and
 - Transportation Engineering.

Certificate

Civil and Environmental Engineering - Construction Management Certificate

The Construction Management Certificate Program is directed at Part-time students currently employed in the construction industry as well as other students interested in obtaining credentials in construction management.

The Academic Requirements associated with the Graduate and Post-Baccalaureate Certificate in Construction Management include the completion of fifteen (15) credits of coursework within the Civil and Environmental Department from among the following Graduate Level courses:

- CEE 2201 - CONSTRUCTION COST ENGINEERING*
- CEE 2202 - CONSTRUCTION SCHEDULING*
- CEE 2203 - CONSTRUCT METHODS AND EQUIPMENT*
- CEE 2204 - CONSTRUCTION LAW AND RISK MGMNT
- CEE 2205 - CONSTRUCT FINANCE & COST CONTROL
- CEE 2206 - CONSTRUCT & COST OF ELEC SUPPLY
- CEE 2207 - CONSTRUCT & COST OF MECHL SYSTEMS
- CEE 2230 - BUILDING INFORMATION MODELING

Students must complete three (3) required courses above (designated with an asterisk *) and may select any two (2) of the remaining courses above as electives in the completion of their Certificate. Additional graduate level courses within the Swanson School of Engineering may be considered as substitutes for the two (2) elective courses with permission of the Program Director to customize the Certificate to meet the educational goals of the student. All courses can be taken either on campus or online.

Doctoral

Civil and Environmental Engineering - Advanced Infrastructure Systems - Geotechnical and Pavement Engineering Specialty, PhD

PhD Track Requirements

Students pursuing the PhD must complete a minimum of 72 credits, including the following:

- 24 course credits (8 courses) in major area
- 15 additional course or special investigation credits or research credits in major area
- 9 course credits (three courses) in minor area
- 18 credits of dissertation research

The total number of credits above these minimum requirements will depend on the student's background, academic achievement, and dissertation topic. This decision will be made in consultation with the major advisor.

Each student must complete 8 courses towards the *Major Concentration* and 3 courses towards the *Minor Concentration* for a **total of 11 Lecture Courses**, i.e., a minimum of 33 credits of post-baccalaureate coursework taken at Pitt (2XXX level or higher) or transferred in from post-baccalaureate study. The coursework should be comprised of lecture courses and not include seminar or research courses.

Independent of any credits transferred from prior post-baccalaureate study, each student must complete at least 9 credits (~3 courses) at Pitt. At least 3 of these credits (~1 course) must come from "CEE" designated courses.

- Up to 30 credits may be applied to the *Major Concentration* and/or *Minor Concentration* from previously completed post-baccalaureate study.

- A minor area of concentration can be within any approved coherent area of science or engineering at the University of Pittsburgh outside of CEE.

- Doctoral Research (CEE 3997 - RESEARCH, PH.D) may only be taken following successful completion of the PhD Preliminary Exam.

- At least 12 credits of the *Dissertation* credit may be taken as Doctoral Dissertation (CEE 3999 - PH.D. DISSERTATION) which may only be taken following successful completion of the PhD Dissertation Proposal Exam. Remaining *Dissertation* credit may be taken as Doctoral Research CEE 3997 - RESEARCH, PH.D or Doctoral Dissertation.

- All students must enroll in the departmental seminar (CEE 2085 - GRADUATE DEPARTMENTAL SEMINAR) every semester of full-time residency (i.e., full-time study in the PhD program).

Additional Information

Plan of Study

The PhD Plan of Study is prepared by the student with the aid of the student's faculty advisor during the student's first two terms of graduate study. It should be approved and signed by the faculty advisor, all other faculty members in the program area, the graduate coordinator, and the department chair. Copies should be made available to the student, the faculty advisor, and the academic coordinator. Any change in the Plan of Study must be approved by the faculty advisor and the academic coordinator, and should likewise be recorded.

PhD Examination Structure

All PhD candidates must pass the preliminary, comprehensive, and final oral examinations:

Preliminary Examination

The purpose of this examination is to determine the student's potential to complete the PhD program. It is organized by the advisor and faculty from the student's program area, before or sometime during the first two terms of the program.

Comprehensive Examination

All PhD students must take this examination toward the end of their course work. Students must submit a written proposal of their expected dissertation research and pass a presentation and comprehensive oral examination administered by the student's doctoral committee. The comprehensive examination committee will consist of the major advisor as chair, at least two faculty members from the student's program area within the Department of Civil and Environmental Engineering, and at least one faculty member from outside the Department of Civil and Environmental Engineering. The written proposal is recommended to be in the format of a standard federal research proposal (e.g., National Science Foundation) in terms of length, formatting, and technical content. A student must have a cumulative GPA of 3.0/4.0 or higher to be allowed to participate in the examination. The examination can be administered no sooner than 1 term (i.e., 4 months) following completion of the Preliminary Exam and no later than 2 terms (i.e., 8 months) prior to the Dissertation Defense.

Final Oral Examination

This is an oral defense of the student's PhD dissertation. The examination will be administered by the doctoral committee. The doctoral committee will consist of the major advisor as chair, at least two faculty members from the student's program area within the Department of Civil and Environmental Engineering, and at least one faculty member from outside the Department of Civil and Environmental Engineering.

Civil and Environmental Engineering - Advanced Infrastructure Systems - Structural Engineering and Mechanics Specialty, PhD

PhD Track Requirements

Students pursuing the PhD must complete a minimum of 72 credits, including the following:

- 24 course credits (8 courses) in major area
- 15 additional course or special investigation credits or research credits in major area
- 9 course credits (three courses) in minor area
- 18 credits of dissertation research

The total number of credits above these minimum requirements will depend on the student's background, academic achievement, and dissertation topic. This decision will be made in consultation with the major advisor.

Each student must complete 8 courses towards the *Major Concentration* and 3 courses towards the *Minor Concentration* for a **total of 11 Lecture Courses**, i.e., a minimum of 33 credits of post-baccalaureate coursework taken at Pitt (2XXX level or higher) or transferred in from post-baccalaureate study. The coursework should be comprised of lecture courses and not include seminar or research courses.

Independent of any credits transferred from prior post-baccalaureate study, each student must complete at least 9 credits (~3 courses) at Pitt. At least 3 of these credits (~1 course) must come from "CEE" designated courses.

- Up to 30 credits may be applied to the *Major Concentration* and/or *Minor Concentration* from previously completed post-baccalaureate study.

- A minor area of concentration can be within any approved coherent area of science or engineering at the University of Pittsburgh outside of CEE.

- Doctoral Research (CEE 3997 - RESEARCH, PH.D) may only be taken following successful completion of the PhD Preliminary Exam.

- At least 12 credits of the *Dissertation* credit may be taken as Doctoral Dissertation (CEE 3999 - PH.D. DISSERTATION) which may only be taken following successful completion of the PhD Dissertation Proposal Exam. Remaining *Dissertation* credit may be taken as Doctoral Research CEE 3997 - RESEARCH, PH.D or Doctoral Dissertation.

- All students must enroll in the departmental seminar (CEE 2085 - GRADUATE DEPARTMENTAL SEMINAR) every semester of full-time residency (i.e., full-time study in the PhD program).

Additional Information

Plan of Study

The PhD Plan of Study is prepared by the student with the aid of the student's faculty advisor during the student's first two terms of graduate study. It should be approved and signed by the faculty advisor, all other faculty members in the program area, the graduate coordinator, and the department chair. Copies should be made available to the student, the faculty advisor, and the academic coordinator. Any change in the Plan of Study must be approved by the faculty advisor and the academic coordinator, and should likewise be recorded.

PhD Examination Structure

All PhD candidates must pass the preliminary, comprehensive, and final oral examinations:

Preliminary Examination

The purpose of this examination is to determine the student's potential to complete the PhD program. It is organized by the advisor and faculty from the student's program area, before or sometime during the first two terms of the program.

Comprehensive Examination

All PhD students must take this examination toward the end of their course work. Students must submit a written proposal of their expected dissertation research and pass a presentation and comprehensive oral examination administered by the student's doctoral committee. The comprehensive examination committee will consist of the major advisor as chair, at least two faculty members from the student's program area within the Department of Civil and Environmental Engineering, and at least one faculty member from outside the Department of Civil and Environmental Engineering. The written proposal is recommended to be in the format of a standard federal research proposal (e.g., National Science Foundation) in terms of length, formatting, and technical content. A student must have a cumulative GPA of 3.0/4.0 or higher to be allowed to participate in the examination. The examination can be administered no sooner than 1 term (i.e., 4 months) following completion of the Preliminary Exam and no later than 2 terms (i.e., 8 months) prior to the Dissertation Defense.

Final Oral Examination

This is an oral defense of the student's PhD dissertation. The examination will be administered by the doctoral committee. The doctoral committee will consist of the major advisor as chair, at least two faculty members from the student's program area within the Department of Civil and Environmental Engineering, and at least one faculty member from outside the Department of Civil and Environmental Engineering.

Civil and Environmental Engineering - Advanced Infrastructure Systems - Transportation Engineering Specialty, PhD

PhD Track Requirements

Students pursuing the PhD must complete a minimum of 72 credits, including the following:

- 24 course credits (8 courses) in major area
- 15 additional course or special investigation credits or research credits in major area
- 9 course credits (three courses) in minor area
- 18 credits of dissertation research

The total number of credits above these minimum requirements will depend on the student's background, academic achievement, and dissertation topic. This decision will be made in consultation with the major advisor.

Each student must complete 8 courses towards the *Major Concentration* and 3 courses towards the *Minor Concentration* for a **total of 11 Lecture Courses**, i.e., a minimum of 33 credits of post-baccalaureate coursework taken at Pitt (2XXX level or higher) or transferred in from post-baccalaureate study. The coursework should be comprised of lecture courses and not include seminar or research courses.

Independent of any credits transferred from prior post-baccalaureate study, each student must complete at least 9 credits (~3 courses) at Pitt. At least 3 of these credits (~1 course) must come from "CEE" designated courses.

- Up to 30 credits may be applied to the *Major Concentration* and/or *Minor Concentration* from previously completed post-baccalaureate study.

- A minor area of concentration can be within any approved coherent area of science or engineering at the University of Pittsburgh outside of CEE.

- Doctoral Research (CEE 3997 - RESEARCH, PH.D) may only be taken following successful completion of the PhD Preliminary Exam.

- At least 12 credits of the *Dissertation* credit may be taken as Doctoral Dissertation (CEE 3999 - PH.D. DISSERTATION) which may only be taken following successful completion of the PhD Dissertation Proposal Exam. Remaining *Dissertation* credit may be taken as Doctoral Research CEE 3997 - RESEARCH, PH.D or Doctoral Dissertation.

- All students must enroll in the departmental seminar (CEE 2085 - GRADUATE DEPARTMENTAL SEMINAR) every semester of full-time residency (i.e., full-time study in the PhD program).

Additional Information

Plan of Study

The PhD Plan of Study is prepared by the student with the aid of the student's faculty advisor during the student's first two terms of graduate study. It should be approved and signed by the faculty advisor, all other faculty members in the program area, the graduate coordinator, and the department chair. Copies should be made available to the student, the faculty advisor, and the academic coordinator. Any change in the Plan of Study must be approved by the faculty advisor and the academic coordinator, and should likewise be recorded.

PhD Examination Structure

All PhD candidates must pass the preliminary, comprehensive, and final oral examinations:

Preliminary Examination

The purpose of this examination is to determine the student's potential to complete the PhD program. It is organized by the advisor and faculty from the student's program area, before or sometime during the first two terms of the program.

Comprehensive Examination

All PhD students must take this examination toward the end of their course work. Students must submit a written proposal of their expected dissertation research and pass a presentation and comprehensive oral examination administered by the student's doctoral committee. The comprehensive examination committee will consist of the major advisor as chair, at least two faculty members from the student's program area within the Department of Civil and Environmental Engineering, and at least one faculty member from outside the Department of Civil and Environmental Engineering. The written proposal is recommended to be in the format of a standard federal research proposal (e.g., National Science Foundation) in terms of length, formatting, and technical content. A student must have a cumulative GPA of 3.0/4.0 or higher to be allowed to participate in the examination. The examination can be administered no sooner than 1 term (i.e., 4 months) following completion of the Preliminary Exam and no later than 2 terms (i.e., 8 months) prior to the Dissertation Defense.

Final Oral Examination

This is an oral defense of the student's PhD dissertation. The examination will be administered by the doctoral committee. The doctoral committee will consist of the major advisor as chair, at least two faculty members from the student's program area within the Department of Civil and Environmental Engineering, and at least one faculty member from outside the Department of Civil and Environmental Engineering.

Civil and Environmental Engineering - Sustainability and Environmental Engineering - Environmental Engineering Specialty, PhD

PhD Track Requirements

Students pursuing the PhD must complete a minimum of 72 credits, including the following:

- 24 course credits (8 courses) in major area
- 15 additional course or special investigation credits or research credits in major area
- 9 course credits (three courses) in minor area
- 18 credits of dissertation research

The total number of credits above these minimum requirements will depend on the student's background, academic achievement, and dissertation topic. This decision will be made in consultation with the major advisor.

Each student must complete 8 courses towards the *Major Concentration* and 3 courses towards the *Minor Concentration* for a **total of 11 Lecture Courses**, i.e., a minimum of 33 credits of post-baccalaureate coursework taken at Pitt (2XXX level or higher) or transferred in from post-baccalaureate study. The coursework should be comprised of lecture courses and not include seminar or research courses.

Independent of any credits transferred from prior post-baccalaureate study, each student must complete at least 9 credits (~3 courses) at Pitt. At least 3 of these credits (~1 course) must come from "CEE" designated courses.

- Up to 30 credits may be applied to the *Major Concentration* and/or *Minor Concentration* from previously completed post-baccalaureate study.

- A minor area of concentration can be within any approved coherent area of science or engineering at the University of Pittsburgh outside of CEE.

- Doctoral Research (CEE 3997 - RESEARCH, PH.D) may only be taken following successful completion of the PhD Preliminary Exam.

- At least 12 credits of the *Dissertation* credit may be taken as Doctoral Dissertation (CEE 3999 - PH.D. DISSERTATION) which may only be taken following successful completion of the PhD Dissertation Proposal Exam. Remaining *Dissertation* credit may be taken as Doctoral Research CEE 3997 - RESEARCH, PH.D or Doctoral Dissertation.

- All students must enroll in the departmental seminar (CEE 2085 - GRADUATE DEPARTMENTAL SEMINAR) every semester of full-time residency (i.e., full-time study in the PhD program).

Additional Information

Plan of Study

The PhD Plan of Study is prepared by the student with the aid of the student's faculty advisor during the student's first two terms of graduate study. It should be approved and signed by the faculty advisor, all other faculty members in the program area, the graduate coordinator, and the department chair. Copies should be made available to the student, the faculty advisor, and the academic coordinator. Any change in the Plan of Study must be approved by the faculty advisor and the academic coordinator, and should likewise be recorded.

PhD Examination Structure

All PhD candidates must pass the preliminary, comprehensive, and final oral examinations:

Preliminary Examination

The purpose of this examination is to determine the student's potential to complete the PhD program. It is organized by the advisor and faculty from the student's program area, before or sometime during the first two terms of the program.

Comprehensive Examination

All PhD students must take this examination toward the end of their course work. Students must submit a written proposal of their expected dissertation research and pass a presentation and comprehensive oral examination administered by the student's doctoral committee. The comprehensive examination committee will consist of the major advisor as chair, at least two faculty members from the student's program area within the Department of Civil and Environmental Engineering, and at least one faculty member from outside the Department of Civil and Environmental Engineering. The written proposal is recommended to be in the format of a standard federal research proposal (e.g., National Science Foundation) in terms of length, formatting, and technical content. A student must have a cumulative GPA of 3.0/4.0 or higher to be allowed to participate in the examination. The examination can be administered no sooner than 1 term (i.e., 4 months) following completion of the Preliminary Exam and no later than 2 terms (i.e., 8 months) prior to the Dissertation Defense.

Final Oral Examination

This is an oral defense of the student's PhD dissertation. The examination will be administered by the doctoral committee. The doctoral committee will consist of the major advisor as chair, at least two faculty members from the student's program area within the Department of Civil and Environmental Engineering, and at least one faculty member from outside the Department of Civil and Environmental Engineering.

Civil and Environmental Engineering - Sustainability and Environmental Engineering - Sustainable Engineering Specialty, PhD

PhD Track Requirements

Students pursuing the PhD must complete a minimum of 72 credits, including the following:

- 24 course credits (8 courses) in major area
- 15 additional course or special investigation credits or research credits in major area
- 9 course credits (three courses) in minor area
- 18 credits of dissertation research

The total number of credits above these minimum requirements will depend on the student's background, academic achievement, and dissertation topic. This decision will be made in consultation with the major advisor.

Each student must complete 8 courses towards the *Major Concentration* and 3 courses towards the *Minor Concentration* for a **total of 11 Lecture Courses**, i.e., a minimum of 33 credits of post-baccalaureate coursework taken at Pitt (2XXX level or higher) or transferred in from post-baccalaureate study. The coursework should be comprised of lecture courses and not include seminar or research courses.

Independent of any credits transferred from prior post-baccalaureate study, each student must complete at least 9 credits (~3 courses) at Pitt. At least 3 of these credits (~1 course) must come from "CEE" designated courses.

- Up to 30 credits may be applied to the *Major Concentration* and/or *Minor Concentration* from previously completed post-baccalaureate study.

- A minor area of concentration can be within any approved coherent area of science or engineering at the University of Pittsburgh outside of CEE.

- Doctoral Research (CEE 3997 - RESEARCH, PH.D) may only be taken following successful completion of the PhD Preliminary Exam.

- At least 12 credits of the *Dissertation* credit may be taken as Doctoral Dissertation (CEE 3999 - PH.D. DISSERTATION) which may only be taken following successful completion of the PhD Dissertation Proposal Exam. Remaining *Dissertation* credit may be taken as Doctoral Research CEE 3997 - RESEARCH, PH.D or Doctoral Dissertation.

- All students must enroll in the departmental seminar (CEE 2085 - GRADUATE DEPARTMENTAL SEMINAR) every semester of full-time residency (i.e., full-time study in the PhD program).

Additional Information

Plan of Study

The PhD Plan of Study is prepared by the student with the aid of the student's faculty advisor during the student's first two terms of graduate study. It should be approved and signed by the faculty advisor, all other faculty members in the program area, the graduate coordinator, and the department chair. Copies should be made available to the student, the faculty advisor, and the academic coordinator. Any change in the Plan of Study must be approved by the faculty advisor and the academic coordinator, and should likewise be recorded.

PhD Examination Structure

All PhD candidates must pass the preliminary, comprehensive, and final oral examinations:

Preliminary Examination

The purpose of this examination is to determine the student's potential to complete the PhD program. It is organized by the advisor and faculty from the student's program area, before or sometime during the first two terms of the program.

Comprehensive Examination

All PhD students must take this examination toward the end of their course work. Students must submit a written proposal of their expected dissertation research and pass a presentation and comprehensive oral examination administered by the student's doctoral committee. The comprehensive examination committee will consist of the major advisor as chair, at least two faculty members from the student's program area within the Department of Civil and Environmental Engineering, and at least one faculty member from outside the Department of Civil and Environmental Engineering. The written proposal is recommended to be in the format of a standard federal research proposal (e.g., National Science Foundation) in terms of length, formatting, and technical content. A student must have a cumulative GPA of 3.0/4.0 or higher to be allowed to participate in the examination. The examination can be administered no sooner than 1 term (i.e., 4 months) following completion of the Preliminary Exam and no later than 2 terms (i.e., 8 months) prior to the Dissertation Defense.

Final Oral Examination

This is an oral defense of the student's PhD dissertation. The examination will be administered by the doctoral committee. The doctoral committee will consist of the major advisor as chair, at least two faculty members from the student's program area within the Department of Civil and Environmental Engineering, and at least one faculty member from outside the Department of Civil and Environmental Engineering.

Civil and Environmental Engineering - Sustainability and Environmental Engineering - Water Resources Engineering Specialty, PhD

PhD Track Requirements

Students pursuing the PhD must complete a minimum of 72 credits, including the following:

- 24 course credits (8 courses) in major area
- 15 additional course or special investigation credits or research credits in major area
- 9 course credits (three courses) in minor area
- 18 credits of dissertation research

The total number of credits above these minimum requirements will depend on the student's background, academic achievement, and dissertation topic. This decision will be made in consultation with the major advisor.

Each student must complete 8 courses towards the *Major Concentration* and 3 courses towards the *Minor Concentration* for a **total of 11 Lecture Courses**, i.e., a minimum of 33 credits of post-baccalaureate coursework taken at Pitt (2XXX level or higher) or transferred in from post-baccalaureate study. The coursework should be comprised of lecture courses and not include seminar or research courses.

Independent of any credits transferred from prior post-baccalaureate study, each student must complete at least 9 credits (~3 courses) at Pitt. At least 3 of these credits (~1 course) must come from "CEE" designated courses.

- Up to 30 credits may be applied to the *Major Concentration* and/or *Minor Concentration* from previously completed post-baccalaureate study.

- A minor area of concentration can be within any approved coherent area of science or engineering at the University of Pittsburgh outside of CEE.

- Doctoral Research (CEE 3997 - RESEARCH, PH.D) may only be taken following successful completion of the PhD Preliminary Exam.

- At least 12 credits of the *Dissertation* credit may be taken as Doctoral Dissertation (CEE 3999 - PH.D. DISSERTATION) which may only be taken following successful completion of the PhD Dissertation Proposal Exam. Remaining *Dissertation* credit may be taken as Doctoral Research CEE 3997 - RESEARCH, PH.D or Doctoral Dissertation.

- All students must enroll in the departmental seminar (CEE 2085 - GRADUATE DEPARTMENTAL SEMINAR) every semester of full-time residency (i.e., full-time study in the PhD program).

Additional Information

Plan of Study

The PhD Plan of Study is prepared by the student with the aid of the student's faculty advisor during the student's first two terms of graduate study. It should be approved and signed by the faculty advisor, all other faculty members in the program area, the graduate coordinator, and the department chair. Copies should be made available to the student, the faculty advisor, and the academic coordinator. Any change in the Plan of Study must be approved by the faculty advisor and the academic coordinator, and should likewise be recorded.

PhD Examination Structure

All PhD candidates must pass the preliminary, comprehensive, and final oral examinations:

Preliminary Examination

The purpose of this examination is to determine the student's potential to complete the PhD program. It is organized by the advisor and faculty from the student's program area, before or sometime during the first two terms of the program.

Comprehensive Examination

All PhD students must take this examination toward the end of their course work. Students must submit a written proposal of their expected dissertation research and pass a presentation and comprehensive oral examination administered by the student's doctoral committee. The comprehensive examination committee will consist of the major advisor as chair, at least two faculty members from the student's program area within the Department of Civil and Environmental Engineering, and at least one faculty member from outside the Department of Civil and Environmental Engineering. The written proposal is recommended to be in the format of a standard federal research proposal (e.g., National Science Foundation) in terms of length, formatting, and technical content. A student must have a cumulative GPA of 3.0/4.0 or higher to be allowed to participate in the examination. The examination can be administered no sooner than 1 term (i.e., 4 months) following completion of the Preliminary Exam and no later than 2 terms (i.e., 8 months) prior to the Dissertation Defense.

Final Oral Examination

This is an oral defense of the student's PhD dissertation. The examination will be administered by the doctoral committee. The doctoral committee will consist of the major advisor as chair, at least two faculty members from the student's program area within the Department of Civil and Environmental Engineering, and at least one faculty member from outside the Department of Civil and Environmental Engineering.

Joint Degree

Civil Engineering/Mathematics, MSCE/MS

The general requirements for the two options for the Master of Science in Civil and Environmental Engineering/Mathematics degree (thesis and professional) are detailed below:

Thesis Option: 24 course credits (eight courses) minimum and thesis (6 credits), with comprehensive and final examinations.

Professional Option: 30 course credits (10 courses) minimum

Students supported as graduate research assistants and all students intending to continue for a PhD degree are required to pursue the thesis option. The professional option is not available to students supported as graduate research or teaching assistants.

MS Final Examination

Students pursuing the thesis and project MS options must take and pass both a comprehensive examination and a final oral examination.

Comprehensive Examination

This examination is given to all students during the last term of the program. It may be either an oral examination or, at the recommendation of the area faculty, a written examination. It is administered by an MS committee made up of the faculty advisor (as chair), plus a minimum of two other faculty members from fields related to the student's interest. If the result of the examination is unsatisfactory, subsequent action is at the discretion of the MS committee.

Final Oral Examination

The purpose of this examination is to evaluate the student's MS thesis or project and/or related course work. The examination is administered by the MS committee, chaired by the student's major advisor.

Master's

Civil and Environmental Engineering - Construction Management Area, MSCE

Requirements

The general requirements for the option for the Master of Science in Civil and Environmental Engineering - Construction Management Area degree (thesis and professional) are detailed below:

Thesis Option: 24 course credits (eight courses) minimum and thesis (6 credits), with thesis defense

Professional Option: 30 course credits (10 courses) minimum

Students supported as graduate research assistants and all students intending to continue for a PhD degree are required to pursue the thesis option. The professional option is not available to students supported as graduate research or teaching assistants.

The detailed course requirements for the two degree options are as follows:

MS Thesis Degree Requirements

- a) 3 credits - CEE 2201 - CONSTRUCTION COST ENGINEERING or Equivalent
- b) 3 credits - CEE 2202 - CONSTRUCTION SCHEDULING or Equivalent
- c) 3 credits - CEE 2203 - CONSTRUCT METHODS AND EQUIPMENT or Equivalent
- d) 3 credits - CEE 2204 - CONSTRUCTION LAW AND RISK MGMNT or Equivalent
- e) 3 credits - CEE 2205 - CONSTRUCT FINANCE & COST CONTROL or Equivalent
- f) 3 credits - CEE 2206 - CONSTRUCT & COST OF ELEC SUPPLY - OR - CEE 2207 - CONSTRUCT & COST OF MECHL SYSTEMS or Equivalent
- g) 6 credits - CEE 2999 - M.S. THESIS

Thesis Defense

Students pursuing the MS Thesis Option must pass an oral presentation and defense of their completed thesis, administered by the student's thesis committee. The committee shall be comprised of 3 or more members (including the student's graduate advisor). The chair of the committee and at least one other committee member must be appointed to the University of Pittsburgh Graduate Faculty.

Professional MS Degree Requirements

- a) 3 credits - CEE 2201 - CONSTRUCTION COST ENGINEERING or Equivalent
- b) 3 credits - CEE 2202 - CONSTRUCTION SCHEDULING or Equivalent
- c) 3 credits - CEE 2203 - CONSTRUCT METHODS AND EQUIPMENT or Equivalent
- d) 3 credits - CEE 2204 - CONSTRUCTION LAW AND RISK MGMNT or Equivalent
- e) 3 credits - CEE 2205 - CONSTRUCT FINANCE & COST CONTROL or Equivalent
- f) 3 credits - CEE 2206 - CONSTRUCT & COST OF ELEC SUPPLY - OR - CEE 2207 - CONSTRUCT & COST OF MECHL SYSTEMS or Equivalent
- g) 12 credits - Graduate Technical Electives

Notes: Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996; although no more than six credits of CEE 2996 may count toward the degree program coursework requirements).

Civil and Environmental Engineering - Environmental Engineering Area, MSCE

Requirements

The general requirements for the option for the Master of Science in Civil and Environmental Engineering - Environmental Engineering Area degree (thesis and professional) are detailed below:

Thesis Option: 24 course credits (eight courses) minimum and thesis (6 credits), with thesis defense

Professional Option: 30 course credits (10 courses) minimum

Students supported as graduate research assistants and all students intending to continue for a PhD degree are required to pursue the thesis option. The professional option is not available to students supported as graduate research or teaching assistants.

The detailed course requirements for the two degree options are as follows:

MS Thesis Degree Requirements

- a) 3 credits - CEE 2500 - ENVRNMNTL ENGRG MICROBIOL or Equivalent
- b) 3 credits - CEE 2501 - ENVIRONMENTAL ENGINEERING CHEMISTRY or Equivalent
- c) 3 credits - CEE 2502 - PHYSICAL-CHEMICAL PRINCIPLES IN ENVIRONMENTAL ENGINEERING or Equivalent
- d) 3 credits - CEE 3501 - ENVRNMNTL ENGRG PROCESSES 1 or Equivalent
- e) 3 credits - CEE 3502 - ENVRNMNTL ENGRG PROCESSES 2 or Equivalent
- f) 9 credits - Graduate Technical Electives

Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996; although no more than six credits of CEE 2996 may count towards the degree program coursework requirements).

- g) 6 credits - MS Thesis CEE 2999 - M.S. THESIS

Thesis Defense

Students pursuing the MS Thesis Option must pass an oral presentation and defense of their completed thesis, administered by the student's thesis committee. The committee shall be comprised of 3 or more members (including the student's graduate advisor). The chair of the committee and at least one other committee member must be appointed to the University of Pittsburgh Graduate Faculty.

Professional MS Degree Requirements

- a) 3 credits - CEE 2500 - ENVRNMNTL ENGRG MICROBIOL or Equivalent
- b) 3 credits - CEE 2501 - ENVIRONMENTAL ENGINEERING CHEMISTRY or Equivalent
- c) 3 credits - CEE 2502 - PHYSICAL-CHEMICAL PRINCIPLES IN ENVIRONMENTAL ENGINEERING or Equivalent
- d) 3 credits - CEE 3501 - ENVRNMNTL ENGRG PROCESSES 1 or Equivalent
- e) 3 credits - CEE 3502 - ENVRNMNTL ENGRG PROCESSES 2 or Equivalent
- f) 15 credits - Graduate Technical Electives

Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996; although no more than six credits of CEE 2996 may count towards the degree program coursework requirements).

Civil and Environmental Engineering - Geotechnical Area, MSCE

Requirements

The general requirements for the option for the Master of Science in Civil and Environmental Engineering - Geotechnical Engineering Area degree (thesis and professional) are detailed below:

Thesis Option: 24 course credits (eight courses) minimum and thesis (6 credits), with thesis defense

Professional Option: 30 course credits (10 courses) minimum

Students supported as graduate research assistants and all students intending to continue for a PhD degree are required to pursue the thesis option. The professional option is not available to students supported as graduate research or teaching assistants.

The detailed course requirements for the two degree options are as follows:

MS Thesis Degree Requirements

- a) 3 credits - CEE 2800 - ENGINEERING GEOLOGY or Equivalent
- b) 3 credits - CEE 2801 - ADVANCED SOIL MECHANICS or Equivalent
- c) 3 credits - CEE 2802 - GEOTECHNICAL ANALYSIS or Equivalent
- d) 3 credits - CEE 3805 - ROCK MECHANICS or Equivalent
- e) 12 credits - Graduate Technical Electives

Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996; although no more than six credits of CEE 2996 may count towards the degree program coursework requirements).

- f) 6 credits - MS Thesis CEE 2999 - M.S. THESIS

Thesis Defense

Students pursuing the MS Thesis Option must pass an oral presentation and defense of their completed thesis, administered by the student's thesis committee. The committee shall be comprised of 3 or more members (including the student's graduate advisor). The chair of the committee and at least one other committee member must be appointed to the University of Pittsburgh Graduate Faculty.

Professional MS Degree Requirements

- a) 3 credits - CEE 2800 - ENGINEERING GEOLOGY or Equivalent
- b) 3 credits - CEE 2801 - ADVANCED SOIL MECHANICS or Equivalent
- c) 3 credits - CEE 2802 - GEOTECHNICAL ANALYSIS or Equivalent
- d) 3 credits - CEE 3805 - ROCK MECHANICS or Equivalent
- e) 18 credits - Graduate Technical Electives

Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996; although no more than six credits of CEE 2996 may count towards the degree program coursework requirements).

Civil and Environmental Engineering - Pavement Engineering Area, MSCE

Requirements

The general requirements for the option for the Master of Science in Civil and Environmental Engineering - Pavement Engineering Area degree (thesis and professional) are detailed below:

Thesis Option: 24 course credits (eight courses) minimum and thesis (6 credits), with thesis defense

Professional Option: 30 course credits (10 courses) minimum

Students supported as graduate research assistants and all students intending to continue for a PhD degree are required to pursue the thesis option. The professional option is not available to students supported as graduate research or teaching assistants.

The detailed course requirements for the two degree options are as follows:

MS Thesis Degree Requirements

- a) 3 credits - CEE 2714 - PAVEMENT DESIGN AND ANALYSIS or Equivalent
- b) 3 credits - CEE 2715 - PAVEMENT MAINTENANCE AND REHAB or Equivalent
- c) 3 credits - CEE 2717 - COMPONENTS, PROPERTIES AND DESIGN OF PORTLAND CEMENT CONCRETE or Equivalent -- OR -- CEE 2718 - ADVANCED CONSTRUCTION AND BITUMINOUS MATERIALS or Equivalent
- d) 3 credits - CEE 3714 - ADVANCED PAVEMENT DESIGN & ANAL or Equivalent
- e) 12 credits - Graduate Technical Electives

Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996; although no more than six credits of CEE 2996 may count towards the degree program coursework requirements).

- f) 6 credits - MS Thesis CEE 2999 - M.S. THESIS

Thesis Defense

Students pursuing the MS Thesis Option must pass an oral presentation and defense of their completed thesis, administered by the student's thesis committee. The committee shall be comprised of 3 or more members (including the student's graduate advisor). The chair of the committee and at least one other committee member must be appointed to the University of Pittsburgh Graduate Faculty.

Professional MS Degree Requirements

- a) 3 credits - CEE 2714 - PAVEMENT DESIGN AND ANALYSIS or Equivalent
- b) 3 credits - CEE 2715 - PAVEMENT MAINTENANCE AND REHAB or Equivalent
- c) 3 credits - CEE 2717 - COMPONENTS, PROPERTIES AND DESIGN OF PORTLAND CEMENT CONCRETE or Equivalent -- OR -- CEE 2718 - ADVANCED CONSTRUCTION AND BITUMINOUS MATERIALS or Equivalent
- d) 3 credits - CEE 3714 - ADVANCED PAVEMENT DESIGN & ANAL or Equivalent
- e) 18 credits - Graduate Technical Electives

Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996; although no more than six credits of CEE 2996 may count towards the degree program coursework requirements).

Civil and Environmental Engineering - Structural Engineering and Mechanics Area, MSCE

Requirements

The general requirements for the option for the Master of Science in Civil and Environmental Engineering - Structural Engineering and Mechanics Area degree (thesis and professional) are detailed below:

Thesis Option: 24 course credits (eight courses) minimum and thesis (6 credits), with thesis defense

Professional Option: 30 course credits (10 courses) minimum

Students supported as graduate research assistants and all students intending to continue for a PhD degree are required to pursue the thesis option. The professional option is not available to students supported as graduate research or teaching assistants.

The detailed course requirements for the two degree options are as follows:

MS Thesis Degree Requirements

a) 3 credits - CEE 2320 - ADVANCED MECHANICS OF MATERIALS or CEE 2321 - ELASTICITY, PLASTICITY AND FRACTURE MECHANICS

b) 3 credits - CEE 2333 - INTRODUCTION TO FINITE ELEMENTS or Equivalent

c) 3 credits - SEM Graduate Design Elective CEE 2340 - CONCRETE STRUCTURES 2, CEE 2341 - STEEL STRUCTURES 2, CEE 2343 - PRESTRESSED CONCRETE, CEE 2346 - REPAIR AND RETROFIT OF STRUCTURES or CEE 2347 - BRIDGE ENGINEERING

d) 6 credits - SEM Graduate Technical Elective CEE 2330 - ADVANCED STRUCTURAL ANALYSIS, CEE 2343 - PRESTRESSED CONCRETE, CEE 2347 - BRIDGE ENGINEERING, CEE 2360 - DYNAMICS OF STRUCTURES, CEE 2370 - INTRODUCTION TO NONDESTRUCTIVE EVALUATION AND STRUCTURAL HEALTH MONITORING, CEE 3330 - STRUCTURAL STABILITY, or CEE 3333 - ADVANCED FINITE ELEMENT METHODS

Note: CEE 2330 - ADVANCED STRUCTURAL ANALYSIS may not be taken for graduate credit if the student's undergraduate program includes an equivalent course.

e) 9 credits - Graduate Technical Electives

Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996; although no more than six credits of CEE 2996 may count towards the degree program coursework requirements).

f) 6 credits - MS Thesis CEE 2999 - M.S. THESIS

Thesis Defense

Students pursuing the MS Thesis Option must pass an oral presentation and defense of their completed thesis, administered by the student's thesis committee. The committee shall be comprised of 3 or more members (including the student's graduate advisor). The chair of the committee and at least one other committee member must be appointed to the University of Pittsburgh Graduate Faculty.

Professional MS Degree Requirements

a) 3 credits - CEE 2320 - ADVANCED MECHANICS OF MATERIALS or CEE 2321 - ELASTICITY, PLASTICITY AND FRACTURE MECHANICS

b) 3 credits - CEE 2333 - INTRODUCTION TO FINITE ELEMENTS or Equivalent

c) 3 credits - SEM Graduate Design Elective CEE 2340 - CONCRETE STRUCTURES 2, CEE 2341 - STEEL STRUCTURES 2, CEE 2343 - PRESTRESSED CONCRETE, CEE 2346 - REPAIR AND RETROFIT OF STRUCTURES or CEE 2347 - BRIDGE ENGINEERING

d) 6 credits - SEM Graduate Technical Elective CEE 2330 - ADVANCED STRUCTURAL ANALYSIS, CEE 2343 - PRESTRESSED CONCRETE, CEE 2347 - BRIDGE ENGINEERING, CEE 2360 - DYNAMICS OF STRUCTURES, CEE 2370 - INTRODUCTION TO NONDESTRUCTIVE EVALUATION AND STRUCTURAL HEALTH MONITORING, CEE 3330 - STRUCTURAL STABILITY, or CEE 3333 - ADVANCED FINITE ELEMENT METHODS

Note: CEE 2330 - ADVANCED STRUCTURAL ANALYSIS may not be taken for graduate credit if the student's undergraduate program includes an equivalent course.

e) 15 credits - Graduate Technical Electives

Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996; although no more than six credits of CEE 2996 may count towards the degree program coursework requirements).

Civil and Environmental Engineering - Sustainable Engineering Area, MSCE

Requirements

The general requirements for the option for the Master of Science in Civil and Environmental Engineering - Sustainable Engineering Area degree (thesis and professional) are detailed below:

Thesis Option: 24 course credits (eight courses) minimum and thesis (6 credits), with thesis defense

Professional Option: 30 course credits (10 courses) minimum

Students supported as graduate research assistants and all students intending to continue for a PhD degree are required to pursue the thesis option. The professional option is not available to students supported as graduate research or teaching assistants.

The detailed course requirements for the two degree options are as follows:

MS Thesis Degree Requirements

a) 3 credits - CEE 2609 - LIFE CYCLE ASSESSMENT METHODS AND TOOLS or Equivalent

b) 3 credits - CEE 2610 - ENGINEERING AND SUSTAINABLE DEVELOPMENT or Equivalent

c) 3 credits - CEE 2620 - ADVANCED GREEN BUILDING AND CONSTRUCTION or Equivalent

d) 15 credits - Graduate Technical Electives

Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996; although no more than six credits of CEE 2996 may count towards the degree program coursework requirements).

f) 6 credits - MS Thesis CEE 2999 - M.S. THESIS

Thesis Defense

Students pursuing the MS Thesis Option must pass an oral presentation and defense of their completed thesis, administered by the student's thesis committee. The committee shall be comprised of 3 or more members (including the student's graduate advisor). The chair of the committee and at least one other committee member must be appointed to the University of Pittsburgh Graduate Faculty.

Professional MS Degree Requirements

- a) 3 credits - CEE 2609 - LIFE CYCLE ASSESSMENT METHODS AND TOOLS or Equivalent
- b) 3 credits - CEE 2610 - ENGINEERING AND SUSTAINABLE DEVELOPMENT or Equivalent
- c) 3 credits - CEE 2620 - ADVANCED GREEN BUILDING AND CONSTRUCTION or Equivalent
- d) 21 credits - Graduate Technical Electives

Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996; although no more than six credits of CEE 2996 may count towards the degree program coursework requirements).

Civil and Environmental Engineering - Transportation Engineering Area, MSCE

Requirements

The general requirements for the option for the Master of Science in Civil and Environmental Engineering - Transportation Engineering Area degree (thesis and professional) are detailed below:

Thesis Option: 24 course credits (eight courses) minimum and thesis (6 credits), with thesis defense

Professional Option: 30 course credits (10 courses) minimum

Students supported as graduate research assistants and all students intending to continue for a PhD degree are required to pursue the thesis option. The professional option is not available to students supported as graduate research or teaching assistants.

The detailed course requirements for the two degree options are as follows:

MS Thesis Degree Requirements

- a) 3 credits - CEE 2700 - TRAFFIC MGMT AND OPERATIONS or Equivalent
- b) 3 credits - CEE 2710 - TRAFFIC CONTROL SYSTEMS or Equivalent
- c) 3 credits - CEE 2720 - URBAN TRANSPORTATION PLANNING or Equivalent
- d) 3 credits - CEE 2714 - PAVEMENT DESIGN AND ANALYSIS or CEE 2730 - HIGHWAY ENGINEERING or Equivalent
- e) 3 credits - CEE 2750 - PROJECT DEVELOPMENT AND IMPLEMENTATION
- f) 9 credits - Graduate Technical Electives

Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996; although no more than six credits of CEE 2996 may count towards the degree program coursework requirements).

- g) 6 credits - MS Thesis CEE 2999 - M.S. THESIS

Thesis Defense

Students pursuing the MS Thesis Option must pass an oral presentation and defense of their completed thesis, administered by the student's thesis committee. The committee shall be comprised of 3 or more members (including the student's graduate advisor). The chair of the committee and at least one other committee member must be appointed to the University of Pittsburgh Graduate Faculty.

Professional MS Degree Requirements

- a) 3 credits - CEE 2700 - TRAFFIC MGMNT AND OPERATIONS or Equivalent
- b) 3 credits - CEE 2710 - TRAFFIC CONTROL SYSTEMS or Equivalent
- c) 3 credits - CEE 2720 - URBAN TRANSPORTATION PLANNING or Equivalent
- d) 3 credits - CEE 2714 - PAVEMENT DESIGN AND ANALYSIS or CEE 2730 - HIGHWAY ENGINEERING or Equivalent
- e) 3 credits - CEE 2750 - PROJECT DEVELOPMENT AND IMPLEMENTATION
- f) 15 credits - Graduate Technical Electives

Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996; although no more than six credits of CEE 2996 may count towards the degree program coursework requirements).

Civil and Environmental Engineering - Water Resources Engineering Area, MSCE

Requirements

The general requirements for the option for the Master of Science in Civil and Environmental Engineering - Water Resources Engineering Area degree (thesis and professional) are detailed below:

Thesis Option: 24 course credits (eight courses) minimum and thesis (6 credits), with thesis defense

Professional Option: 30 course credits (10 courses) minimum

Students supported as graduate research assistants and all students intending to continue for a PhD degree are required to pursue the thesis option. The professional option is not available to students supported as graduate research or teaching assistants.

The detailed course requirements for the two degree options are as follows:

MS Thesis Degree Requirements

- a) 3 credits - CEE 3408 - ADVANCED ENVIRONMENTAL FLUID MECHANICS or Equivalent
- b) 3 credits - CEE 3414 - ADVANCED HYDROLOGY or Equivalent
- c) 3 credits from either CEE 2416 - SEDIMENT TRANSPORT or Equivalent -- OR -- CEE 3416 - RIVER MECHANICS AND MORPHODYNAMICS or Equivalent
- d) 3 credits - CEE 2410 - WATER RESOURCES ENGINEERING
- e) 12 credits - Graduate Technical Electives

Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996; although no more than six credits of CEE 2996 may count towards the degree program coursework requirements).

- f) 6 credits - MS Thesis CEE 2999 - M.S. THESIS

Thesis Defense

Students pursuing the MS Thesis Option must pass an oral presentation and defense of their completed thesis, administered by the student's thesis committee. The committee shall be comprised of 3 or more members (including the student's graduate advisor). The chair of the committee and at least one other committee member must be appointed to the University of Pittsburgh Graduate Faculty.

Professional MS Degree Requirements

- a) 3 credits - CEE 3408 - ADVANCED ENVIRONMENTAL FLUID MECHANICS or Equivalent
- b) 3 credits - CEE 3414 - ADVANCED HYDROLOGY or Equivalent
- c) 3 credits from either CEE 2416 - SEDIMENT TRANSPORT or Equivalent -- OR -- CEE 3416 - RIVER MECHANICS AND MORPHODYNAMICS or Equivalent
- d) 3 credits - CEE 2410 - WATER RESOURCES ENGINEERING

Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996; although no more than six credits of CEE 2996 may count towards the degree program coursework requirements).

- e) 18 credits - Graduate Technical Electives

Graduate Technical Electives may include any advisor-approved program-related graduate course (i.e., course numbers 2XXX or 3XXX), including guided special investigations (CEE 2996; although no more than six credits of CEE 2996 may count towards the degree program coursework requirements).

Department of Electrical and Computer Engineering

Contact Information

Department Chair: Alan D. George
Main Office: 1238 Benedum Hall
412-624-8002
Fax: 412-624-8003
E-mail: ecemain@pitt.edu
<http://www.engineering.pitt.edu/ECE/>

Additional information concerning the Electrical and Computer Engineering graduate program may be obtained from Sandy Weisberg, Electrical and Computer Engineering Program Administrator. Ms. Weisberg is located at 1238 Benedum Hall, 3700 O'Hara Street, Pittsburgh, PA 15261. Alternately, you may contact her via phone at 412-642-8001, fax at 412-624-8003, or email ecemain@pitt.edu.

Graduate Degree Programs

The Department of Electrical and Computer Engineering offers a program of graduate study and research for master's and doctoral degree students whose career choice is oriented toward basic or applied research in industry, government, or academic institutions. Degrees awarded are the Master of Science in Electrical and Computer Engineering and the Doctor of Philosophy in Electrical and Computer Engineering. Course work and faculty/student research in the graduate Electrical Engineering program are concentrated in the following four areas:

Computer Engineering
Optical and Electronic Devices
Electric Power Engineering
Signal Processing and Systems

and include research in computer architecture, reconfigurable and high-performance computing, computer-aided design (CAD), very-large-scale integrated (VLSI) design, optical interfacing, embedded systems, parallel processing architectures, networking, photonic and electronic devices, plasmonics, quantum photonic devices, micro/nanorobotics and systems, fiber optics, ultrafast laser processing, 2D/low-dimensional materials and devices, semiconductor device modeling and characterization, power electronics, pattern recognition, biomedical image processing, speech processing, statistical signal processing, wavelets, intelligent and neutral control, human-centered control, networked control, radio-frequency identification (RFID) and tags, electric power systems analysis, simulation and modeling: transmission, distribution systems and technologies, real-time control of power systems, renewable energy interconnections, and smart grid.

Graduate Admissions

http://www.engineering.pitt.edu/Departments/Electrical-Computer/_Content/Graduate/Electrical-and-Computer-Engineering-Graduate-Admissions/

Applicants for admission must submit transcripts of all college-level work, two letters of recommendation and scores on the verbal, quantitative and writing assessment-analytical sections of the Graduate Record Examination. International applicants whose first language is not English are required to submit the TOEFL administered by the Educational Testing Service with a minimum score of 80 (internet-based test). For awards consideration, applications must be completed by February 1.

Financial Aid

The Department of Electrical and Computer Engineering offers graduate students support in a variety of ways. Many full-time students are supported by graduate research assistantships or teaching assistantships. There are also several fellowships available for highly qualified graduate students.

Graduate Regulations

In addition to the general regulations of the Swanson School of Engineering, the electrical and computer engineering department has the following requirements:

Certificate

Electric Power Engineering Certificate

- Via Synchronous, Interactive, Distance-Enabled Delivery

The University of Pittsburgh Swanson School of Engineering has established an Electric Power Engineering Post-Baccalaureate/Graduate Certificate Program that rises to the challenge of meeting the nation's critical development needs for electric power engineering professionals. This is the only distance enabled program in electric power engineering that allows students to attend classroom lectures in real time, and also allows synchronous participation remotely via the Internet.

The program is deeply rooted in core electric power engineering principles and focuses on the expansion and enhanced reliability of electric power grid infrastructure through application of power electronics and advanced control technologies, as well as renewable energy integration and smart grids. Program content - combined with innovative distance-enabled delivery and collaborative program components - makes this program an attractive and unique choice in graduate engineering, particularly for individuals in industry/business. For additional information and to apply: www.engineering.pitt.edu/powercertificate

http://www.engineering.pitt.edu/App_shared/GainfulEmployCert/electric/Gainful_Employment_Disclosure.html

Certificate Curriculum

Credit-hours required: 15

Students may select any five of the following courses:

- ECE 2250 - POWER ELECTRONICS
- ECE 2646 - LINEAR SYSTEM THEORY
- ECE 2774 - POWER SYSTEMS ANALYSIS 2
- ECE 2777 - POWER SYSTEMS TRANSIENTS 1
- ECE 2778 - FACTS AND HVDC TECHNOLOGIES
- ECE 2780 - RENEWABLE AND ALTERNATIVE ENERGY
- ECE 2795 - SPECIAL TOPICS POWER Protective Relaying and Substation Automation
- ECE 2795 - SPECIAL TOPICS POWER Microgrid Concepts and Distributed Generation Technologies

- ECE 2795 - SPECIAL TOPICS POWER Power & Energy Industry Practices
- ECE 2795 - SPECIAL TOPICS POWER Electrical Distribution System Engineering & Analysis II
- ECE 2795 - SPECIAL TOPICS POWER Advanced Electric Machines and Drives
- ECE 2795 - SPECIAL TOPICS POWER Power Magnetic Devices

Additional Information

Admission Requirements

- BS in electrical engineering from an ABET-accredited university program (no industry experience required) *OR*
- BS in any engineering field, PLUS a minimum of three years of power industry experience
- Completed application via Apply Yourself , Pitt's online application portal
- At least two references preferred
- No GRE required
- Applications and references will be reviewed by the program director prior to admission

Click here to download our Electric Power Engineering Certificate informational one-sheet.

<https://www.youtube.com/watch?v=OPinGSYS6VI>

For more information about the Electric Power Engineering program, contact:

Gregory Reed, PhD , Program Director
 Director, Center for Energy and the GRID Institute
 Professor, Electrical & Computer Engineering
gfr3@pitt.edu

Doctoral

Electrical & Computer Engineering, PhD ECE

In Fall 2019, the Electrical Engineering, PhD was renamed to Electrical and Computer Engineering. Students currently enrolled will be moved over to the updated program name.

The objective of the PhD program is to achieve a high degree of competence in one major field in Electrical and Computer Engineering. A minimum of 72 credits after the BS degree and a dissertation are required for the PhD degree. The dissertation should embody an extended original and independent investigation of a problem of significance in Electrical and Computer Engineering. Of the credits, at least 18 must be in dissertation research (6 or more in ECE 3997 and 12 or more in ECE 3999), and at least 24 course credits must be attained beyond the minimum of 30 credits for the MS degree. The 24 credits must include:

1. At least 3 courses (9 credits) that are in the catalog and have been approved by the entire faculty.
2. A maximum of 2 courses (6 credits) of ECE 3998.
3. A maximum of 3 research courses (9 credits), ECE 3995 that would be directed toward research. Research courses require the approval of the student's Program Conference Committee. In addition, the student is required to write a 1-2 page proposal for each such course citing the topic, the teacher, the rationale for the course, and a deliverable from the course experience. The deliverable can be a submitted full journal paper, a research proposal for funding, or a complete patent application. Research courses will be specifically designated.

Entrance Requirements. To be accepted into the PhD program a student who graduated from the University of Pittsburgh with an MS degree in Electrical and Computer Engineering must have a QPA of 3.30 or better and the recommendation from the MS thesis committee. The student must submit an application to continue into the PhD program. Applications can be obtained from the Graduate Program Administrator. For students who obtained the MS degree from other institutions, the QPA and letters of recommendation, GRE general exam and TOEFL (if required) results will be used for admission. Exceptionally well-qualified students may be permitted to enter the PhD program without an MS degree (see Section 3.4).

Exams. There are four separate exams that must be passed in order to obtain the PhD degree. The student must also have a Program Conference with a faculty committee to approve his/her plan of study. Descriptions of each follow.

Program Conference. During the first year, a PhD student must schedule a meeting with a faculty committee to present a tentative program of study for approval. The committee consists of the student's advisor, who chairs the committee, and a minimum of two other faculty members from the department.

On the Program Conference form, the student must list all of the courses he/she has taken as a graduate student in the department as well as those for which he/she has obtained advanced standing. Courses that he/she is planning to take in the future in Electrical and Computer Engineering as well as in related areas (see Section 6.2) should also be included. Finally, the form should list the four courses that are required for the PhD Comprehensive Exam and a tentative schedule for the different exams and the residency requirements. The committee can approve, reject or make modifications to the proposed program. The advisor is responsible for supervising the student's progress in the approved program.

Preliminary Exam. The purpose of the preliminary exam is to ascertain the capabilities of a student to do independent research. The exam generally consists of an oral presentation of a written document, prepared by the student, to a committee of ECE faculty members. The student and his/her advisor will determine the subject of the document.

Students completing the MS research option who are interested in pursuing doctoral studies have already demonstrated their ability to do independent research. Therefore, their MS thesis oral and the preliminary exam may be administered simultaneously.

Continuing MS students who elected the professional option or who obtained their degrees from other institutions must schedule a preliminary exam. The student must prepare a written document of the same caliber as an MS thesis. This may be done by either taking a graduate project course (ECE 3998) or by using a thesis presented at another institution. The student's advisor will then assist the student in forming a committee with a composition similar to that of an MS thesis exam committee. Two weeks before the exam, the written report should be given to the committee members and the Graduate Program Administrator should be informed of the composition of the committee, time, title and abstract of the thesis in order to publish an announcement.

PhD Comprehensive Exam. To complete the Comprehensive PhD exam, a student must obtain a minimum QPA of 3.3 in the four courses assigned by the PhD program conference committee no later than the first two years of enrollment in the PhD program.

If the student fails to achieve this requirement, he/she must pass an oral exam that takes place at the same time as the PhD Proposal exam and answer general questions related to his/her research area. If he/she fails this oral exam, the student may take it once more three months later.

To complete the PhD Comprehensive exam, a student must select four courses in his/her area of specialization and have earned a grade of B or higher in each.

Dissertation Proposal Exam. For the dissertation proposal examination, the student prepares a written proposal of his/her dissertation and presents it orally to an exam committee. Students must have a cumulative graduate QPA of 3.30 to be considered for doctoral candidacy. The committee consists of at least five members, four of whom must be from the Electrical and Computer Engineering Department, and at least one who must be from outside the department (external member). Three of the departmental members must be graduate faculty members and at least one of the external members must be a graduate faculty member from another department in the university. Other appropriate member(s) may also serve on the committee. A faculty member from another accredited university may serve as an external graduate faculty member of the committee if that individual's academic background is comparable to the qualifications for graduate faculty status at the University of Pittsburgh.

The dissertation proposal should be given to the committee members at least two weeks before the exam, and the student must inform the Graduate Program Administrator of the composition of the committee and provide a proposal with a completion time line as well as a title and an abstract at least two weeks prior to the exam date.

If the doctoral committee approves the dissertation proposal, the student is then formally admitted to Candidacy for the Doctor of Philosophy Degree. The proposal exam must be completed at least two semesters before the student plans to graduate. Students can register for ECE 3997 for preliminary work for the PhD proposal exam.

Final Oral Exam. The final oral exam is administered by the doctoral committee and determines the acceptability of the student's dissertation and his/her ability to comprehend, organize and make original contributions to his/her area of research.

Only students who have passed the dissertation proposal exam may register for dissertation research (ECE 3999). A minimum of 18 research credits is required for graduation, of which at least 12 must be in ECE 3999. Once a student registers for research, he/she must continue to register for Fall and Spring terms until the final oral examination has been passed.

At least two weeks before the date set for the exam, the student must submit a copy of the dissertation to each member of the exam committee and register with the Graduate Program Administrator. The final oral exam is open to the public.

Students scheduling their final oral exam must submit at least one paper from their thesis work to a refereed journal. The publication form must be signed by the major advisor and submitted to the Graduate Program Administrator at least two weeks before the final oral exam. Submitting a paper to a refereed journal is a requirement for the PhD degree.

Master's

Electrical & Computer Engineering, MS ECE

In Fall 2019, the Electrical Engineering, MSEE was renamed to Electrical and Computer Engineering. Students currently enrolled will be moved over to the updated program name.

As a general rule, the admission requirements for the Master of Science degree in Electrical Engineering are a minimum QPA of 3.0, two letters of recommendation, GRE General Test scores, and TOEFL for international applicants.

The degree of Master of Science in Electrical Engineering can be obtained by following either a research or a professional option. The research option includes a thesis while the professional option is 30 credits of course work. Students who intend to continue for a PhD degree are highly encouraged to take the research option.

Course selection for either the research or the professional degree options is to be done in consultation with the student's advisor according to the following requirements:

1. the course selection must include at least 15 graduate credits in ECE, and
2. courses outside ECE must come from the list of recommended courses (see section 6.2).

Courses that are required of students admitted on a provisional status are to be considered additional to these requirements. If the student chooses the research option, only 6 credits of ECE 2999 will count towards the degree requirement. Notice that credits in ECE 2997, research for the MS, and in ECE 3893, the graduate seminar, will not be considered towards the degree requirements.

Professional Option. A minimum of 30 credits of course work conforming to the requirements in section 3.1 is required. Although not required, a three credit graduate project course (ECE 2998) is highly recommended for students who might later choose to enter the PhD program. No comprehensive exam is required for students following the professional option.

Research Option. A minimum of 24 credits of course work is required. In addition, a thesis (with a minimum of six credits of ECE 2999, MS Thesis) must be completed and presented at an oral defense.

It should be emphasized that the above credit requirements for both options are the minimum acceptable and may not necessarily satisfy the degree requirements. In some instances it might be necessary for a student to take undergraduate courses to be accepted into full graduate status. Thus, depending upon the student's background and program, it may be necessary to take more than the minimum number of credits required.

Thesis Requirement. MS students taking the research option must prepare a thesis showing marked attainment in their area of investigation (see section 2.9). A graduate student begins thesis work after the fulfillment of the following conditions:

Completing at least 12 credits,

Being on full graduate status, and

Achieving a cumulative QPA of 3.00 or higher.

Students in the research option must defend their theses orally. A committee consisting of three Electrical and Computer Engineering graduate faculty members and chaired by the student's major advisor is formed to evaluate the thesis and defense. Faculty members with a secondary appointment in Electrical and Computer Engineering may also chair such a committee. The student must provide this committee with copies of the thesis at least two weeks prior to the day of the oral exam. The names of the faculty on the committee, the time, the title and the abstract of the thesis should be submitted to the Graduate Program Administrator at least two weeks before the desired exam date in order to publish an announcement. The oral exam is open to the public. If the student is interested in pursuing a PhD, this exam may be combined with the PhD Preliminary Exam and the Program Conference.

Department of Industrial Engineering

Contact Information

Department Chair: Bopaya Bidanda
Main Office: 1025 Benedum Hall
412-624-9830
Fax: 412-624-9831
E-mail: bidanda@pitt.edu
<http://www.engineering.pitt.edu/industrial/>

Additional information concerning the department's graduate program may be obtained from the graduate secretary at the above address, or e-mail gradie@pitt.edu.

Graduate Degree Programs

The Department of Industrial Engineering's graduate programs prepare engineers to assume leadership positions in industry, government, and service organizations. The Master of Science in Industrial Engineering program is very flexible, and students may either choose to focus on some area or opt for a more broad-based curriculum with coursework spanning multiple areas. Narrower concentration areas in Data Science, Engineering Management and Safety Engineering are also available.

In addition, the department also offers a dual degree (MSIE/MBA) program in cooperation with the Joseph M. Katz Graduate School of Business, and several options with the Master's program including (1) a Graduate Certificate in Safety Engineering, (2) opportunities for Lean Six Sigma Certification, (3) a Graduate Certificate in Healthcare Systems Engineering in cooperation with the Graduate School of Public Health, and (4) a Graduate Certificate in Nuclear Engineering in cooperation with the Department of Mechanical Engineering and Materials Science.

The Doctor of Philosophy degree is the department's flagship graduate program. Currently, the primary areas of research include all aspects of operations research, manufacturing science and nontraditional manufacturing, and supply chains. Doctoral graduates are qualified for academic research careers as well as technical leadership positions in industry.

Admissions

Applicants must possess an undergraduate or graduate degree from an ABET-accredited program in any engineering discipline, or a degree in a complementary technical discipline, such as mathematics, physics, or computer science. The department also requires undergraduate knowledge of calculus-based probability and statistics, calculus, linear algebra, and proficiency in computer programming.

Applicants for admission must submit the application form and fee, transcripts of all college-level work, three letters of recommendation, and a statement of career goals/objectives. International applicants to the full-time Masters program and all applicants to the PhD program must also submit scores on the verbal, quantitative, and writing assessment-analytical sections of the Graduate Record Examination (GRE). Applicants to the part-time master's program are generally not required to take the GRE. International applicants whose first language is not English must take the TOEFL administered by the Educational Testing Service with a minimum score of 550 (paper-based test)/213 (computer-based test)/ 80 (internet-based test). It is desirable for PhD applicants to have an interview with a faculty member, although this is not a requirement for admission.

Domestic applicants are considered on a rolling basis, while deadlines for international applicants are as follows: fall term - April 1 and spring term - July 1. International applicants are not accepted for enrollment beginning in a summer term. Prospective students are encouraged to apply early whenever possible.

Applications may also be completed online by going to <http://www.engineering.pitt.edu/Departments/Industrial/Admissions/>

Applicants to the MSIE-MBA program must apply through the Joseph M. Katz Graduate School of Business

Financial Assistance

It is the department's policy to provide graduate teaching or research assistantships to as many PhD students as possible. However, these awards are limited in number and highly competitive, and are awarded on the basis of merit and departmental research/teaching requirements. Financial support comes from the department, not individual faculty, and is generally restricted only to students interested in pursuing a doctoral degree. All decisions on assistantships are made by the chair based upon the recommendations of the departmental graduate committee. Barring unforeseen circumstances, students who are awarded financial support will have their financial support continued as long as they maintain their level of academic excellence and make satisfactory progress toward their degree objectives. For full consideration, students must apply early for financial support and in no case later than January 31 for the fall term and July 31 for the spring term.

Certificate

Health Care Systems Engineering Certificate

The certificate in Health Care Systems Engineering is intended for individuals pursuing careers in health systems management and process engineering. Primarily designed for Master's degree students in the Department of Health Policy & Management and the Department of Industrial Engineering, this program provides a rigorous and multi-disciplinary education as a complement to the core curriculum of both programs. With a focus on enhancing innovation, effectiveness and efficiency in health care and public health, the Certificate's ultimate goal is to produce well-educated professionals and leaders in their disciplines. The HSE certificate is not a stand-alone option but is open to all Master's students in Industrial Engineering, and students must formally apply for this option. For IE graduate students, the MS degree in IE along with the HSE certificate requires a total of 37-38 credits. Students interested in the HSE certificate are strongly encouraged to map out their study plans immediately after enrolling in the department.

A recommended study plan for MSIE students who choose the HSE Certificate option is shown below.

Fall Year 1 (10 Credits)

- IE 2005 - PROBABILITY AND STATISTICS FOR ENGINEERS I
- IE 2006 - INTRO TO MANUFACTURING SYSTEMS
- IE 2106 - OPERATIONS IMPROVEMENT IN HEALTHCARE
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- IE 2110 - HEALTH SYSTEMS ENGINEERING SEMINAR

Spring Year 1 (12 Credits)

- IE 2001 - OPERATIONS RESEARCH
- IE 2102 - LEAN SIX SIGMA I (GREEN BELT)
- IE 2303 - WORK DESIGN
- IE 2108 - HEALTH SYSTEMS ENGINEERING: QUANTITATIVE ANALYTICS

Fall Year 2 (9 Credits)

- HPM 2207 - QUALITY ASSESSMENT AND PATIENT SAFETY
- HPM 2220 - COST EFFECTIVENESS ANALYSIS HEALTH CARE
- HPM 2217 - CLINICAL DECISION ANALYSIS
- HPM 2105 - INTRODUCTION TO THE US HEALTHCARE DELIVERY SYSTEM I
- IE Core Elective¹ - 3 credits

Spring Year 2 (6-7 Credits)

- HPM Elective¹ - 2-3 credits
- HPM 2106 - HEALTH SYSTEMS LEADERSHIP AND PROFESSIONAL DEVELOPMENT 2
- IE 2998 - GRADUATE PROJECTS/PRACTICUM ²

Note

¹These electives can be switched around, or the last term could be reduced to just 3 credits if these elective credits are taken earlier in the program (e.g. during the fall or summer)

²Cannot be taken until the last term

Safety Engineering Certificate

The certificate in Safety Engineering program is intended for engineers seeking training in safety engineering to enhance their operational abilities or if they become newly assigned to positions that have higher levels of safety engineering responsibilities. It is also designed to enhance the capabilities of non-engineering based safety professionals seeking training in safety engineering, and affords the opportunity for engineers and other working professionals to maintain their certifications and licensure as safety professionals. A minimum of 15 credits are required to complete this certificate and the certificate may be obtained as a stand-alone program or in conjunction with the MS degree.

Required Courses (9 credits):

The following courses are required for this certificate:

- IE 2301 - INTRODUCTION TO SAFETY ENGINEERING
- IE 2302 - ENGINEERING FOR PROCESS SAFETY
- IE 2303 - WORK DESIGN

Electives (6 credits):

Students may select any two of the following courses:

- BIOENG 2725 - DESIGN FOR INJURY PREVENTION
- CEE 2201 - CONSTRUCTION COST ENGINEERING
- CEE 2202 - CONSTRUCTION SCHEDULING
- CEE 2203 - CONSTRUCT METHODS AND EQUIPMENT
- CEE 2205 - CONSTRUCT FINANCE & COST CONTROL
- CEE 2207 - CONSTRUCT & COST OF MECHL SYSTEMS
- CEE 2230 - BUILDING INFORMATION MODELING
- CEE 2347 - BRIDGE ENGINEERING
- CEE 2700 - TRAFFIC MGMNT AND OPERATIONS
- CEE 2710 - TRAFFIC CONTROL SYSTEMS
- CEE 2711 - ADVANCED TRANSPORTATION MANAGEMENT STRATEGIES
- CEE 2725 - PUBLIC TRANSPORTATION SYSTEMS
- CEE 2730 - HIGHWAY ENGINEERING
- CEE 2750 - PROJECT DEVELOPMENT AND IMPLEMENTATION
- ECE 2646 - LINEAR SYSTEM THEORY
- ECE 2774 - POWER SYSTEMS ANALYSIS 2

- ECE 2777 - POWER SYSTEMS TRANSIENTS 1
- ECE 2250 - POWER ELECTRONICS
- ECE 2795 - SPECIAL TOPICS POWER - Protective Relaying and Automation
- ECE 2795 - SPECIAL TOPICS POWER - Renewable and Alternative Energy Systems
- ENGR 2100 - FUNDAMENTALS OF NUCLEAR ENGINEERING
- ENGR 2102 - NUCLEAR PLANT DYNAMICS AND CONTROL
- ENGR 2103 - INTEGRATION OF NUCLEAR PLANT SYSTEMS WITH THE REACTOR CORE
- ENGR 2104 - NUCLEAR OPERATIONS AND SAFETY
- ENGR 2105 - INTEGRATED NUCLEAR POWER PLANT OPERATIONS
- ENGR 2110 - NUCLEAR MATERIALS
- ENGR 2112 - NUCLEAR CHEMISTRY AND RADIOCHEMISTRY
- ENGR 2115 - HEAT TRANSFER AND FLUID FLOW IN NUCLEAR PLANTS
- ENGR 2120 - MATHEMATICAL MODELING OF NUCLEAR PLANTS
- ENGR 2125 - CASE STUDIES IN NUCLEAR CODES AND STANDARDS
- ENGR 2130 - NUCLEAR FUEL CYCLE AND ENVIRONMENTAL ISSUES
- ENGR 2633 - MINERALS INDUSTRY RISK MANAGEMENT
- ENGR 2635 - MINE VENTILATION ENGINEERING
- ENGR 2638 - MINING HEALTH AND SAFETY
- ENGR 2639 - MINE EVALUATION AND MANAGEMENT
- ME 2045 - LINEAR CONTROL SYSTEMS
- ME 2053 - HEAT AND MASS TRANSFER

Doctoral

Industrial Engineering, PhD

This is the department's flagship graduate program and prepares the student for the rigorous demands of a career in research and development, or academia. It requires a strong background in mathematics, probability theory, optimization techniques and manufacturing systems. The PhD student is expected to be a full-time student. Although it is possible to seek candidacy as a part-time student, the PhD candidate must spend at least one academic year on campus full time. The graduate faculty typically works closely with individual doctoral students to create a flexible program tailored to individual needs.

Entrance to the PhD Program: To be admitted to the doctoral program, students must pass the PhD qualifying examination. The student must seek faculty approval to take this examination, which is typically given once a year in late April or early May and encompasses (1) Operations Research, (2) Probability, (3) Statistics & Data Analysis, (4) Manufacturing Systems & Basic Industrial Engineering, and (5) *either* Stochastic Processes *or* Micro & Nano Manufacturing. A cumulative grade point average of 3.30 or better in graduate course work and formal faculty approval are required in order to be able to take the exam. The examination allows the department to assess the student's academic preparation and creative ability to conduct doctoral-level research. Students are expected to take the examination in April/May of the calendar year following the one in which they entered the graduate program, although it is acceptable to take the examination earlier.

Doctoral Course and Dissertation Credit Requirements: In addition to the basic core courses, doctoral students take additional courses that may be required in preparation for the PhD degree and the student's dissertation topic. These courses are selected in conjunction with a program approved by the student's advisor. According to University regulations, the PhD requires at least 72 credits beyond the bachelor's degree or 42 credits beyond the master's degree, including 18 credits for dissertation research. Currently, course credits typically include the following:

- Other required courses (IE 2100, 2084, 2088): 6-9 credits
- Qualifying core (IE 2006, IE 2007, IE 2072, IE 2081, IE 2011 OR IE 2084): 15 credits
- Additional course work (at least 6 credits of which must come from offerings outside the Department of Industrial Engineering): 21-24 credits
- Dissertation research (IE 3997/IE 3999): at least 18 credits

Additional Doctoral Requirements: All full-time students must enroll in and attend IE 3095 (Graduate Seminar) each term they are in residence; the credits for these do not count toward the 72-credit requirement.

The comprehensive examination is taken by students after completing the course work in their concentration. The PhD comprehensive exam has a three-fold purpose: (1) to test the student's proficiency (knowledge and skills) in his or her major area of interest; (2) to identify deficiencies in the student's background and suggest remedial work; and (3) to test the student's ability to prepare an acceptable dissertation in his or her area of concentration.

All doctoral students are expected to pursue research by working with individual faculty in areas that can lead to a potential doctoral dissertation. A PhD candidate must demonstrate the ability to conduct research of an original nature by completing a dissertation and preparing one or more papers of publishable quality. The dissertation topic is selected by the student in some theoretical or methodological area of interest in consultation with a faculty advisor. A faculty committee must approve the dissertation proposal before the student embarks on dissertation research. Information regarding the PhD program can be obtained by going to http://www.engineering.pitt.edu/Departments/Industrial/_Content/Graduate/Doctoral-Program/

Teaching Requirements for PhD Students: All PhD students should complete the following concentration in Scientific Communication, with two elements:

1. **Training program** requires the completion of the following:
 1. Attendance at a minimum of one teaching workshop run by the Pitt Center for Integrating Research, Teaching and Learning (PITT-CIRTL) and approved by the department; see <https://www.engineering.pitt.edu/cirtl>
 2. Attaining a score of at least four in the ELI English Comprehensibility Test for TAs
 3. ENGR 2050 - TECHNICAL WRITING or ENGR 2052 - INTRODUCTION TO TECHNICAL COMMUNICATION
2. **Mentorship-in-practice:** The goal of this requirement is to provide a mentored experience to the PhD students, regardless of their funding support, in classroom-based pedagogy. This requires one term as a TA and one term as an independent instructor. Satisfaction of this requirement, or any exceptions, must be approved by the graduate program director.

Joint Degree

Industrial Engineering/Business Administration, MSIE/MBA

This dual-degree program, offered in conjunction with the Joseph M. Katz Graduate School of Business, positions individuals with an undergraduate degree in engineering or the hard sciences to take a management role in a company that has a significant engineering and/or technological focus. Full-time students can complete both degrees in 20 months, while part-time students can do so in four years. Prospective students must apply via the Joseph M. Katz Graduate School of Business to the joint program; students who are already in the MBA program are not permitted to enroll in the joint program.

A total of 25.5 credits from the Department of Industrial Engineering are required (12 credits in core classes, 12 credits in electives, and 1.5 credits in an integrated project).

In particular these credits are divided as follows:

- Required Core (2 courses: 6 credits)*
 - IE 2001 - OPERATIONS RESEARCH
 - IE 2006 - INTRO TO MANUFACTURING SYSTEMS
- Elective Core: at least two of the following (2 courses: 6 credits)
 - IE 2003 - ENGINEERING MANAGEMENT
 - IE 2007 - STATISTICS AND DATA ANALYSIS
 - IE 2088 - DIGITAL SYSTEMS SIMULATION
 - IE 2100 - SUPPLY CHAIN ANALYSIS
 - IE 2303 - WORK DESIGN*
- Free Electives (4 courses: 12 credits)
 - Any elective offered by the IE Department (including courses in the elective core above)
- Integrated Project (1.5 credits)
 - IE 2998 - GRADUATE PROJECTS/PRACTICUM

*IE 2303 - WORK DESIGN is required for students without an undergraduate degree in IE

For details on the curriculum requirements for the MBA portion of the program, please visit Joseph M. Katz Graduate School of Business.

Master's

Industrial Engineering, MSIE

Requirements for the MSIE Degree

The Master of Science in Industrial Engineering program is very flexible and requires 30 to 31 credits of graduate study. It may be obtained with or without a thesis option. With either option, the student is required to take three core courses (IE 2001, IE 2005, and IE 2006) that count for 9 credits, and at least two courses from the elective core (currently IE 2003, IE 2007, IE 2088, IE 2100 and IE 2303) that count for an additional 6 credits. Students who do not have an undergraduate degree in Industrial Engineering are required to select IE 2303 from this elective core.

- With the non-thesis option, the remaining 15 credits may be freely chosen from the elective core or other departmental graduate courses based on the student's individual interests and the approval of his or her academic advisor. With the permission of the advisor, the student may also take up to 6 of the 15 credits from other relevant graduate offerings outside the department.
- With the thesis option, 9 of the 15 remaining credits may be freely chosen from the elective core or other departmental graduate offerings. In addition, the student must complete a 6 to 8-credit thesis. With this option, out-of-department electives are generally not permitted.

In both cases, students who have already taken one or more of the core courses as undergraduates or as part of another graduate program are encouraged to skip such courses and substitute them with more advanced course work in the same area.

Normally the program can be completed in three terms of full-time study or two to three years of part-time study. Many graduate courses are offered in the evening for the convenience of working professionals. Courses are also offered over the summer term. Information regarding the MS program can be obtained by going to: <http://www.engineering.pitt.edu/industrial/graduate/>

Department of Mechanical Engineering and Materials Science and Engineering

The Department of Mechanical Engineering and Materials Science offers MS and PhD degrees in both areas as well as MS degree in Nuclear Engineering, and the graduate certificate in Nuclear Engineering which is open to all graduate students within the Swanson School of Engineering. The certificate in Nuclear Engineering may also be earned by qualified post baccalaureate students who are not seeking to also earn an MS degree.

Contact Information

Department Chair: Brian Gleeson, PhD
Main Office: 636 Benedum Hall
412-624-9784
Fax: 412-624-4846
E-mail: pittme@engr.pitt.edu
<http://www.engineering.pitt.edu/Departments/MEMS/>

MSE Graduate Director: Jung-Kun Lee, PhD
636 Benedum Hall
412-648-3395
E-mail: jul37@pitt.edu

ME Graduate Director: Inanc Senocak, PhD
636 Benedum Hall
412-624-5430
E-mail: senocak@pitt.edu

NE Graduate Director: Heng Ban, PhD
636 Benedum Hall
412-624-0325
E-mail: heng.ban@pitt.edu

MEMS Graduate Administrator: Carolyn Chuha
636D Benedum Hall
412-624-9722
E-mail: cac90@pitt.edu

Materials Science and Engineering

The Department of Mechanical Engineering and Materials Science offers broad-based educational and research programs in materials science and engineering leading to the degrees of Master of Science and Doctor of Philosophy in Materials Science and Engineering. These programs are oriented toward the application of fundamental knowledge of materials science and engineering to the solution of real-world materials problems that impede technological progress. They are designed to educate engineers, providing them with the tools to become successful in research, development, production, management, and teaching. The department also offers a dual degree Masters program with the Katz Graduate School of Business.

Basic courses on the structure, properties, and energetics of materials are taken in common. The student, working with faculty advisors, tailors the program to suit individual interests and demands of the student's chosen field of specialization through advanced and specialty courses.

The range of research projects in the department reflects the broad spectrum of interest of the faculty. However, interest in the structure and properties of materials and their relationship to materials processing is a common thread that ties together many of the programs. Research is aimed at building an understanding of basic phenomena that will lead to solutions of materials problems at the forefront of technological and social progress.

Current research interests are centered in several areas of metals and ceramics, including corrosion and oxidation; high-temperature materials; materials for energy applications; additive manufacturing; metal-forming processes; phase transformations in metals and ceramics; intermetallic phases; plastic deformation of metals; surfaces and interfaces; thermomechanical processing of steels; ceramic processing and sintering science; electronic properties of ceramics; nanostructured materials; catalytic materials; thin film science and technology; and laser processing of materials.

Application Deadlines

January 15 - Fall semester admission

July 1 - Spring semester admission

February 1 - Summer semester admission

Master of Science Program

The Master of Science in Materials Science and Engineering degree (MSMSE) may be pursued as either a Professional MS Track program (for practicing engineers) or a Research MS Track program. Students can tailor their individual MS program to emphasize different aspects of materials science and engineering (e.g., ceramics, metallurgy, etc.).

Admissions

A bachelor's or master's degree holder applying to the program must have cumulative grade point average (QPA) equal to or higher than 3.0 (B) or equivalent. Students who do not meet this requirement may be able to enter the program based on experience demonstrating their excellence, as evaluated by the Graduate Committee.

In some cases, depending on previous background and QPA, students may be admitted initially on a provisional basis. This usually requires students to secure grades of 3.0 (B) or better in courses that are required to obtain a better background in materials science and engineering and/or other graduate-level courses as deemed necessary by the Graduate Admissions Committee.

Doctor of Philosophy Program

http://www.engineering.pitt.edu/Departments/MEMS/_Content/Graduate/Graduate-Program-Accordion-content/

The Doctor of Philosophy Program in Materials Science and Engineering is a research degree leading largely to careers in teaching and research in academia and industry. This program is designed for excellent students. As the studies progress, students develop an understanding at the highest level in their area of specialization that must lead to an original contribution to the field in the PhD dissertation.

Admissions

A bachelor's or master's degree holder applying to the program must have a QPA equal to or higher than 3.3 (B+) or equivalent. Students who do not meet this requirement may be able to enter the program based on experience demonstrating their excellence, as evaluated by the Graduate Committee.

In some cases, depending on previous background and QPA, students may be admitted initially on a provisional basis. This usually requires students to secure grades of 3.3 (B+) or better in courses that are required to obtain a better background in materials science and engineering and/or other graduate-level courses as deemed necessary by the Graduate Admissions Committee

Graduate Materials Science Courses

http://www.engineering.pitt.edu/Departments/MEMS/_Content/Graduate/Graduate-Program-Accordion-content/

Six core courses are offered annually and other graduate courses are offered on a two-year rotation.

Mechanical Engineering

Graduate Degree Programs

The mechanical engineering graduate program offers PhD and master of science degrees in mechanical engineering, and master of science degree in nuclear engineering. Each graduate student's program is developed individually within very broad limits and is carefully designed to meet his or her needs and objectives. The graduate faculty is committed to high-quality research and teaching. The curriculum is an integrated program of study in applied sciences, applied mathematics, and modern computational procedures that are relevant to the research emphasis in the department. The research is focused on five major areas: (1) Energy Technology: fluid mechanics, Newtonian and non-Newtonian fluid dynamics, heat transfer, combustion, fuel cells, gas turbines, advanced thermodynamics cycles and hybrid systems, thermal hydraulics in nuclear energy generation, energy accountability and sustainability in electronic equipment; transducers and control; (2) Smart Materials, Transducers, Dynamic Systems and Control: Sensors and actuators based on smart materials, adaptive structures and materials, structural acoustics, active/passive noise control, micro-electro-mechanical systems, microfluidic devices, radio-frequency energy harvesting, structural acoustics, and structural vibration control, novel actuators and mechatronics; (3) Nanotechnology: process design and modeling, tribology, composite materials, computational materials, multiscale simulation methods; micro- and nano-fabrication and characterization methods; (4) Advanced Manufacturing: 3D additive manufacturing, inkjet printing, laser manufacturing, topology optimization; and (5) Biomechanics: constitutive modeling of soft biological tissues, experimental and computational biomechanics, biomechanical modeling/simulation; musculoskeletal biomechanics, upper extremity biomechanics, joint replacement. In addition to the MS and PhD degrees, the department also offers a dual degree program with the Katz Graduate School of Business.

Application Deadlines

January 15 - Fall semester admission

July 1 - Spring semester admission

February 1 - Summer semester admission

Admissions

https://app.applyyourself.com/AYApplicantLogin/fl_ApplicantLogin.asp?id=up-e

An application for either the MS in mechanical engineering or PhD program is judged on the student's prior academic record, GRE scores (required for PhD applicants), the accreditation of the prior degree granting school, and the capability of the department to match the applicant's interest with the program. A foreign national student who did not receive his or her Bachelor of Science or Master of Science degree from an accredited U.S. institution is required to take the TOEFL exam and receive a score of at least 550 (213 for the computerbased exam/80 internet-based exam) or the International English Language Testing System (IELTS) and receive a minimum result of Band 6.5 as well as the GRE. GRE testing may also be required for applicants of the MS program if requested by the Graduate Committee. Students with a Bachelor of Science degree in another engineering field, mathematics, or physics will also be considered for the graduate program with the possibility that prerequisite courses may be required.

A part-time program is available for students who are employed in local industries. Part-time students usually carry from 3 to 6 credits per term in either day or evening classes.

Requirements for the Master of Science Program

http://www.engineering.pitt.edu/MEMS/Graduate/Mechanical_Engineering/

The Master of Science in Mechanical Engineering degree (MSME) can be pursued as either a Professional MS Track (for practicing engineers) or a Research MS Track. The Professional Track is best suited to those currently in industry who are looking to increase their knowledge.

The Nuclear Engineering Graduate Program

The Department of Mechanical and Materials Science offers graduate studies in advanced nuclear engineering. The graduate faculty is committed to high-quality research and teaching. The curriculum is an integrated program of study in applied sciences, applied mathematics, and modern computational procedures that are relevant to the research emphasis in the department. The research is focused on three major areas: (1) Nuclear Energy Technology (2) Operations and Safety (3) Nuclear Materials (4) Nuclear Modeling and Simulations and (5) Radiology and Radiochemistry.

Degree Programs

An application for the MS program is judged on the student's prior academic record, GRE scores, the accreditation of the prior degree granting school, and the capability of the department to match the applicant's interest with the program. A foreign national student who did not receive his or her Bachelor of Science from an accredited U.S. institution is required to take the TOEFL exam and receive a score of at least 550 (213 for the computer-based exam / 79-80 internet-based exam) or the International English Language Testing System (IELTS) and receive a minimum result of Band 6.5 as well as the GRE. Students with a Bachelor of Science degree in another engineering field, mathematics, or physics will also be considered for the graduate program with the possibility that prerequisite courses may be required. A part-time program is available for students who are employed in local industries. Part-time students usually carry from three to six credits per term in either day or evening classes.

Applicants who do not meet these requirements will be considered on an individual basis with strong emphasis given to academic promise, career orientation, work experience, and preparation in engineering and related disciplines. In some cases, applicants may be admitted provisionally until certain deficiencies in either coursework or academic achievement are satisfied.

Nuclear Engineering Graduate Certificate

The Department of Mechanical Engineering and Materials Sciences is offering a certificate for students in the Swanson School of Engineering with an interest in nuclear science and technology. Students from the Bioengineering, Civil, Chemical, Industrial, Mechanical, Materials Science, and Electrical/Computer engineering programs may be most interested in obtaining this certificate.

Fifteen units are required to complete the certificate. This certificate may be combined with graduate courses in any one of the School's seven Master of Science (MS) degree programs or the certificate may be awarded stand-alone as a post-baccalaureate certificate. Since the nuclear courses are cross-listed as Mechanical Engineering courses, they can be counted toward both a MSME degree and Nuclear Engineering Graduate Certificate.

This program provides coursework for graduate level nuclear engineering education with a focus on nuclear operations and safety. This focus on nuclear operations and safety not only fulfills a recognized educational need, but is also designed to take advantage of unique industrial resources in the Pittsburgh area which will greatly facilitate student learning.

The renaissance of nuclear science and technology in the United States has created a need in the marketplace once again for engineers with nuclear knowledge. The University of Pittsburgh aims to meet these marketplace needs by preparing engineers through the graduate certificate in nuclear engineering. Classes are taught by current and former nuclear engineers, including faculty with experience conducting commercial nuclear operations programs for Westinghouse or the Beaver Valley Nuclear Station and with certificates or operation licenses from the US Nuclear Regulatory Commission.

Objectives

The objectives of the nuclear engineering certificate are:

- To develop the basic competencies needed by science and engineering graduates to contribute quickly and effectively to the renaissance of nuclear science and technology in the United States and abroad.
- To create a benchmark educational program that can serve as a model throughout academia

Certificate

Nuclear Engineering Certificate

Graduate Certificate in Nuclear Engineering Overview

A key need in the nuclear technology marketplace is for engineers from diverse disciplines who possess knowledge of nuclear phenomenology and technology. The University of Pittsburgh meets these marketplace needs by preparing engineers through the graduate certificate in nuclear engineering.

Objective

The objective of the nuclear engineering certificate is to provide the advanced competencies needed by science and engineering graduates to contribute quickly and effectively to nuclear science and technology in the United States and abroad.

This program provides coursework for graduate level nuclear engineering education with a focus on nuclear operations and safety. The certificate may be combined with graduate courses in any one of the seven MS degree programs (Bioengineering, Chemical, Civil, Electrical and Computer, Industrial, Materials Science and Mechanical Engineering) or taken as a post-baccalaureate certificate. The focus on nuclear operations and safety not only fulfills a recognized educational need, but also takes advantage of unique industrial resources in the Pittsburgh area which greatly facilitate student learning.

Since all nuclear courses are cross-listed as Mechanical Engineering Courses, they count both toward a Nuclear Certificate and toward an MS or PhD degree.

Requirements

All students must successfully complete five of the nuclear courses listed below in order to earn the graduate certificate. Nuclear Certificates are conferred only on those students who have completed all course requirements with at least a 3.00 GPA.

Contacts

If you have questions about the curriculum, please contact either the Director or Associate Director of Nuclear Engineering. Currently these posts are occupied by Dr. Heng Ban (heng.ban@pitt.edu) and Dr. Tom Congedo (tvc9@pitt.edu), respectively.

If you have questions about registration, please contact the Graduate Administrator, Ms. Carolyn Chuha (cac90@pitt.edu or (412) 624-9722)

Requirements

- ENGR 2100 - FUNDAMENTALS OF NUCLEAR ENGINEERING or

- ME 2100 - FUNDAMENTALS OF NUCLEAR ENGINEERING
- ENGR 2101 - NUCLEAR CORE DYNAMICS or
- ME 2101 - NUCLEAR CORE DYNAMICS Pre-req: ENGR 2100 / ME 2100 or with instructor's permission
- ENGR 2102 - NUCLEAR PLANT DYNAMICS AND CONTROL or
- ME 2102 - NUCLEAR PLANT DYNAMICS AND CONTROL Pre-req: ENGR 2100 / ME 2100 or with instructor's permission
- ENGR 2103 - INTEGRATION OF NUCLEAR PLANT SYSTEMS WITH THE REACTOR CORE or
- ME 2103 - INTEGRATION OF NUCLEAR PLANT SYSTEMS WITH THE REACTOR CORE Pre-req: ENGR 2100 / ME 2100 or with instructor's permission
- ENGR 2104 - NUCLEAR OPERATIONS AND SAFETY or
- ME 2104 - NUCLEAR OPERATIONS AND SAFETY Pre-req: ENGR 2100 / ME 2100 or with instructor's permission
- ENGR 2105 - INTEGRATED NUCLEAR POWER PLANT OPERATIONS or
- ME 2105 - INTEGRATED NUCLEAR POWER PLANT OPERATIONS Pre-req: ENGR 2100 / ME 2100 or with instructor's permission
- ENGR 2106 - NUCLEAR QUALITY ASSURANCE MANAGEMENT or
- ME 2106 - NUCLEAR QUALITY ASSURANCE MANAGEMENT
- ENGR 2110 - NUCLEAR MATERIALS or
- ME 2110 - NUCLEAR MATERIALS Pre-req: an undergraduate course in materials science or instructor's permission
- ENGR 2112 - NUCLEAR CHEMISTRY AND RADIOCHEMISTRY or
- ME 2112 - NUCLEAR CHEMISTRY AND RADIOCHEMISTRY
- ENGR 2113 - RADIATION DETECTION AND MEASUREMENT or
- ME 2113 - RADIATION DETECTION AND MEASUREMENT
- ENGR 2115 - HEAT TRANSFER AND FLUID FLOW IN NUCLEAR PLANTS or
- ME 2115 - HEAT TRANSFER AND FLUID FLOW IN NUCLEAR PLANTS Pre-req: an undergraduate course in heat transfer and fluid flow or instructor's permission
- ENGR 2116 - BOILING WATER REACTOR THERMAL-HYDRAULICS AND SAFETY or
- ME 2116 - BOILING WATER REACTOR THERMAL-HYDRAULICS AND SAFETY Pre-req: an undergraduate course in heat transfer and fluid flow or instructor's permission
- ENGR 2120 - MATHEMATICAL MODELING OF NUCLEAR PLANTS or
- ME 2120 - MATHEMATICAL MODELING OF NUCLEAR PLANTS Pre-req: ENGR 2100 / ME 2100 or instructor's permission
- ENGR 2122 - MANAGEMENT PRINCIPLES IN NUCLEAR POWER or
- ME 2122 - MANAGEMENT PRINCIPLES IN NUCLEAR POWER
- ENGR 2125 - CASE STUDIES IN NUCLEAR CODES AND STANDARDS or
- ME 2125 - CASE STUDIES IN NUCLEAR CODES AND STANDARDS
- ENGR 2130 - NUCLEAR FUEL CYCLE AND ENVIRONMENTAL ISSUES or
- ME 2130 - NUCLEAR FUEL CYCLE AND ENVIRONMENTAL ISSUES

Processing, Properties, and Performance of Engineering Metals Certificate

The graduate-level Certificate in Processing, Properties, and Performance of Engineering Metals is designed primarily to meet the needs of working engineers who wish to pursue or enhance a particular aspect of materials science and engineering and of traditional graduate students in science and/or engineering who want to supplement their program with courses having a metals focus.

The academic requirements associated with the Certificate in Processing, Properties, and Performance of Engineering Metals include the completion of fifteen (15) credits of coursework within the Department of Mechanical Engineering and Materials Science as follows:

Required Courses

Students must complete the following two (2) courses:

- MSE 2030 - MECHANICAL BEHAVR OF MATERIALS
- MSE 2067 - ELEMENTS OF MATRLS SCI & ENGRG 1

Electives

Students may select three (3) of the following courses as electives:

- MSE 2045 - ADV FERUS PHYSICAL METALLURGY
- MSE 2046 - PHYSICAL METALLURGY ENGR ALLOYS
- MSE 2047 - ANALYSIS AND CHARACTERIZATION AT THE NANO-SCALE
- MSE 2055 - PRIN OF SOLIDIFICATION ENGRNG
- MSE 2088 - POWDER PROCESSING OF MATERIALS
- MSE 2090 - CORROSION AND FAILURE ANALYSIS

Note:

If students have a bachelor's degree in Materials Science and Engineering, MSE 2067 can be waived upon the permission of the Program Director. In this case, one (1) more elective course must be substituted for MSE 2067 to complete the requirements of the Certificate. All courses must be taken on campus.

Doctoral

Materials Science and Engineering, PhD

Requirements for the PhD Degree

A minimum of 72 credits is required for the PhD. Of the total of 72 credits required for the PhD degree a minimum of 36 credits must be coursework beyond the Bachelor of Science (BS) degree. PhD students must maintain a minimum QPA of 3.3 (B+) in this coursework. The coursework consists of (I) a materials core (six required courses students must take in the first year of enrollment), (II) a group of courses tailored for each student's research and as required technical broadening beyond the MSE focus, (III) courses to address mathematical/numerical skills, and (IV) PhD Research and Dissertation credits. The student's advisor must approve the course sequence selection.

The 18 credits core course component must be taken within the first year of the program. Typically, PhD students will carry a course load of three courses per term until their coursework is completed. If a student's background is insufficient for a given graduate course, the student must prepare by attending appropriate undergraduate courses or through independent study. This should be arranged in consultation with the student's faculty advisor and the lecturing faculty of the relevant course(s).

In addition to core courses, a student must take at least twelve (12) credits from advanced and technical elective courses in the MSE graduate program and relevant science and engineering disciplines. As a part of advanced and technical elective courses, a total of up to twelve (12) credits may be taken in relevant engineering disciplines outside of the MSE designation of graduate level courses and in relevant science disciplines outside of SSoE. The selection of courses, in general, must be acceptable to the student's advisor.

In addition to core and advanced/technical elective courses, the student is required to take six (6) credits from mathematics/numerical courses.

Minimum credit requirements include:

Core Courses (18 credits)

- MSE 2003 - STRUCTURE OF MATERIALS
- MSE 2011 - ENERGETICS
- MSE 2013 - KINETICS IN MATERIALS SCIENCE
- MSE 2015 - ELECTROMAGNETIC PROPERTIES OF MATERIALS
- MSE 2030 - MECHANICAL BEHAVIOR OF MATERIALS
- MSE 2067 - ELEMENTS OF MATERIALS SCIENCE & ENGINEERING I

Note:

A student must score at least a B (3.0) in each of these six classes. If a student does not get at least a letter grade of B, the class must be taken a second time. These classes must be successfully completed before the student can apply for admission to PhD Candidacy. If a student has a bachelor's degree in Materials Science and Engineering, MSE 2067 can be waived upon the permission of the Program Director. In this case, one (1) more advanced/technical elective course must be substituted for MSE 2067 to complete the requirements for the PhD degree.

Advanced and Technical Elective Courses

A student must take advanced courses and technical elective courses. These are comprised of at least two courses (6 credits) selected by the student and his or her advisor as the best advanced preparation for research in the area of the dissertation, and two courses (6 credits), as a broadening experience, to complement the student's PhD specialization and contribute significantly to career preparation.

Mathematics Courses

A student must take two mathematics/numerical courses for six (6) credits beyond those required for the materials science and engineering Bachelor of Science degree. They can be satisfied by many courses. This requirement may be waived if it was met in a previous graduate program which the student attended before entering MSE, PhD program.

PhD Research and Dissertation Credits

Each student must also have:

- At least six (6) credits of MSE 3997 (PhD Research);
- At least 12 credits of MSE 3999* (PhD Dissertation);

*Please note that registration for MSE 3999 is allowed only after the student has passed the Comprehensive Examination and defended the PhD Proposal, which qualifies the student for the status of PhD Candidacy.

The course requirements described in these guidelines are a minimum requirement. The minimum requirement of 72 credits of graduate work must be satisfied by combinations of research, course work and transfer credits for the award of a PhD degree. Students are allowed to take additional courses with the agreement of their advisors. In some cases, these courses may be suggested by the PhD Committee for better preparation for a given research area. Note that completion of the PhD degree and admission PhD candidacy require a GPA of B+ or better (≥ 3.3).

Mechanical Engineering, PhD

http://www.engineering.pitt.edu/MEMS/Graduate/Graduate_Information/

The goal of the Doctor of Philosophy program in the Department of Mechanical Engineering is to develop the student for the rigorous career demands of engineering research either in the industrial or academic fields. The student is educated at the pioneering edge of technical, management,

systems design, and decision-making concepts. This work requires a strong background in mathematics and one of the specialty areas of mechanical engineering. The PhD student is expected to attend full time. It is possible, however, to seek candidacy as a part-time student with the stipulation that the PhD candidate must spend at least one full-time academic year on campus.

A graduate student who has completed eight course courses of the master's program in good standing can go directly into the PhD program. An applicant who has received the Master of Science in mechanical engineering from a university with an Accreditation Board for Engineering and Technology (ABET)-accredited mechanical engineering curriculum, or who has substantially equivalent preparation, is eligible to enter the Doctor of Philosophy program in the Department of Mechanical Engineering.

If deficiencies in engineering preparation are noted, as in the case of science majors from accredited institutions, admission may be granted after the completion of such designated undergraduate courses as may best correct the deficiencies. Only those individuals whose preparation has been judged satisfactory for graduate study in the Department of Mechanical Engineering will be admitted to full graduate status.

Doctoral level courses are numbered in the 3000 series, but courses numbered in the 2000 series may also be appropriate for doctoral study. Courses numbered below 2000 do not meet the minimum requirements for doctoral study, although they may be taken to supplement a doctoral program. Students must maintain a minimum cumulative QPA of 3.30 in courses to be eligible to take the preliminary and comprehensive examinations as well as to graduate.

Plan of Study

A minimum of 72 credits is required for the PhD degree. Of the total 72 credits, a minimum of 36 credits must be completed as coursework at the 2000 or higher levels beyond the Bachelor of Science (BS) degree. PhD students must maintain a minimum QPA of 3.3 (B+) in this coursework. Students can transfer up to 30 didactic course credits from an M.S. or equivalent degree, subject to approval by the graduate program committee.

Each student must also have:

- At least six (6) credits of ME 3997 (PhD Research);
- At least 12 credits of ME 3999 (PhD Dissertation);

Please note that registration for ME 3999 is allowed only after the student has passed the Comprehensive Examination and defended the PhD Proposal, which qualifies the student for the status of PhD Candidacy.

The course requirements described in these guidelines are a minimum requirement. The minimum requirement of 72 credits of graduate work must be satisfied by combinations of research, course work and transfer credits for the award of a PhD degree. Students are allowed to take additional courses with the agreement of their advisors. In some cases, these courses may be suggested by the PhD Committee for better preparation for a given research area. Note that completion of the PhD degree and admission PhD candidacy require a GPA of B+ or better (≥ 3.3).

Total Credits: 72

Master's

Materials Science and Engineering - Professional Track, MSMSE

The professional MS track is primarily oriented toward part-time students currently working in industry.

MS Track Requirements

The professional track consists of a minimum of 30 course credits (equivalent to 10 courses). There are no thesis or comprehensive examination requirements for this degree. Up to nine (9) credits of coursework counting towards the 30 course credits requirement may consist of non-MSE courses in other Engineering, Science or Mathematics disciplines that are approved by a student's advisor. No more than six credits may be granted to a student as transfer credit for work done at another accredited graduate institution. At least 21 course credits must be obtained from MSE 2000 and 3000 courses, **not** including Graduate Seminar (MSE 3023 and 3024), MS Research (MSE 2997), and MS Thesis (MSE 2999). An independent graduate project (MSE 2998) can be conducted after consultation with the student's faculty advisor and may account for 3 of the 21 required MSE credits. Students with non-MSE backgrounds are strongly encouraged to take for credit introductory courses (e.g. MSE 2067 or equivalent). MS degrees are conferred only on those students who have completed all course requirements with at least a 3.00 (B) GPA.

Materials Science and Engineering - Research Track, MSMSE

The research track is primarily for full-time students who have the intention to pursue a PhD or are strongly oriented toward a research career. The University transcript will include an entry indicating that a student is in the research MS track.

Research MS Track Requirements

The Research Track MS degree requires a minimum of 30 credits of course and research based graduate study, including at least 21 course credits. At most up to nine (9) credits of coursework counting towards the required minimum of 21 course credits may consist of technical courses in other non-MSE Engineering, Science or Mathematics disciplines that are approved by a student's advisor. No more than six (6) credits may be granted toward completion of the requirements for the Research Track MS for work completed at another accredited graduate institution. A minimum of 12 course credits must be derived from 2000- and 3000-level MSE courses, not including credits associated with Graduate Seminar (MSE 3023 and MSE 3024), MS Research (MSE 2997), and MS Thesis (MSE 2999). Students with non-MSE backgrounds are strongly encouraged to take for credit introductory courses (e.g. MSE 2067 or equivalent). The student's advisor must approve the course sequence selection. In addition to coursework requirements a minimum of 3 credits of MS research (MSE 2997) and six (6) credits of MS Thesis (MSE 2999) are required. Master's degrees are conferred only on those students who have completed all courses required for the degree with an average grade of least a 3.00 (B) GPA.

MS Thesis

An MS student should initiate research work as early as possible and then register for MS research (MSE 2997). Once thesis preparation has begun, a student must register for thesis credits (MSE 2999) in each succeeding term until successful completion of the thesis and a final oral defense and comprehensive exam. The MS thesis document is at least expected to be a report on independently conducted research and must adhere to the School of Engineering defined style and format. A Style and Form Manual for a thesis is available in the Engineering Office of Administration.

The purpose of an MS thesis oral defense is to evaluate an MS thesis and the student's command of the research subject. The successful completion of a defense is a requirement for the MS degree. The thesis examining committee consists of at least three members of the MSE faculty who are recommended by the student's advisor and approved by the department chair. After successfully completing a defense, a student must deposit an electronic and/or hard copies of the approved thesis in accordance with the current guidelines for thesis submissions available from the Office of Administration of the School of Engineering or the MSE Program Office.

Part-time students may pursue the research MS track. However, they must recognize that, although their thesis topics may be related to the broad technical area of their employment, results of work-related routine technical activities, analysis, surveys, or studies conducted for employers are not acceptable for inclusion in MS theses. Furthermore, part-time students should become aware of the University Intellectual Property Ownership Policy before undertaking theses. Prospective students must clarify all of these issues before contemplating a research-based MS degree.

Mechanical Engineering - Professional Track, MSME

Professional Master of Science Track

Students must take at least one of the following mathematics courses:

- ME 2001 - DIFFERENTIAL EQUATIONS
- ME 2002 - LINEAR AND COMPLEX ANALYSIS
- ME 2646 - LINEAR SYSTEM THEORY or
- ECE 2646 - LINEAR SYSTEM THEORY

Mechanical engineering courses are offered from the following subject areas:

Dynamic Systems and Control

- ME 2015 - ROBOT MODELING AND CONTROL
- ME 2020 - MECHANICAL VIBRATIONS
- ME 2027 - ADVANCED DYNAMICS
- ME 2042 - MEASUREMENT AND ANALYSIS OF VIBRO-ACOUSTIC SYSTEMS
- ME 2045 - LINEAR CONTROL SYSTEMS
- ME 2046 - DIGITAL CONTROL SYSTEMS
- ME 2242 - OPTIMAL FILTERING AND ESTIMATION
- ME 2247 - INTRODUCTION TO NONLINEAR CONTROL DESIGN or
- ECE 2647 - INTRODUCTION TO NONLINEAR CONTROL DESIGN
- ME 2646 - LINEAR SYSTEM THEORY or
- ECE 2646 - LINEAR SYSTEM THEORY
- ME 2671 - OPTIMIZATION METHODS or
- ECE 2671 - OPTIMIZATION METHODS
- ECE 3650 - OPTIMAL CONTROL
- ME 2082 - ELCTRMECHL SENSORS & ACTUATORS

Fluid Mechanics

- ME 2003 - INTRODUCTION TO CONTINUUM MECHANICS
- ME 2055 - COMPUTR ANAL TRANSPORT PHENOMENA
- ME 2070 - MICROFLUIDICS
- ME 2074 - ADVANCED FLUID MECHANICS 1

MEMS/NEMS

- ME 2010 - NANOMECHANICS, MATERIALS AND DEVICE
- ME 2049 - THERMAL MANAGEMENT IN ELECTRONIC SYSTEMS
- ME 2082 - ELCTRMECHL SENSORS & ACTUATORS
- ME 2222 - NANOSCALE MODELING AND SIMULATION: MOLECULAR DYNAMICS
- ME 2223 - NANOSCALE MODELING AND SIMULATIONS:

Materials and Biomechanics

- ME 2005 - STRUCTURE OF MATERIALS
- ME 2007 - ELEMENTS OF MATERIAL SCIENCE AND ENGINEERING 1
- ME 2008 - Elements of Materials Science and Engineering 2 (Proposed)
- ME 2009 - PROCESSING OF MATERIALS
- ME 2010 - NANOMECHANICS, MATERIALS AND DEVICE
- ME 2048 - ENGINEERING ALLOYS FOR CONSTRUCTION
- ME 2060 - NUMERICAL METHODS
- ME 2062 - ORTHOPAEDIC ENGINEERING
- ME 2067 - MUSCULOSKELETAL BIOMECHANIC
- ME 2084 - INTRODUCTION TO POLYMER SCIENCE
- ME 2086 - DESIGN & MECHANICS OF 3D PRINTED MATERIALS AND STRUCTURES
- ME 2222 - NANOSCALE MODELING AND SIMULATION: MOLECULAR DYNAMICS
- ME 2223 - NANOSCALE MODELING AND SIMULATIONS:

Nuclear

- ME 2100 - FUNDAMENTALS OF NUCLEAR ENGINEERING
- ME 2101 - NUCLEAR CORE DYNAMICS
- ME 2102 - NUCLEAR PLANT DYNAMICS AND CONTROL
- ME 2103 - INTEGRATION OF NUCLEAR PLANT SYSTEMS WITH THE REACTOR CORE
- ME 2104 - NUCLEAR OPERATIONS AND SAFETY
- ME 2105 - INTEGRATED NUCLEAR POWER PLANT OPERATIONS
- ME 2106 - NUCLEAR QUALITY ASSURANCE MANAGEMENT
- ME 2107 - HIGH PERFORMANCE COMPUTING ALGORITHMS AND METHODS
- ME 2110 - NUCLEAR MATERIALS
- ME 2112 - NUCLEAR CHEMISTRY AND RADIOCHEMISTRY
- ME 2115 - HEAT TRANSFER AND FLUID FLOW IN NUCLEAR PLANTS
- ME 2116 - BOILING WATER REACTOR THERMAL-HYDRAULICS AND SAFETY
- ME 2118 - COMPUTATIONAL RADIATION TRANSPORT
- ME 2120 - MATHEMATICAL MODELING OF NUCLEAR PLANTS
- ME 2122 - MANAGEMENT PRINCIPLES IN NUCLEAR POWER
- ME 2125 - CASE STUDIES IN NUCLEAR CODES AND STANDARDS
- ME 2130 - NUCLEAR FUEL CYCLE AND ENVIRONMENTAL ISSUES

Solid Mechanics

- ME 2003 - INTRODUCTION TO CONTINUUM MECHANICS
- ME 2004 - ELASTICITY
- ME 2010 - NANOMECHANICS, MATERIALS AND DEVICE
- ME 2022 - APPLIED SOLID MECHANICS
- ME 2033 - FRACTURE MECHANICS FOR PRODUCT DESIGN AND MANUFACTURING
- ME 2047 - FINITE ELEMENT ANALYSIS

Thermal Systems

- ME 2049 - THERMAL MANAGEMENT IN ELECTRONIC SYSTEMS
- ME 2050 - THERMODYNAMICS
- ME 2053 - HEAT AND MASS TRANSFER
- ME 2055 - COMPUTATIONAL TRANSPORT PHENOMENA
- ME 2056 - INTRO TO COMBUSTION THEORY
- ME 2074 - ADVANCED FLUID MECHANICS I

Note:

A student may take up to 9 graduate credits from other engineering, mathematics, or physics departments.

Mechanical Engineering - Research Track, MSME

Research Master of Science Track

The Research MS Track is designed for individuals seeking an in-depth research experience in mechanical engineering. A total of 21 course credits and a master's thesis are required for this degree. Upon entering the program, students plan a program of study with the aid of their faculty advisor.

Students must take:

- ME 2997 - RESEARCH, M.S.

- ME 2999 - M. S. THESIS (at least 6 credits)

At least one of the following mathematics courses:

- ME 2001 - DIFFERENTIAL EQUATIONS
- ME 2002 - LINEAR AND COMPLEX ANALYSIS
- ME 2646 - LINEAR SYSTEM THEORY or
- ECE 2646 - LINEAR SYSTEM THEORY

Note:

A student may take up to 9 graduate credits from other engineering, mathematics, or physics departments.

Nuclear Engineering, MS

The Nuclear Engineering Graduate Program

The Department of Mechanical Engineering and Materials Science offers graduate studies in nuclear engineering. Broad areas covered in the curriculum include: (1) Nuclear Energy Technology, (2) Nuclear Operations and Safety, (3) Nuclear Materials, (4) Nuclear Modeling and Simulations, and (5) Radiochemistry and Radiation Measurement.

Degree Programs

Master of Science Program

The degree requirements can be met by either of the two options described below. Upon entering, the student plans a program of study with the aid of a faculty advisor.

The MS in Nuclear Engineering has two track options:

- Thesis Option (Research MS Track) or
- Non-Thesis Option (Professional MS Track)

Thesis Option (Research M.S. Track)

The research M.S. track is primarily for those students focused on technology development. Further, full time graduate students who are supported by department scholarships must choose the research M.S. track. The thesis examining committee will consist of at least three members of the faculty recommended by a major advisor and approved by the MEMS department chair. The final oral examination in defense of the master's thesis is conducted by the thesis committee, and a report of this examination signed by all members of the committee must be filed in the office of the dean.

Requirements

To complete the MS requirement of 30 graduate credits (with at least a 3.00 QPA) for the Research M.S., students must complete the following:

ME 2997 - RESEARCH, M.S. totaling 3-credits

ME 2999 - M. S. THESIS totaling 6-credits

21 additional credits, comprising:

At least one of the following three mathematics courses (3-credits each):

ME 2001 - DIFFERENTIAL EQUATIONS

ME 2002 - LINEAR AND COMPLEX ANALYSIS or

ME 2646 - LINEAR SYSTEM THEORY /ECE 2646 - LINEAR SYSTEM THEORY

At least five of the nuclear engineering courses listed below (totaling at least 15-credits)

Up to nine graduate credits (six for MS/MBA students) from courses offered in other engineering departments or in the mathematics or physics departments (totaling up to 9-credits), as approved by the Nuclear Engineering program directors.

Non-Thesis Option (Professional M.S. Track)

The professional MS program is oriented toward full-time students seeking a career in industry, and part-time students currently working in industry. Full-time Grad Student Research-supported students might change to the Professional M.S. track, upon approval by the sponsoring faculty advisor and the graduate program.

The professional master's degree requires the completion of at least 30 course credits of graduate study approved by the Nuclear Engineering program directors, with at least a 3.00 GPA. No more than six credit hours may be granted as transfer credit for work done at another accredited graduate institution. All credits earned in the ME master's degree program must be at the graduate level (the 2000 or 3000 series courses).

Requirements:

To complete the MS requirement of 30 graduate credits for the Professional M.S., students must complete:

At least one of the following three mathematics courses (3-credits each)

ME 2001 - DIFFERENTIAL EQUATIONS

ME 2002 - LINEAR AND COMPLEX ANALYSIS or

ME 2646 - LINEAR SYSTEM THEORY /ECE 2646 - LINEAR SYSTEM THEORY

At least five of the nuclear engineering courses listed below (totaling at least 15-credits)

Up to nine graduate credits (six for MS/MBA students) from courses offered in other engineering departments or in the mathematics or physics departments (totaling up to 9-credits) as approved by Nuclear Engineering program directors.

MS/MBA students are also required to complete an integrated project course. Please contact the Graduate Directors for a copy of the guidelines for the integrated project course.

Nuclear Engineering Course Offerings

- ENGR 2100 - FUNDAMENTALS OF NUCLEAR ENGINEERING or
- ME 2100 - FUNDAMENTALS OF NUCLEAR ENGINEERING

- ENGR 2101 - NUCLEAR CORE DYNAMICS or
- ME 2101 - NUCLEAR CORE DYNAMICS Pre-req: ENGR 2100 / ME 2100 or with instructor's permission

- ENGR 2102 - NUCLEAR PLANT DYNAMICS AND CONTROL or
- ME 2102 - NUCLEAR PLANT DYNAMICS AND CONTROL Pre-req: ENGR 2100 / ME 2100 or with instructor's permission

- ENGR 2103 - INTEGRATION OF NUCLEAR PLANT SYSTEMS WITH THE REACTOR CORE or
- ME 2103 - INTEGRATION OF NUCLEAR PLANT SYSTEMS WITH THE REACTOR CORE Pre-req: ENGR 2100 / ME 2100 or with instructor's permission

- ENGR 2104 - NUCLEAR OPERATIONS AND SAFETY or

- ME 2104 - NUCLEAR OPERATIONS AND SAFETY Pre-req: ENGR 2100 / ME 2100 or with instructor's permission
- ENGR 2105 - INTEGRATED NUCLEAR POWER PLANT OPERATIONS or
- ME 2105 - INTEGRATED NUCLEAR POWER PLANT OPERATIONS Pre-req: ENGR 2100 / ME 2100 or with instructor's permission
- ENGR 2106 - NUCLEAR QUALITY ASSURANCE MANAGEMENT or
- ME 2106 - NUCLEAR QUALITY ASSURANCE MANAGEMENT
- ENGR 2110 - NUCLEAR MATERIALS or
- ME 2110 - NUCLEAR MATERIALS Pre-req: an undergraduate course in materials science or instructor's permission
- ENGR 2112 - NUCLEAR CHEMISTRY AND RADIOCHEMISTRY or
- ME 2112 - NUCLEAR CHEMISTRY AND RADIOCHEMISTRY
- ENGR 2113 - RADIATION DETECTION AND MEASUREMENT or
- ME 2113 - RADIATION DETECTION AND MEASUREMENT
- ENGR 2115 - HEAT TRANSFER AND FLUID FLOW IN NUCLEAR PLANTS or
- ME 2115 - HEAT TRANSFER AND FLUID FLOW IN NUCLEAR PLANTS Pre-req: an undergraduate course in heat transfer and fluid flow or instructor's permission
- ENGR 2116 - BOILING WATER REACTOR THERMAL-HYDRAULICS AND SAFETY or
- ME 2116 - BOILING WATER REACTOR THERMAL-HYDRAULICS AND SAFETY Pre-req: an undergraduate course in heat transfer and fluid flow or instructor's permission
- ENGR 2120 - MATHEMATICAL MODELING OF NUCLEAR PLANTS or
- ME 2120 - MATHEMATICAL MODELING OF NUCLEAR PLANTS Pre-req: ENGR 2100 / ME 2100 or with instructor's permission
- ENGR 2122 - MANAGEMENT PRINCIPLES IN NUCLEAR POWER or
- ME 2122 - MANAGEMENT PRINCIPLES IN NUCLEAR POWER
- ENGR 2125 - CASE STUDIES IN NUCLEAR CODES AND STANDARDS or
- ME 2125 - CASE STUDIES IN NUCLEAR CODES AND STANDARDS
- ENGR 2130 - NUCLEAR FUEL CYCLE AND ENVIRONMENTAL ISSUES or
- ME 2130 - NUCLEAR FUEL CYCLE AND ENVIRONMENTAL ISSUES
- ME 2097 - SPECIAL STUDY MECHANICAL ENGRG
(Special Study is as agreed with Advisor)

SOE Faculty

STEVEN D. ABRAMOWITCH, Associate Professor and William Kepler Whiteford Faculty Fellow, Bioengineering, PhD, University of Pittsburgh

MURAT AKCAKAYA, Assistant Professor, Electrical and Computer Engineering, PhD, Washington University

DAVID ANDERSON, Assistant Professor, Electrical and Computer Engineering, PhD, University of Rochester

HESSAM BABAEI, Assistant Professor, Mechanical Engineering and Materials Science, PhD, Louisiana State University

ANNA C. BALAZS, Distinguished Professor and John A. Swanson Chair, Chemical and Petroleum Engineering, PhD, Massachusetts Institute of Technology

HSEEN BALED, Assistant Professor, Chemical and Petroleum Engineering, PhD, University of Pittsburgh

HENG BAN, R.K. Mellon Professor in Energy, Mechanical Engineering and Materials Science, PhD, University of Kentucky

IPSITA BANERJEE, Associate Professor, Chemical and Petroleum Engineering, PhD, Rutgers University

MASOUD BARATI, Assistant Professor, Electrical and Computer Engineering, PhD, Illinois Institute of Technology

MATTHEW BARRY, Assistant Professor, Mechanical Engineering and Materials Science, PhD, University of Pittsburgh

AARON P. BATISTA, Associate Professor, Bioengineering, PhD, California Institute of Technology

CARLA APARECIDA BAUMEL, Assistant Professor, Civil and Environmental Engineering, PhD, Northwestern University

TARYN BAYLES, Vice Chair for Education and Professor, Chemical and Petroleum Engineering, PhD, University of Pittsburgh

ERIC J. BECKMAN, George M. and Eva M. Bevier Chair Professor, Chemical and Petroleum Engineering, PhD, University of Massachusetts

MOSTAFA BEDEWY, Assistant Professor, Industrial Engineering, PhD, University of Michigan

KURT E. BESHORNER, Associate Professor, Bioengineering, PhD, University of Pittsburgh

MARY BESTERFIELD-SACRE, Associate Dean for Academic Affairs and Nickolas A. DeCecco Professor, Industrial Engineering, PhD, University of Pittsburgh

BOPAYA BIDANDA, Chair and Ernest E. Roth Professor, Industrial Engineering, PhD, Pennsylvania State University

HODA BIDKHORI, Assistant Professor, Industrial Engineering, PhD, Massachusetts Institute of Technology

MELISSA M. BILEC, Associate Professor and Roberta Luxbacher Faculty Fellow, Civil and Environmental Engineering, PhD, University of Pittsburgh

HARVEY S. BOROVETZ, Distinguished Professor, Bioengineering, PhD, Carnegie Mellon University

IONNIS BOURMPAKIS, Assistant Professor and Bicentennial Faculty Fellow, Chemical and Petroleum Engineering, PhD, University of Crete

BRYAN N. BROWN, Assistant Professor, Bioengineering, PhD, University of Pittsburgh

DANIEL D. BUDNY, Associate Professor, Civil and Environmental Engineering; Director, Freshman Engineering Program, PhD, Michigan State University

ANDREW P. BUNGER, Associate Professor and R.K. Mellon Faculty Fellow, Civil and Environmental Engineering, Chemical and Petroleum Engineering, PhD, University of Minnesota

KAREN BURSIC, Associate Professor and Undergraduate Program Director, Industrial Engineering, PhD, University of Pittsburgh

LEONARD W. CASSON, Associate Professor, Civil and Environmental Engineering, PhD, University of Texas at Austin

RAKIE CHAM, Associate Professor, Bioengineering, PhD, University of Pittsburgh

JUN CHEN, Assistant Professor, Electrical and Computer Engineering, PhD, Chinese Academy of Sciences

APRIL CHAMBERS, Assistant Professor, Bioengineering, PhD, University of Pittsburgh

KEVIN P. CHEN, Paul E. Lego Professor, Electrical and Computer Engineering, PhD, University of Toronto

MARKUS CHMIELUS, Assistant Professor, Mechanical Engineering and Materials Science, PhD, Technical University, Berlin, Germany

SUNG KWON CHO, Professor, Mechanical Engineering and Materials Science, PhD, Seoul National University, Korea

YOUNGJAE CHUN, Associate Professor, Industrial Engineering, PhD, University of California, Los Angeles

MINKING CHYU, Associate Dean for International Initiatives; Leighton E. and Mary N. Orr Chair Professor, Mechanical Engineering and Materials Science, PhD, University of Minnesota

RENEE CLARK, Assistant Professor, Industrial Engineering, PhD, University of Pittsburgh

WILLIAM W. CLARK, Professor, Mechanical Engineering and Materials Science, PhD, Virginia Polytechnic Institute and State University

DANIEL G. COLE, Associate Professor, Mechanical Engineering and Materials Science, PhD, Virginia Polytechnic Institute and State University

XINYAN CUI, William Keppler Whiteford Professor, Bioengineering, PhD, University of Michigan

AHMED DALLAL, Assistant Professor, Electrical and Computer Engineering, PhD, University of Pittsburgh

MONI KANCHAN DATTA, Assistant Professor, Bioengineering, PhD, Indian Institute of Technology, India

LANCE A. DAVIDSON, Professor and Wellington C. Carl Faculty Fellow, Bioengineering, PhD, University of California at Berkeley

RICHARD E. DEBSKI, Professor and William Keppler Whiteford Faculty Fellow, Bioengineering, PhD, University of Pittsburgh

SAMUEL J. DICKERSON, Assistant Professor and Director, Electrical and Computer Engineering, PhD, University of Pittsburgh

AMRO EL-JAROUDI, Associate Professor and Director, Electrical and Computer Engineering, PhD, Northeastern University

MAHMOUD EL NOKALI, Associate Professor, Electrical and Computer Engineering, PhD, McGill University

ROBERT M. ENICK, Bayer Professor and Vice Chair for Research, Chemical and Petroleum Engineering, PhD, University of Pittsburgh

WILLIAM FEDERSPIEL, William Keppler Whiteford Professor, Graduate Coordinator, Bioengineering, PhD, University of Rochester

SUSAN FULLERTON, Assistant Professor, Chemical and Petroleum Engineering, PhD, The Pennsylvania State University

GIOVANNI P. GALDI, Leighton E. and Mary N. Orr Professor, Mechanical Engineering and Materials Science, PhD, University of Naples, Italy

NEERAJ J. GANDHI, Professor, Bioengineering, PhD, University of California, San Francisco

JIN GAO, Assistant Professor, Bioengineering, PhD, Chinese Academy of Sciences

WEI GAO, Associate Professor, Electrical and Computer Engineering, PhD, Pennsylvania State University

CALIXTO I. GARCIA, Professor, Mechanical Engineering and Materials Science, PhD, University of Pittsburgh

MARK J. GARTNER, Professor of Practice, Bioengineering, PhD, Carnegie Mellon University

ALAN D. GEORGE, Ruth E. and Howard T. Mickle Professor and Chair of Electrical and Computer Engineering, PhD, Florida State University

LEANNE GILBERTSON, Assistant Professor, Civil and Environmental Engineering, PhD, Yale University

PEYMAN GIVI, Distinguished Professor and James T. MacLeod Professor, Mechanical Engineering and Materials Science, PhD, Carnegie Mellon University

BRIAN M. GLEESON, Chair and Harry S. Tack Professor, Mechanical Engineering and Materials Science PhD, University of California at Los Angeles

ANDRES GOMEZ ESCOBAR, Assistant Professor, Industrial Engineering, PhD, University of California, Berkeley

BRANDON GRAINGER, Assistant Professor, Electrical and Computer Engineering, PhD, University of Pittsburgh

KILICHAN GURLEYIK, Assistant Professor, Bioengineering, DSc, Washington University in St. Louis

SARAH HAIG, Assistant Professor, Civil and Environmental Engineering, PhD, University of Glasgow

JOEL M. HAIGHT, Professor, Industrial Engineering, PhD, Auburn University

KENT A. HARRIES, Professor and Bicentennial Board of Visitors Faculty Fellow, Civil and Environmental Engineering, PhD, McGill University

ALAN HIRSCHMAN, Professor, Bioengineering, PhD, Carnegie Mellon University

GERALD D. HOLDER, Distinguished Service Professor, Chemical and Petroleum Engineering, PhD, University of Michigan

KATHERINE MARY HORNBOSTEL, Assistant Professor, Mechanical Engineering and Materials Science, PhD, Massachusetts Institute of Technology

JINGTONG HU, Assistant Professor, Electrical and Computer Engineering, PhD, University of Texas at Dallas

HENG HUANG, John A. Jerenko Professor, Electrical and Computer Engineering, PhD, Dartmouth College

TIN-KAN HUNG, Professor, Bioengineering, PhD, University of Iowa

ANTHONY T. IANNACCHIONE, Associate Professor, Civil and Environmental Engineering, PhD, University of Pittsburgh

TAMER S. IBRAHIM, Associate Professor, Bioengineering, PhD, The Ohio State University

STEVEN P. JACOBS, Professor, Electrical and Computer Engineering, DSc, Washington University

TEVIS D. B. JACOBS, Assistant Professor, Mechanical Engineering and Materials Science, PhD, University of Pennsylvania

DANIEL R. JIANG, Assistant Professor, Industrial Engineering, PhD, Princeton University

J. KARL JOHNSON, William Kepler Whiteford Professor, Chemical and Petroleum Engineering, PhD, Cornell University

ALEX K. JONES, Professor and COE Undergraduate Program Director, Electrical and Computer Engineering, PhD, Northwestern University

BISTRA JORDANOVA, Assistant Professor, Bioengineering, PhD, Carnegie Mellon University

JOHN A. KEITH, Assistant Professor and R.K. Mellon Faculty Fellow, Chemical and Petroleum Engineering, PhD, California Institute of Technology

ROBERT JOHN KERESTES, Assistant Professor, Electrical and Computer Engineering, PhD, University of Pittsburgh

VIKAS KHANNA, Associate Professor, Civil and Environmental Engineering, PhD, The Ohio State University

LEV KHAZANOVICH, Anthony E. Gill Chair Professor and Civil and Environmental Engineering, PhD, University of Illinois

HONG KOO KIM, Bell of PA/Bell Atlantic Professor, Electrical and Computer Engineering, PhD, Carnegie Mellon University

TAKASHI DANIEL YOSHIDA KOZAI, Assistant Professor, Bioengineering, PhD, University of Michigan

PRASHANT N. KUMTA, Edward R. Weidlein Chair Professor, Bioengineering, PhD, University of Arizona

ALEXIS KWASINSKI, Associate Professor and R.K. Mellon Faculty Fellow, Electrical and Computer Engineering, PhD, University of Illinois at Urbana-Champaign

JUNG-KUN LEE, Professor and William Kepler Whiteford Faculty Fellow, Mechanical Engineering and Materials Science, PhD, Seoul National University, Korea

KEEWON LEE, Assistant Professor, Bioengineering, PhD, Mayo Clinic College of Medicine

SANGYEOP LEE, Assistant Professor, Mechanical Engineering and Materials Science, PhD, Massachusetts Institute of Technology

PAUL LEU, Associate Professor and B.P. America Faculty Fellow, Industrial Engineering, PhD, Stanford University

GUANGYONG LI, Associate Professor, Electrical and Computer Engineering, PhD, Michigan State University

LEI LI, Associate Professor, Chemical and Petroleum Engineering, PhD, University of Michigan

XU LIANG, William Keppeler Whiteford Professor, Civil and Environmental Engineering, PhD, University of Washington

JEEN-SHANG LIN, Associate Professor, Civil and Environmental Engineering, ScD, Massachusetts Institute of Technology

STEVEN LITTLE, Chair and William Kepler Whiteford Professor, Chemical and Petroleum Engineering, PhD, Massachusetts Institute of Technology

PATRICK J. LOUGHLIN, Professor, Bioengineering, PhD, University of Washington

NIATIKUN LOUIS LUANGKESORN, Assistant Professor, Industrial Engineering, PhD, Northwestern University

ARASH MAHBOOBIN, Assistant Professor, Bioengineering, PhD, University of Pittsburgh

SPANDAN MAITI, Assistant Professor, Bioengineering, PhD, University of Illinois, Urbana-Champaign

LISA M. MAILLART, Professor, Industrial Engineering, PhD, University of Michigan

SCOTT X. MAO, William Kepler Whiteford Professor, Mechanical Engineering and Materials Science, PhD, Tohoku University

ZHI-HONG MAO, Associate Professor and William Kepler Whiteford Faculty Fellow, Electrical and Computer Engineering, PhD, Massachusetts Institute of Technology

JAMES R. MARTIN, II, U.S. Steel Dean of Engineering, Swanson School of Engineering, Civil and Environmental Engineering, PhD, Virginia Tech

JOSEPH J. MCCARTHY, William Kepler Whiteford Professor and Vice Provost for Undergraduate Studies, PhD, Northwestern University

JAMES R. MCKONE, Assistant Professor, Chemical and Petroleum Engineering, PhD, California Institute of Technology

RAVI S. MEENAKSHISUNDARAM, William Kepler Whiteford Professor, Industrial Engineering, PhD, Purdue University

IRENE MENA, Assistant Professor and Director of the First Year Engineering Program, Mechanical Engineering and Materials Science, PhD, Purdue University

NATASA MISKOV-ZIVANOV, Assistant Professor, Electrical and Computer Engineering, PhD, Carnegie Mellon University

KARTIK MOHANRAM, Associate Professor, Electrical and Computer Engineering, PhD, University of Texas at Austin

BADIE I. MORSI, Professor, Chemical and Petroleum Engineering, PhD, ScD, Institut National Polytechnique de Lorraine-Ecole Nationale Supérieure des Industries Chimiques

JOHN MURPHY, Professor, Chemical and Petroleum Engineering, Duquesne University

SITTICHAJ NATESAKHAWAT, Assistant Professor, Chemical and Petroleum Engineering, PhD, The Ohio State University

IAN NETTLESHIP, Associate Professor, Mechanical Engineering and Materials Science, PhD, University of Leeds

TAGBO HERMAN ROLAND NIEPA, Assistant Professor, Chemical and Petroleum Engineering, PhD, Syracuse University

ROBERT S. PARKER, Robert V.D. Luft Professor and Vice Chair for Graduate Education, Chemical and Petroleum Engineering, PhD, University of Delaware

THOMAS PICCONE, Assistant Professor, Mechanical and Petroleum Engineering, PhD, Massachusetts Institute of Technology

OLEG A. PROKOPYEV, Professor, Industrial Engineering, PhD, University of Florida

JAYANT RAJGOPAL, Professor and Graduate Program Director, Industrial Engineering, PhD, University of Iowa

MARK S. REDFERN, Vice Provost for Research and William Kepler Whiteford Professor, Swanson School of Engineering; Professor, Bioengineering, PhD, University of Michigan

GREGORY F. REED, Professor, Electrical and Computer Engineering, PhD, University of Pittsburgh

PIERVINCENZO RIZZO, Professor, Civil and Environmental Engineering, PhD, University of California at San Diego

ANNE M. ROBERTSON, William Kepler Whiteford Professor, Mechanical Engineering and Materials Science, PhD, University of California at Berkeley

JOAQUIN RODRIGUEZ, Assistant Professor, Chemical and Petroleum Engineering, PhD, University of Pittsburgh

ABHIJIT ROY, Assistant Professor, Bioengineering, PhD, Indian Institute of Technology

PARTHA ROY, Associate Professor, Bioengineering, PhD, University of Texas, Southwestern Medical Center

WARREN RUDER, Assistant Professor, Bioengineering, PhD, Carnegie Mellon University

STEVEN G. SACHS, Assistant Professor, Civil and Environmental Engineering, PhD, University of Pittsburgh

JOSEPH T. SAMOSKY, Assistant Professor, Bioengineering, PhD, Massachusetts Institute of Technology

DAVID SANCHEZ, Assistant Professor, Civil and Environmental Engineering, PhD, University of Pittsburgh

WISSAM SAIDI, Associate Professor, Mechanical Engineering and Materials Science, PhD, Ohio State University

SHERVIN SAMMAK, Assistant Professor, Mechanical Engineering and Materials Science, PhD, University of Pittsburgh

DAVID SCHMIDT, Associate Professor, Mechanical Engineering and Materials Science, PhD, Carnegie Mellon University

JOHN SEBASTIAN, Professor of Practice, Civil and Environmental Engineering, MBA, University of Pittsburgh

ERVIN SEJDIC, Associate Professor and Fulton C. Noss Faculty Fellow, Electrical and Computer Engineering, PhD, University of Western Ontario

INANC SENOCAK, Associate Professor, Mechanical Engineering and Materials Science, PhD, University of Florida

JASON SHOEMAKER, Assistant Professor, Chemical and Petroleum Engineering, PhD, University of California, Santa Barbara

SANJEEV G. SHROFF, Chair, Distinguished Professor and Gerald E. McGinnis Chair, Bioengineering, PhD, University of Pennsylvania

WILLIAM S. SLAUGHTER IV, Associate Professor and Undergraduate Director, Mechanical Engineering and Materials Science, PhD, Harvard University

PATRICK SMOLINSKI, Associate Professor, Mechanical Engineering and Materials Science, PhD, Northwestern University

MAX STEPHENS, Assistant Professor, Civil and Environmental Engineering, PhD, University of Washington

GEORGE DEWITT STETTEN, Professor, Bioengineering, PhD, University of North Carolina

SUSHENG TAN, Associate Professor, Electrical and Computer Engineering, PhD, Chinese Academy of Sciences

ALBERT C. F. TO, Associate Professor and CNG Faculty Fellow, Mechanical Engineering and Materials Science, PhD, University of California at Berkeley

GELSY TORRES-OVIEDO, Assistant Professor, Bioengineering, PhD, Georgia Institute of Technology and Emory University

LUIS E. VALLEJO, Professor, Civil and Environmental Engineering, PhD, University of Wisconsin

JONATHAN VANDE GEEST, Professor, Bioengineering, PhD, University of Pittsburgh

JULIE M. VANDENBOSSCHE, Associate Professor, Civil and Environmental Engineering, PhD, University of Minnesota

SACHIN S. VELANKAR, Associate Professor, Chemical and Petroleum Engineering, PhD, University of Delaware

OLEG VELIKOKHATNYI, Assistant Professor, Bioengineering, PhD, Institute of Strength Physics and Materials Science of Russian Academy of Sciences

GÖTZ VESER, Nickolas A. DeCecco Professor, Chemical and Petroleum Engineering, PhD, Fritz-Haber-Institute of the Max-Planck-Society

NATASA VIDIC, Assistant Professor, Industrial Engineering, PhD, University of Pittsburgh

RADISAV D. VIDIC, Chair William Keppler Whiteford Professor, Civil and Environmental Engineering, PhD, University of Cincinnati

JEFFREY S. VIPPERMAN, Professor and Vice Chair, Mechanical Engineering and Materials Science, PhD, Duke University

DAVID VORP, Associate Dean for Research, and John A. Swanson Professor, Bioengineering, PhD, University of Pittsburgh

GUOFENG WANG, Associate Professor, Mechanical Engineering and Materials Science, PhD, California Institute of Technology

QING-MING WANG, Professor and ME Graduate Director, Mechanical Engineering and Materials Science, PhD, Pennsylvania State University

DOUGLAS WEBER, Associate Professor, Bioengineering, PhD, Arizona State University

JUSTIN WEINBAUM, Assistant Professor, Bioengineering, PhD, Washington University in St. Louis

JOHN WHITEFOOT, Assistant Professor, Mechanical Engineering and Materials Science, PhD, University of Michigan-Ann Arbor

JÖRG M. WIEZOREK, Professor, Mechanical Engineering and Materials Science, PhD, University of Cambridge

CHRISTOPHER E. WILMER, Assistant Professor, Chemical and Petroleum Engineering, PhD, Northwestern University

SYLVANUS N. WOSU, Associate Dean for Diversity Affairs; Associate Professor, Mechanical Engineering and Materials Science, PhD, University of Oklahoma

FENG XIONG, Assistant Professor, Electrical and Computer Engineering, PhD, University of Illinois at Urbana-Champaign

WEI XIONG, Assistant Professor, Mechanical Engineering and Materials Science, PhD, Massachusetts Institute of Technology

JUDITH C. YANG, William Keppler Whiteford Professor, Chemical and Petroleum Engineering, PhD, Cornell University

JUN YANG, William Keppler Whiteford Professor, Electrical and Computer Engineering, PhD, University of Arizona

VICTOR YASHIN, Assistant Professor, Chemical and Petroleum Engineering, PhD, Moscow State University

BO ZENG, Assistant Professor, Industrial Engineering, PhD, Purdue University

MIN HEE YUN, Associate Professor, Electrical and Computer Engineering, PhD, Arizona State University

XIAYUN ZHAO, Assistant Professor, Mechanical Engineering and Materials Science, PhD, Georgia Institute of Technology

LIANG ZHAN, Assistant Professor, Electrical and Computer Engineering, PhD, University of California, Los Angeles

School of Health and Rehabilitation Sciences

Welcome to The School of Health and Rehabilitation Sciences (SHRS)

The School of Health and Rehabilitation Sciences (SHRS) offers educational programs leading to the following graduate degrees and certificates:

Accelerated Programs:

Dietitian Nutritionist Program

Master's Programs:

Master of Science in Clinical Rehabilitation and Mental Health Counseling

Master of Science in Health Informatics with concentrations in:

- Data Science
- Health Care Supervision and Management
- Registered Health Information Administrator

Master of Science in Nutrition and Dietetics

Master of Occupational Therapy (MOT) (only students who received a graduate school guarantee for the MOT are eligible for admission)

Master of Arts or Science in Communication Science and Disorders with concentrations in:

- Speech-Language Pathology
- Audiology

Master of Science degree program in Health and Rehabilitation Sciences with concentrations in:

- Health Information Systems (no longer admitting students)
- Health Care Supervision and Management (no longer admitting students)
- Musculoskeletal Physical Therapy
- Neuromuscular Physical Therapy
- Rehabilitation Science and Technology
- Sports Medicine
- Sports Science
- Wellness and Human Performance (no longer admitting students)

Master of Science in Occupational Therapy

Master of Science in Physician Assistant Studies

Master of Science in Prosthetics & Orthotics

Doctoral Programs:

Professional doctoral degrees:

- Doctor of Audiology (AuD)
- Doctor of Occupational Therapy (OTD)
- Doctor of Physical Therapy (DPT)
- Doctor of Physical Therapy/ Doctor of Philosophy in Bioengineering
- Doctor of Clinical Science (CScD) in Speech-Language Pathology (no longer admitting students)
- Doctor of Clinical Science (CScD) in Occupational Therapy with concentrations in:
 - Geriatric Practice
 - Pediatric Practice
 - Musculoskeletal Rehabilitation
 - Neurological Rehabilitation Clinical Educator
 - Professional Leader and Advocate

Doctor of Philosophy

- Communication Science and Disorders
- Rehabilitation Science

Certificate Programs:

Offered through the Health Information Management Department:

- Health Data Analytics Certificate
- Health Information Cybersecurity Certificate
- Leadership in Health Informatics Certificate
- Revenue Cycle Management Certificate

SHRS is affiliated with the University of Pittsburgh Schools of the Health Sciences and shares a close affiliation with the world-class University of Pittsburgh Medical Center (UPMC). The medical center comprises a variety of hospitals and clinical facilities that affords students a wealth of opportunities for professional experience.

The SHRS faculty ground their teaching upon research studies, clinical service and participation in their respective professional associations. Faculty research and service typically occurs within a multi-disciplinary collaboration in diverse health care and research environments. Consequently, both entry-level and advanced students are exposed to state-of-the-art curricula, which are continually reviewed from the perspective of new research findings, technological developments, changing public policy and accepted clinical and management practice.

Our students interact with role models and mentors who demonstrate the core values of their respective professions including commitment to:

- Respect for the inherent value, dignity and integrity of the patient, client and/or research subject;
- A service-oriented and personalized approach to health care and rehabilitation;
- Ethical behavior in all clinical, service and research interactions with patients, colleagues, employees and others.

Philosophy of Graduate Education

The faculty of the School of Health and Rehabilitation Sciences (SHRS) believes that it has a major responsibility in graduate education to broaden the perspectives and awareness of students in the health professions toward high standards of scholarship and recognition of its relevance to technological and human needs.

Graduate programs provide depth in a substantial area of the student's profession and foster critical thinking through a variety of scholarly and creative activities thereby generating an atmosphere of scientific inquiry. These substantive areas include the knowledge of the scientific basis for the development of advanced clinical expertise within the professions represented in the School. An equally important function is to encourage health professionals to be sensitive to the needs of the human beings they are serving and to adapt their methods to the changing social, economic and technological environments in which they practice. Accordingly, these professionals should develop the capability to perform newly emerging and expanding roles of advanced clinical services, research, teaching and administration in the health care systems, advancing the frontiers of their particular field of expertise.

On the assumption that the accumulation and mastery of basic factual knowledge have been accomplished, graduate education focuses on synthesis and integration to allow for new systemic insights into the application and extension of that knowledge. The linkage of various educational experiences with research projects enhances problem-solving skills. Through interdisciplinary and multi-disciplinary didactic, clinical and research experiences, individual professional identity is fostered, while the ability to function both on an independent and collaborative level with colleagues from other disciplines is enhanced.

Admission Information

Contact Information

Office of Admissions
School of Health and Rehabilitation Sciences
4020 Forbes Tower

412-383-6558
Fax: 412-383-6535
E-mail: admissions@shrs.pitt.edu
Website: www.shrs.pitt.edu

Application Procedures

Each graduate and doctoral program at SHRS has its own specific list of application requirements and instructions. We utilize various application portals for admission.

The following SHRS programs utilize Centralized Application Systems (CAS) which are unique application portals for specific professions:

Communication Science and Disorders (MA and AuD) (CSDCAS <https://csdcas.liaisoncas.com>)
Doctor of Physical Therapy (PTCAS <http://www.ptcas.org/>)
Doctor of Occupational Therapy (OTCAS <https://otcas.liaisoncas.com>)
Physician Assistant Studies (CASPA <https://caspa.liaisoncas.com>)
Prosthetics & Orthotics (OPCAS <https://portal.opcas.org/>)

The following SHRS programs utilize the SHRS Apply Yourself application:

Clinical Rehabilitation and Mental Health Counseling
Dietitian Nutritionist Program
Health Informatics (on-campus)
Master of Science in Health and Rehabilitation Sciences:

- Neuromuscular or Musculoskeletal Physical Therapy
- Rehabilitation Science and Technology
- Sports Medicine
- Sports Science

Master of Science in Occupational Therapy
Doctor of Clinical Science in Speech-Language Pathology
Doctor of Clinical Science in Occupational Therapy
PhD in Communication Science
PhD in Rehabilitation Science

To apply to the *online* Health Informatics Master of Science and certificate programs, please visit: <https://online.shrs.pitt.edu/>

*Applicants for the Master of Occupational Therapy (MOT) program should contact the OT Department

Admissions Process for International Students:

SHRS is a globally diverse community with students from over 20 countries, including Canada, China, Colombia, Ghana, Greece, India, Indonesia, Korea, Mexico, Saudi Arabia, Singapore, Switzerland, Taiwan, and Thailand.

As noted above, because each program has its own specific requirements, it is encouraged that international applicants review these requirements (including CAS programs).

In addition to general admission requirements, SHRS has specific requirements for international applicants that are noted below.

Application Deadlines

Fall admission: April 15*
Spring admission: September 1
Summer admission: February 1

*Please note that if a program deadline is prior to the deadline above you must submit your application by the program deadline.

Academic Credential Evaluations

Applicants who have completed the equivalent of a baccalaureate degree or higher at an institution outside of the United States are required to provide an official third-party course-by-course evaluation of those academic credentials verifying Grade Point Average (GPA) on a 4.0 scale. The evaluation is an application requirement.

Upon admission official transcripts of all original language academic records for all post-secondary educational endeavors are required. If original documents are issued in a language other than English, certified English translations must also be submitted. A final transcript or diploma showing completion of the undergraduate degree must be submitted prior to starting all SHRS graduate programs.

SHRS requires credential evaluations be provided by a member of the National Association of Credential Evaluation Services. Below is a non-exhaustive list of accreditation services. SHRS neither endorses nor recommends any company over another. The list is in alphabetical order. Visit www.naces.org/members.html for a more extensive list of service providers.

Educational Credential Evaluators, Inc.: www.ece.org

International Consultants of Delaware, Inc.: www.icdeval.com

Joseph Silney & Associates, Inc.: www.jsilny.com

World Education Services, Inc.: www.wes.org

International applicants are not required to submit an evaluation for degrees earned in the United States.

Verification of English Language Proficiency

The University of Pittsburgh accepts TOEFL or IELTS test scores to verify English Language Proficiency.

TOEFL

Minimum TOEFL scores accepted (with the exception of the programs below) are:

- 80 on the internet based test
- 550 on the paper based test

Minimum TOEFL scores accepted by the PhD in Rehabilitation Science, Communication Science and Disorders (MA/MS) and Doctor of Audiology (AuD) are:

- 100 on the internet based test
- 600 on the paper based test

Minimum TOEFL scores accepted by the Doctor of Occupational Therapy (OTD) are:

- 90 on the internet based test
- 575 on the paper based test

TOEFL scores must be sent electronically through ETS to institution code 2927.

IELTS

The minimum IELTS score accepted (with the exception of the programs below) is:

- Overall Band 6.5

The minimum IELTS score accepted by the PhD in Rehabilitation Science, Communication Science and Disorders (MA/MS), Doctor of Audiology (AuD) and Doctor of Occupational Therapy (OTD) is:

- Overall Band 7.0

IELTS scores must be mailed to the address below:

SHRS Admissions Office
4020 Forbes Tower
University of Pittsburgh
Pittsburgh, PA 15260

IELTS score reports must be submitted in the original sealed envelope to be considered official.

Verification of English Language Proficiency is required unless the following apply:

- The applicant is a citizen of a country whose official language is English.
- The applicant has completed a degree at a regionally accredited institution in the U.S.
- The applicant is not a citizen of a country whose official language is English but has completed a degree program at an institution outside of the U.S. where the language of instruction is English and where the official national language of the country in which the institution is located is English.

Information for Admitted Students

If you are a citizen of a country whose official language is not English, and you scored below 100 on the TOEFL iBT or overall band 7.0 or lower on the IELTS, you will be required to take an English Language Proficiency Test to better assess your English Language skills. The results of this exam may be used to recommend (not require) additional English language instruction that may supplement your education. If you have additional questions about the test, please click [here](#).

Process of Issuing Visa Documents

For future international students - Once you have confirmed your admission to the School of Health and Rehabilitation Sciences (SHRS) at the University of Pittsburgh, SHRS will notify the Office of International Services (OIS) of your future attendance. OIS will then email you to complete the information required to either create or verify your immigration documents. This email will also include information about the timeline for receiving a new immigration document and international student orientation.

All international students should refer to the University's Office of International Services (OIS) website at <http://www.ois.pitt.edu> for information on admissions, orientation, immigration and visas, and life in Pittsburgh.

Admission Status

Full Status

The student has been admitted into a SHRS degree program. To maintain full graduate status, the student must achieve a minimum cumulative GPA of 3.000 (based on 4.000) in his/her graduate study. Students whose cumulative GPA drops below a 3.000 while in the program will be placed on academic probation (please see the Academic Probation policy in this handbook).

Non-Degree Status

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

Applicants who do not wish to enroll in a degree program may apply for admission as non-degree students to take one or more courses of particular interest, if written permission is obtained from the course instructor. Non-degree students are permitted to take a total of six (6) credits. A non-degree student wishing to register for more than 6 credits must receive approval from the Department Chair/Program Director. Information concerning such requests should be directed first to the Director of Admissions, 4020 Forbes Tower, University of Pittsburgh, Pittsburgh, PA 15260 or via email at admissions@shrs.pitt.edu.

Active Status

Graduate students are required to register for at least 1 credit in the fall and spring terms. PhD students who have completed their course work and have successfully proposed their dissertation, must be enrolled in dissertation credits or FTDI (Full time Dissertation Study) in the fall and spring terms to maintain active status.

Inactive Status

A student who has not registered for at least 1 credit or for full-time dissertation study during a 12-month period will be transferred automatically to inactive status. Inactive students cannot apply to graduate or take Preliminary or Comprehensive Examinations. While on inactive status, a student is not eligible to use University facilities and should not expect to receive counseling by the faculty or active supervision by his/her advisor and committee.

Reinstatement

Readmission is not automatic nor does it necessarily reinstate the student to the academic status enjoyed prior to becoming inactive. Students must formally re-apply for admission and pay the application fee. If the requirements for successful completion of the specific graduate program in which the student was enrolled have changed during the period of non-enrollment, the re-admitted student may be required to meet the revised requirements of the program that are in effect at the time of readmission. This will be decided by the Department Chair of the student's particular program; for the doctoral program the decision will be made by the Associate Dean of Graduate Studies.

Upon readmission, the student's Plan of Study will be adjusted to meet the requirements at the time of readmission.

Financial Information

Tuition and Fee Rates

Tuition and fee rates are available on the Financial Information page in the University Catalog and the tuition chart is on-line at Graduate Tuition & Mandatory Fees.

Full Tuition

Graduate students registered for 9 to 15 credits in the Fall and Spring Terms are regarded as full-time students, and are assessed the current graduate "flat" tuition rate for their academic center. Students will be charged per credit for each credit exceeding the maximum full-time credit limit.

Summer Term

All students are billed on a per-credit basis. (except for the Doctor of Physical Therapy program)

Residency/Reduced Tuition

Students who reside in the Commonwealth of Pennsylvania may be eligible for reduced tuition through state appropriations.

Eligibility is determined by criteria outlined in the University of Pittsburgh Guidelines for Determining Eligibility for Reduced Tuition Rates, available on-line at <http://payments.pitt.edu/pa-tuition-rate-eligibility>.

Additional Fees

Lab Fees: Lab courses may incur an additional fee to cover laboratory expenses. These fees will be charged to the student directly and will appear on the invoice generated by Student Accounts in addition to tuition and other fees each semester.

Financial Obligation of Students

The University of Pittsburgh has the right to withhold services if a student defaults on any financial obligation until repayment arrangements have been made that are satisfactory to the office or department to which the debt is owed.

Scholarships, Grants and Financial Aid

If you are interested in applying for loans, scholarships, grants, or work study, you should call, or visit the University of Pittsburgh, Office of Admissions and Financial Aid, Alumni Hall, Pittsburgh, PA 15260, 412-624-PITT. The website for information is <https://oafa.pitt.edu/>

The website specifically for graduate students is: Graduate School Financial Aid Instructions.

SHRS Scholarships and Awards

General information on scholarship and awards can be found at: SHRS Financial Information Page. Information on merit, individual department and school wide scholarship and awards can be found at: Schoolwide Scholarships

Contact individual departments for information on scholarships and awards specific to your area of study.

SHRS Academic Regulations

Minimum Academic Standard

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

- It is the student's responsibility to review her/his academic standing, to identify graduate program requirements and prerequisites for intended graduate program(s) and to monitor their completion.
- All required and prerequisite coursework must be taken for a grade, when letter grade option is available, unless approved by the Department Chair/Program Director.
- Students must receive a grade of C or better in all courses required by their program curriculum.
- Students who receive a grade below a C in a required course must repeat that course and attain a grade of C or better to graduate. (Note: University regulations state that a student may repeat any course in which a grade of B- or lower is received if an authorization to repeat the course is given by the student's adviser/faculty.)
- Students will not be permitted to register for a course until they attain a C or better in its prerequisites.
- Failure to receive an acceptable grade after the second opportunity to complete a required course may result in the student being dismissed from the program and SHRS.

Advising

Master and Clinical Doctorates

Master's students are assigned an advisor who must be a member of the SHRS faculty holding a regular, research, clinical, or adjunct appointment, and having at least a master's degree. The director of the program to which the student has been accepted selects advisors for SHRS graduate students. Students are notified of their advisor after their enrollment. It is the student's responsibility to contact the advisor to schedule an initial meeting.

Doctor of Philosophy

PhD students are assigned an academic advisor in the student's main area of specialization. The academic advisor and student will plan course work and other experiences to enable the student to meet program requirements and her/his academic goals.

Change of Advisor

If either the student or his or her assigned advisor prefers, the student can choose another advisor. The student must obtain a *Change of Advisor form*, **located on the SHRS website under forms**. The student must complete the form and secure the required signatures, and return the form to the Office of Student Services. As a general rule, students who have more than 50% of the credits required for graduation should not initiate change of advisor procedures.

More information on Advisor roles and responsibilities can be found in the SHRS Graduate Handbook.

Plan of Study

Every student in SHRS must have a Plan of Study, signed by academic/faculty advisor, on file with Student Services by the end of the first semester. Any revisions to the Plan of Study must be approved by the academic/faculty advisor or Department Chair and submitted to Student Services.

To be certified for graduation, students must have successfully completed all courses outlined in their final Plan of Study as well as any other requirements for the degree. A final Plan of Study must be on file in Student Services 4019 Forbes Tower.

Allowable Credits

Transfer Credits

The completion of requirements for advanced degrees must be satisfied through registration at the Oakland Campus of the University of Pittsburgh. Graduate students already enrolled may, when approved in advance by their Department Chair and the Dean, spend a term or more at another graduate institution to obtain training or experience not available at the University of Pittsburgh and transfer those credits toward the requirements for

an advanced degree at the University of Pittsburgh. In such instances, neither the University nor any of its components are responsible for providing any financial assistance to the graduate student.

Transcripts certifying graduate courses completed at another institution prior to admission to the University of Pittsburgh should be submitted at the time of application, and will be evaluated for acceptability as transfer credits early in the student's graduate career by the advisor and Department Chair.

For **Master of Arts and Master of Science degrees**, no more than six (6) credits may be transferred. The Office of Student Services will enter the transfer credits on the student's transcript. Grades (and quality points) are not recorded for credits accepted by transfer.

For **Professional Master and Clinical Doctorate Degrees**, no more than one-third of the total number of required credits may be granted to a student as transfer credit for work done at another accredited graduate institution.

For all **Master and Clinical Doctorate** a maximum of six (6) credits in undergraduate courses (numbered 1000 and above) may be included as transfer credits in the Plan of Study.

For **Doctor of Philosophy** up to 30 credits taken at the graduate level (2000 & 3000 level courses) toward a master's degree may be transferred. In all cases, at least 36 credits must be completed as a PhD student at the University of Pittsburgh. No Undergraduate credits (1000 level course) may be applied towards the doctoral degree. All transfer credits must be submitted to and approved by the Associate Dean of Graduate Studies. Please note, credits transferred from another institution may not be used to substitute for credits of courses required in the degree study plan. For example, credits transferred for a statistics course taken at another institution will not count toward the 9 credits of statistics required in the PhD program here at the University of Pittsburgh. The student will still need to take 9 credits of statistics at the University of Pittsburgh.

Transfer credits will not be accepted for courses in which a grade lower than B (GPA = 3.000), or its equivalent, has been received. No credit is granted toward an advanced degree for work completed in extension courses, correspondence courses, or in the off-campus center or another institution unless those credits are approved for the equivalent graduate degrees at the institution, and provided that the institution has an accredited program.

Credits Required

The number of credits required for the Master's degree varies among the departments within SHRS, but all departments require at least 30 credits. Many departments offer a variety of emphases. Individual departments should be contacted for the number of credits and Plan of Study specific to that department and focus.

Undergraduate Courses in the Graduate Program

A maximum of six (6) credits in undergraduate courses (numbered 1000 and above) may be included in the *Plan of Study*.

Grading Policy

All SHRS graduate programs adhere to the University's grading system and grading policies for graduate students. Please refer to the Office of the University Registrar on Grades or the University Catalog on Grading and Records

SHRS Policy and Procedure for G and I Grades

G & I (Incomplete) Grade Policy

SHRS (G) Grade Policy

The G grade signifies unfinished course work due to extenuating personal circumstances. Students assigned G grades are required to complete course requirements no later than one year after the term or session in which the course was taken.

Once the deadline has passed, the G grade will be changed automatically to a (NG) - No Grade. The NG grade will remain on the record and the student will be required to re-register for the course if it is needed to fulfill requirements for graduation.

Action required by the student and faculty member for a "G" grade:

- The student, instructor and advisor are to fill out a Completion Agreement of G Grade Credits Form (the form and the SHRS G grade Policy and instructions can be found on the SHRS website)
- A copy of this agreement will need to be submitted to Student Services, no later than the end of the add/drop period for the following term. If the following term is the summer term, then the add/drop deadline date is that of the whole summer term.

SHRS (I) Incomplete Grade Policy

The I grade indicates that the work of the course for which it is awarded has not been completed due to the nature of the course, clinical work, or incomplete research work in individual guidance courses or seminars. It is to be awarded only to students who have been doing the regular work of the course but who need more time than the term allows to complete the course work. That is, if extenuating circumstances ought to arise from the nature of the course work rather than from the student's personal difficulties (in which case a G grade is appropriate; see above).

All incomplete grades are expected to be completed by no later than the end of the next consecutive semester. It is the responsibility of the faculty member to clearly state to the student the expected due date.

- If the incomplete grade is given in the spring, it is expected to be completed by the end of the summer term in August.

Action required by the student and faculty member for a "I" grade:

- The student, instructor and advisor are to fill out a Completion Agreement of Incomplete Credits Form (the form and the SHRS I grade Policy and instructions can be found on the SHRS website)
- A copy of this agreement will need to be submitted to Student Services, no later than the end of the add/drop period for the following term. If the following term is the summer term, then the add/drop deadline date is that of the whole summer term.

Student Services, will be following up on any Incompletes grades that are not changed within the expected time frame at the end of every term.

Satisfactory/No Credit (S/NC) grading option

Prerequisite and required courses must be taken for a letter grade when available, and a student must earn a C or better.

More information on Grading Policies can be found in the SHRS Graduate Handbook.

Comprehensive Examination

Comprehensive Examinations are required for many graduate programs in SHRS. Successful completion of the Comprehensive Examination is needed for the student to demonstrate mastery of his/her field of graduate study. Each individual department/program will specify the content and procedure for the scheduling, administration, and grading of the Comprehensive Examination. Please refer to individual program descriptions or handbooks for details of Comprehensive Examinations for each program.

Enrollment Status

Graduate students cannot enroll for more than (15) units without the dean's approval. Only an advisor or the University Registrar's Office can enroll you after you receive approval for the additional unit(s)

Graduate students registered for 9 to 15 credits in the Fall and Spring Terms are regarded as full-time students.

Students cannot enroll in courses that meet at the same time.

More information on enrolling in courses can be found in the SHRS Graduate Handbook.

Monitored Withdrawal

After the add/drop period has ended, students may withdraw from a course that they no longer wish to attend by completing a Monitored Withdrawal Request form in the office of the school offering the course. Students must process the Monitored Withdrawal Request form within the first nine weeks of the term in the fall and spring. Because summer sessions vary in length, students should check the University's Academic Calendar for those deadlines. Students should check with the school offering the course for the last day to submit a Monitored Withdrawal Request form. The grade W will appear on the student's grade report and transcript. There is no financial adjustment to students' tuition or fee obligations involved in withdrawing from courses, but withdrawing may jeopardize satisfactory academic progress, financial aid, and assistantships or fellowships.

The form must be signed by the instructor of the course and be returned to the Director of Student Services, Registrar, 4024 Forbes Tower within the first nine weeks of the term in the fall and spring.

Late Withdrawal procedure

Procedure for an Appeal for Late Withdrawal

- After the Monitored Withdrawal deadline has passed, students may appeal to withdraw from a course by submitting an Appeal for Late Withdrawal. Form can be found on the SHRS website, under current students/forms.
- All appeals for late withdrawal must be for non-academic reasons, i.e. medical or family emergencies. If you are trying to withdraw without extenuating circumstances, your appeal will be denied.
 - Appeals must be submitted to the Dean's Office of the school offering the course, regardless of the student's home school.
 - Appeals for Late Withdrawal from SHRS courses should be submitted to 4024 Forbes Tower, to the Registrar, Kellie Beach
- The appeal requires information on the class, including class number, catalog/course number, subject, and course title. This information can be found in your Student Center/PeopleSoft.
- The signature of the instructor-or an email from the instructor indicating the date of last attendance, grade earned, and acknowledgment of your withdrawal-is required. You must print and attach copies of the emails.
- Attach a typed statement explaining the extenuating circumstances which you feel merit consideration of withdrawal beyond the deadline. Please provide relevant documentation, such as certification from a doctor, hospital receipts, an obituary, etc.
 - Please address the documentation and the letter to SHRS, Associate Dean for Graduate Studies, Dr. Kelley Fitzgerald
 - Please include your PeopleSoft ID and your University of Pittsburgh e-mail address on each submitted document.
 - Please sign and date each document.
- You will be notified of the Associate Dean's decision via your student email account.
- Appeals for late withdrawal must be submitted before the end of the 13th week of the semester. After the 13th week, students can only appeal to withdraw from the entire semester.
- If your request is approved and you accept the grade of "W" there is no tuition adjustment for withdrawing from the course.

Repetition of Courses

Consult your dean's office for the proper procedure of repeating a class and for information on how this will affect your grades and the calculation of your Grade Point Average (GPA). When you repeat a class, you must officially enroll and pay for the class again. University policy prohibits any student from attending a class without being officially enrolled for that class. A repeated course, has a notation appearing underneath the previous course taken designating that it is excluded from the GPA. The original course and grade will always remain on your record/transcript.

Graduate Students are only permitted to repeat a course once.

Note: Any grade earned in the repeated course will be recorded on the academic transcript, even if it is lower than the original grade.

- A sequence course may not be repeated for credit if the student passes a higher sequence course with a C or better grade.
- A student may not enroll in the same course at another institution and have that grade replace the original grade earned at the University.
- The original course and grade remain on the transcript; however, the grade and credits originally earned are not counted in the calculation of the GPA.
- The grade earned by repeating a course is used instead of the grade originally earned. Withdrawal (W), Repeat (R), and Audit/Non-Credit (N) grades reported for the repeated course will not be identified as a course repeat, and therefore the original grade earned will continue to be counted in the GPA.
- Incomplete grades (G and I) are not identified as repeated courses until the coursework is completed.

- Students seeking to repeat other non-SHRS (prerequisites, electives, etc.) courses will be permitted to do so at the discretion of the program director.

Statute of Limitations on Allowable Coursework

Masters:

The purpose of the statute of limitations is to ensure that a graduate degree from the University of Pittsburgh represents mastery of current knowledge in the field of study. All requirements for MA and MS degrees must be completed within a period of four consecutive calendar years from the student's initial registration for graduate study; all professional masters within five years (includes both full time and part time students). Dual degrees and joint degrees that require course work in excess of 50 credit hours may be granted a longer statute of limitations by the University Council on Graduate Study.

PHD/Doctoral:

From the student's initial registration for graduate study, all requirements for the PhD degree must be completed within a period of 10 years or within eight years if the student has received transfer credits. A student who is unable to complete all degree requirements within a five-year period after passing the comprehensive examination may be re-examined at the discretion of the department or school. Programs for professional doctoral degrees, for which the majority of candidates pursue part-time study while working full-time within their chosen disciplines, may be granted a longer statute of limitations by the schools offering the degrees.

Extension:

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

Resigning from the University for a Specific Term

If students decide to drop all of their courses after the add/drop period has ended and before 60 percent of the term or session has been completed, they must resign from the University for that term. Official resignation from the University requires students to contact the Student Appeals Office. Students have several options. They may resign in person, by mail, or by calling 412-624-7585, where students may leave a message 24 hours a day, including weekends and holidays. An R grade will appear on the student's academic transcript. Tuition is prorated from the date of the student's notification to the Student Appeals Office of the student's desire to resign, unless 60 percent of the term has been completed, in which case there is no refund.

After the 60 percent point of the term or session has passed, students who wish to terminate their registration may process a withdrawal from all classes only with the permission of their academic dean. If the reason for withdrawal is medical or psychological in nature, the academic dean may consult with the director of the Student Health Service prior to making a determination. There is no financial adjustment associated with this procedure, which results in the assignment of W grades for the courses.

Please visit the Student Payment center resignation page on the University of Pittsburgh website for more information.

Leave of Absence

Under special conditions, graduate students may be granted one leave of absence. A maximum leave of two years may be granted to doctoral students or one year to master's students. All requests for a leave of absence need to be put in writing to the Associate Dean of Graduate Studies, using the **SHRS Request of Leave of Absence from a Graduate Program**. The length and rationale for the leave of absence must be approved by the Associate Dean. If approved, the time of the leave shall not count against the total time allowed for the degree (statute of limitations) being sought by the student.

To request of leave of absence, you must complete the "Request of Leave of Absence from a Graduate Program" form which can be found on the SHRS website under current students/forms. This form must be submitted to Student Services on the 4th floor of Forbes Tower for approval.

Note: If the reason for your leave is medical in nature, a formal note from a Doctor must be included with this form.

Academic Probation and Dismissal Policy

Graduate students who have completed at least 9 credits and whose cumulative GPA falls below a 3.000 will be placed on academic probation and/or suspension and will receive written notification of this status. At this point it is the student's responsibility to meet with his or her advisor.

To be removed from academic probation, the student will need to achieve a cumulative GPA of 3.000 within his or her next two terms of study. Failure to do so may subject the student to recommendation for immediate dismissal from the program by the Department Chair, in collaboration with the Associate Dean of Graduate Studies.

Students who fail to demonstrate progress toward meeting graduation requirements in a timely manner may be placed on academic probation or recommended for dismissal from the program by the Department Chair, in collaboration with the Associate Dean of Graduate Studies. SHRS reserves the right to terminate a student at any time for academic or other reasons.

Dismissal from the program is at the discretion of the SHRS Dean. Notwithstanding the foregoing, in the event it is not mathematically possible for a student to remediate their cumulative program GPA within their next two terms of study the student may be immediately dismissed.

A student may appeal their dismissal with the University of Pittsburgh Provost office.

Graduation Requirements

Graduation Requirements for a Graduate degree from SHRS are as follows:

- student must be considered an "active student" at time of graduation; s/he must have been registered for at least one credit at the University of Pittsburgh within the last three terms or sessions
- students may not enroll in courses outside the University of Pittsburgh in the semester they are graduating
- satisfactory completion of required credits
- minimum cumulative GPA 3.000
- the GPA will be calculated as a composite of all courses taken at the University of Pittsburgh and counting toward completion of the degree
- completion of all requirements for the program in which student has enrolled
- no outstanding D, F, G or I grades in a required course
- updated and approved Plan of Study on file in Student Services, 4019 Forbes Tower
- an application for graduation must be filed in the SHRS Office of Student Services, based on the deadlines determined for that term. Email notification of these deadlines will be sent to students in the prior term and will posted on the SHRS Graduation website. The Application for Graduation can be obtained in the Dean's office or on the SHRS Forms website.

A student with outstanding financial obligations to the University is not eligible to receive the diploma, official academic transcripts, or any certification of completion of the academic program.

Thesis and Non-Thesis Options and Procedures

Thesis Option

A thesis is a written report of an investigative study conducted by the student during his/her graduate program. The completion of a thesis requires that the student has the necessary knowledge and skills to conduct a valid study and that the thesis project is the investigation of a research question appropriate to his or her focus of study. The thesis is usually a concluding experience in Master of Science programs and completed under the guidance of a research mentor.

Completion of a thesis may be required for specific graduate programs within SHRS. Students should refer to the specific program requirements to determine if a thesis is required for completion of his/her program. Thesis credits can be obtained in the following courses: HRS 2924, HRS 2925, and CSD 2000. Students should refer to his/her program requirements for specific guidelines for completing the thesis, the minimum number of thesis credits required, and for required courses.

Non-Thesis Option

Many SHRS graduate programs provide a non-thesis option as an alternative to completing a thesis. The non-thesis option is program-specific and reflects the culminating assignment to demonstrate the student's mastery of his/her area of study. Some programs require the student to complete the non-thesis option while others may give the student the opportunity to choose between completing a thesis or the non-thesis option. Students should refer to their home program/department for specific information on the non-thesis option.

Scholarly Paper

As part of the non-thesis option for a Master of Science degree, some programs/departments may require a scholarly paper. A scholarly paper is of publishable quality in a focused area.

Examples of scholarly papers include, but are not limited to: substantial reviews of the literature on a particular topic, development of health care policies, or development of evidence-based treatment procedures. Students who complete this option must register for HRS 2926 Scholarly Paper for 1-6 credits depending on the requirements of his/her plan of study.

More information on Thesis and Non-Thesis options and Scholarly Paper can be found in the SHRS Graduate Handbook.

Internships/ Clinical Education/ Independent Studies

Internships

Overview:

An internship is a period of supervised, planned, practical experience providing an opportunity to apply previously learned skills or theories designed to complement the didactic phase of the academic program. The internship may be primarily clinical, teaching, or administrative in nature. Many programs require internship experiences, coordinated by the student's advisor or an identified Clinical Coordinator, who provides oversight regarding internship objectives and activities, administrative and contractual relationships with the site, and ensures that students meet all SHRS and site criteria.

Clinical Internships

Clinical learning experiences are an integral part of SHRS professional programs. Clinical learning experiences provide the student with the opportunity to apply his/her knowledge in a supervised environment to develop clinical skills and judgment.

Clinical Education

Clinical learning experiences are an integral part of SHRS professional programs. Clinical learning experiences provide the student with the opportunity to apply his/her knowledge in a supervised environment to develop clinical skills and judgment.

Independent Study - HRS 2999 or CSD 2990

Independent Study provides an opportunity for the student to complete an intense, self-designed project with faculty supervision in an area of special interest. A maximum of six (6) independent study credits may be accepted toward meeting degree requirements for the program.

More information on Internships, Clinical Education, Independent Studies can be found in the SHRS Graduate Handbook.

Graduate and Professional Student Association

The SHRS Graduate and Professional Student Organization (SHRS GPSO) is a member of the Graduate and Professional Student Government (GPSG) of the University of Pittsburgh. All full- time and part-time graduate students of SHRS who have active status, as defined by the School, and who are in good standing, as defined by the University, are members of the SHRS GPSG. Further information on becoming active in this organization can be obtained by sending an email to: shrssab@shrs.pitt.edu.

Doctor of Philosophy

SHRS offers a PHD program in Communication Science and Disorders (CSD) and Rehabilitation Science.

Doctor of Philosophy in Communication Science and Disorders (CSD)

The Department of Communication Science and Disorders (CSD) research doctoral program is oriented toward scientific inquiry in the discipline of communication science and disorders with an emphasis on basic and applied research training. Much of the CSD PhD program is individually tailored and designed to meet a variety of academic and professional goals. For Information on the CSD PHD degree, please see Communication Science and Disorders, PhD

Doctor of Philosophy in Rehabilitation Science

The mission of the PhD program in Rehabilitation Science is to advance the frontiers of knowledge underlying the practice of rehabilitation disciplines and professions through research, teaching, and professional development.

This PhD is an interdisciplinary degree. Students enter the program through the following SHRS departments or programs: Health Information Management, Occupational Therapy, Physical Therapy, Rehabilitation Counseling, Rehabilitation Science and Technology, and Sports Medicine. Upon degree completion, you will have mastered a specific area of expertise in rehabilitation science and carry an expansive core of related knowledge.

Contact Information:

Courtney Fleck
Assistant to the Associate Dean of Graduate Studies
4022 Forbes Tower
Phone: 412-624-6538
Fax: 412-383-6535
Email: courtney.fleck@pitt.edu
www.shrs.pitt.edu

Program Summary

Program starts fall, spring or summer terms

- 8 years (with approved credit transfer) or 10 years (without credit transfer)
- 72 credits total required to graduate (some areas of focus may require more credits)

The Primary Goals of the PhD program in Rehabilitation Science are to:

1. Provide core content in theories and models of rehabilitation, disability and/or assistive technology that underpin rehabilitation science;
2. Provide in-depth, state of the science, content in basic, clinical, social, medical and/or engineering sciences that support the dissertation research;
3. Provide mentorship opportunities for immersion in rehabilitation science research laboratories, projects, and/or ongoing studies;
4. Prepare students to conduct and disseminate original research that will advance rehabilitation science;
5. Promote interdisciplinary research in preparation for becoming a research team member;
6. Promote knowledge, behaviors and skills consistent with the responsible conduct of research;
7. Provide opportunities to teach content in an area of expertise.

The doctoral degree in Rehabilitation Science is an interdisciplinary research degree offered by SHRS and not by individual departments within the school. Graduates of this program will have a specific area of expertise in rehabilitation science as well as a core of interdisciplinary knowledge related to this specific area. They will become the researchers, scholars, teachers, thinkers, and planners in the demanding and changing field of rehabilitation science.

Areas of Study

- Assistive technology
- Biomechanics
- Evidence-based practice and epidemiology of disability
- Functioning, disability and health
- Psychosocial, cultural, and behavioral aspects of rehabilitation and disability
- Health information systems and information technology related to health and rehabilitation sciences
- Neural basis of sensory and motor function and dysfunction
- Neuromuscular aspects of sports injuries
- Health Services Research in Rehabilitation

Admission Requirements/ Application Process

Applicants should have a strong interest in rehabilitation research as well as a master's degree in an area related to rehabilitation science. The exceptional student with a bachelor's degree, six or more credits of graduate course work, and compelling clinical/research experience in rehabilitation science will be considered.

Resources, including research mentors, must be available to enable the student to engage in a plan of study in the student's major area of interest in rehabilitation research. Therefore, it is important that there is a match between the research interests of an applicant and an SHRS graduate faculty member.

Admission Requirements

Successful applicants will have a minimum GPA of 3.0 (based on a 4.0 scale) in all college work; minimum scores at the 50th percentile on the revised verbal and quantitative GRE® revised General Test, and a minimum score of 3.5 on the Analytical Writing section of the GRE® revised. Students for whom English is a foreign language must have a minimum TOEFL score of 100 (internet), 600 (paper); or Band 7.0 on the IELTS (reading and writing modules).

Application Requirements

Applicants are required to submit the following:

- Completed SHRS on-line application form
- An essay stating career goals, specific research interests and experience, and clinical interests and experience;
- Three to five academics or work-related letters of recommendation (at least one academic reference must be included as well as a letter of support from the identified Research Mentor. The Research Mentor's letter should indicate how the student is known to the Mentor, a description of the student's potential for success in the program and as a rehabilitation scientist, and how the Mentor will support the student's dissertation research project (funding/resources))
- A résumé, including work history, formal education, continuing education, licensing and certification, professional organizations, honors and awards, publications, presentations, and grants;
- Official transcripts from all colleges attended; transcripts must be sent directly from the institution to the University of Pittsburgh
- GRE® revised General Test scores
- Test of English as a Foreign Language (TOEFL or IELTS scores (for candidates whose native language is not English)
- At least one example of written work (class project, course assignment, publication for which candidate is first author, etc.)
- See the SHRS website for additional requirements for international applicants

Applications are accepted at any time and Applicants are encouraged to apply at least 6 months prior to the term in which they will begin classes.

Applicants are evaluated by the PhD Admissions Committee. Admission to the program requires (1) the applicant to meet the standards for a PhD student in SHRS, and (2) that a faculty member of the PhD program has an opening for an additional PhD student and agrees to be the Academic Advisor for that applicant.

For more information about admission to the PhD program contact:

Office of Admissions
School of Health and Rehabilitation Sciences
4020 Forbes Tower
412-383-6558

Financial Aid

Financial assistance is often available from a variety of sources, including graduate student assistantships and teaching assistantships. These assistantships typically require 20 hours per week of research, teaching, or clinical service in exchange for a tuition, health insurance, and an annual salary. Other forms of financial assistance, including fellowships, may be available through individual faculty grants. Applicants interested in financial support should indicate this on their applications for admission. Acceptance into the PhD program does not assure that a student will be offered financial aid. Depending on the availability of financial aid, the offer of financial support to an applicant may be deferred until a later date. Since financial aid is limited, applicants who desire financial aid are encouraged to apply early.

Transfer Credits

If a student wishes to transfer credits, the student and the student's Academic Advisor must submit a Credit Transfer Request Form to Student Services during the first year of study. Transcripts verifying the graduate courses and course descriptions must accompany the petition. The student and student's Academic Advisor will be informed by the Associate Dean of Graduate Studies which courses are acceptable as transfer credits, and this information will be placed in the student's file. Based on University guidelines, students who transfer any credits from a master's degree must complete the PhD within 8 years; students who do not transfer credits must complete the PhD within 10 years.

Academic Advisor

Students admitted to the PhD program are assigned an Academic Advisor who is a member of the Graduate Faculty in SHRS. He/she will have research interests similar to the student's interests and will have agreed to be the student's Research Mentor.

The Academic Advisor and student will determine the Plan of Study for the student. They will also plan course work or other experiences to enable the student to demonstrate competency in the proposed content supporting the dissertation, as well as statistics/research methodology content in preparation for the Comprehensive Examination and Dissertation Proposal Defense. It is the responsibility of the Academic Advisor to provide advice to the student during the PhD program, especially with the following steps.

1. Petitioning the Associate Dean of Graduate Studies for transfer of credits
2. Preparing a Plan of Study outlining course work and dissertation credits leading to the PhD Degree
3. Locating research opportunities
4. Revising the Plan of Study as needed as the dissertation topic is formulated
5. Finding a Primary Research Mentor

Plan of Study

The student and Academic Advisor will prepare a tentative Plan of Study within the first term of enrollment. If a Plan of Study has not been submitted by the end of the first term, the student will not be permitted to enroll in the subsequent term. The Plan of Study Form can be obtained online on the SHRS website. The Plan of Study should include transfer credits, course work to date, future course work, and dissertation credits leading to the PhD degree. A copy of the Plan of Study will be placed in the student's file. The Plan of Study should be reviewed each term at registration and updated as needed by the student and Academic Advisor. A final updated Plan of Study must be on file in the student's permanent file in Student Services in the term in which the student graduates, or the student cannot be certified by the Registrar for graduation.

More information regarding the following can be found in the PHD handbook on the SHRS website:

- SHRS Student Statistical Support
- Annual Review/Progress Reports
- Preliminary Examination
- Primary Research Mentor
- Comprehensive Examination
- Dissertation Proposal Defense
- Admission to Candidacy
- Dissertation
- Electronic thesis and Dissertation (ETD)
- Final Oral Defense of Dissertation
- Continued Use of Data After Leaving the University of Pittsburgh

Ombudsperson

SHRS has designated a person within SHRS to be the Ombudsperson.

The Ombudsperson is a person who handles complaints, serves as a mediator, and a spokesperson for the rights of a particular individual or group. The Ombudsperson in the School of Health and Rehabilitation Sciences (SHRS) will be a neutral contact person (Non-faculty) for students with whom they can engage in informal discussions to express concerns about conflicts and other issues that may arise during the course of their education that they believe are difficult to address with their academic department.

The Ombudsperson for SHRS is Kellie Beach, Director of Student Services, and Registrar. She can be reached at kbeach@pitt.edu to make an appointment. More information on the role of an Ombudsperson for SHRS can be found on the SHRS website under the Orientation page.

School of Health and Rehabilitation Science Faculty

SHRS Faculty

Programs and Course Offerings

Department of Communication Science and Disorders (CSD)

Master of Arts and Master of Science Degrees in Communication Science and Disorders

The Communication Science and Disorders program provides students with a specialized academic education in communication processes and disorders, including disorders of speech, language, swallowing, and hearing. It includes the knowledge and skills needed to critically evaluate empirical research, and clinical expertise in the diagnosis and treatment of individuals having communicative disorders.

The master's degree program has two concentrations: one in speech-language pathology, and one in audiology. There is also an option for meeting public school practice requirements. For students interested in the clinical practice degree in audiology, please see the section on the Doctor of Audiology (AuD) degree in this bulletin.

A research track (resulting in the Master of Science degree) in audiology and speech-language pathology is also available.

The Masters degree programs in speech-language pathology and audiology at the University of Pittsburgh are accredited by the Council on Academic Accreditation in Audiology and Speech-Language Pathology (CAA) of the American Speech-Language-Hearing Association, 2200 Research Boulevard #310, Rockville, MD 20850, 800-498-2071 or 301-296-5700.

Contact Information

Department of Communication Science and Disorders
School of Health and Rehabilitation Sciences
6035 Forbes Tower
412-383-6543
Email: csdadmissions@shrs.pitt.edu
<http://www.shrs.pitt.edu/CSD/>

General Admission Requirements (CSD MA/MS) Degree

- A baccalaureate degree from an accredited institution. Applicants who do NOT have a CSD major will need to satisfactorily complete the prerequisite coursework listed below.
- A minimum overall and prerequisite GPA of 3.0 is required. However, a GPA of 3.5 or higher is strongly recommended.
- A grade below C- in a CSD major or prerequisite course is not acceptable and must be repeated.

- Applicants who do not meet the minimum requirements for admission may be considered if strong evidence of their ability to complete a graduate program is provided.
- Ability to satisfactorily perform all of the technical standards required for this profession.
- Graduate Record Examination scores (GRE-general). The GRE **must be within the past 5 years**.

Prerequisite Coursework

Applicants should have a minimum of one 3-credit course in each of the following topic areas:

- Anatomy and Physiology of Speech and Hearing
- Language Development
- Speech and Hearing Science
- Transcription Phonetics
- Linguistics

ASHA Requirements

Please note that, in order to be eligible for clinical certification by the American Speech-Language-Hearing Association, you must meet the standards specified by the Association's Council for Clinical Certification. This includes satisfactory completion of at least one 3-credit course in each of the following areas prior to starting the graduate program: Biological Sciences (Human Biology, Anatomy & Physiology), Physical Sciences (Physics, Chemistry), Behavioral Sciences (Sociology, Psychology), Statistics (not research design).

Information for International Applicants

All international degrees will need a credential evaluation. We only accept a 4-year bachelor's degree or an international degree that is equivalent as determined by one of the following transcript evaluators: International Consultants of Delaware, Educational Credential Evaluators Inc., or Joseph Silny & Associates. **We do NOT accept evaluations by World Education Services (WES)**. The program's foreign transcript policies do not apply to study abroad coursework that is itemized on a US college or university transcript (study abroad is processed in the same way as US coursework). International applicants who have earned an undergraduate or graduate degree in the United States do not need a transcript evaluation.

International applicants whose native language is not English must complete a test of English Language Proficiency within 12 months of the due date of the application. Applicants from Quebec Province are required to submit TOEFL or IELTS scores; all other Canadian applicants are exempt from the English language proficiency requirement.

Your application for admission will not be reviewed until your credential evaluation and TOEFL scores are received by CSDCAS.

Graduate students must have a 3.000 cumulative GPA to be eligible to graduate.

Graduate students who have completed at least 9 credits and whose cumulative GPA falls below a 3.000 will be placed on academic probation and will receive written notification of this status. At this point, it is the student's responsibility to meet with his or her adviser. In order to be removed from academic probation, the student will need to achieve a cumulative GPA of 3.000 within his or her next two terms of study. Failure to do so may subject the student to immediate dismissal from the program. Students who fail to demonstrate progress toward meeting graduation requirements in a timely manner may be placed on academic probation or be dismissed from the program.

Doctor of Clinical Science (CScD) Degree in Medical Speech-Language Pathology

The CScD is an advanced clinical doctorate recommended for the student or clinician seeking to employ state of the art clinical excellence and leadership as a speech-language pathologist in settings such as modern primary, tertiary, or rehabilitation medical centers and academic institutions.

The primary objectives of the CScD program are to provide students with advanced academic course work, clinical skills, case-based learning experiences, medical team rotations, and extensive mentored clinical practice. Graduates of this program will excel in their medical specialties and assume leadership roles. Graduates will be prepared for independent clinical practice in the medical setting and clinical faculty positions.

Students are expected to meet the eligibility requirements for application for both American Speech Language and Hearing Association certification (Certificate of Clinical Competence CCC-SLP) and Pennsylvania state licensure over the course of their studies. There is no dissertation project required for the CScD degree; however, students will demonstrate expertise in the critical analysis and application of scientific information.

Contact Information

CSD Administrator
Department of Communication Science and Disorders
School of Health and Rehabilitation Sciences
6035 Forbes Tower
412-383-6543
Fax: 412-383-6555
Email: csdadmissions@shrs.pitt.edu
www.shrs.pitt.edu/csd

Admission Requirements

A SLP MS/MA is required in order to fulfill the clinical component of this program.

Once your application is complete, it will be forwarded to the CSD Department for review by the CScD Admissions Committee.

Applicants will be required to participate in interviews addressing content knowledge and discussions of the program.

The department has an application **deadline of January 1st** to begin the program the following summer term. All application materials must be received by the SHRS Admissions office (4020 Forbes Tower, Pittsburgh, PA 15260) by the deadline. Applicants are encouraged to apply early due to the length of time required to secure a clinical position. Rolling admissions means the department will review and admit qualified applicants until a class is full.

All applicants considering the CScD must email CSD admissions before starting the application process.

Students with master's or doctoral degrees in speech-language pathology (with or without a completed clinical fellowship) may apply for advanced academic and clinical standing. All students must complete a minimum of 87 credits to satisfy didactic and clinical requirements for this degree. 8 credits of advanced standing toward CSD 2520 will be awarded to those entering the program with their Certificate of Clinical Competence (CCC). No more than one-third of the total number of required credits (87) may be granted to a student as transfer credit for work done at another institution. These credits must be appropriate substitute coursework taken beyond what was required for the MA/MS degree. Where a course and/or clinical/teaching experience is/are being considered as a substitute for a CScD requirement, the candidate must show evidence of having attained the CScD course objectives. The request will be considered by the CScD Plan of Study Committee. Approval by both members of the committee, as well as the course instructor of record (for CScD courses), are required for approval of the course substitute.

A successful applicant will be offered conditional admission contingent upon:

- Securing a half time clinical position as a speech-language pathologist in a facility with which the academic department has a working relationship. The department will help locate possible positions, but it is the responsibility of the candidate to successfully secure the position following normal hiring practices at the specific facility.
- Engaging in unsupervised clinical practice in Pennsylvania. To engage in unsupervised clinical practice, you must obtain a Pennsylvania state license or provisional license in speech-language pathology.
- Please be advised that maintenance of the clinical practice above and the State License are mandatory throughout your time in the program. Failure to maintain these requirements is grounds for dismissal from the program, as they are essential components of the academic program.

All applicants are advised to ensure that they meet the certification and licensing requirements before applying to the program. Queries must be addressed by ASHA or the PA State Board - the University of Pittsburgh cannot address these queries.

University of Pittsburgh SHRS requires that applicants have the equivalent of a master's degree in Communication Science and Disorders from a regionally accredited institution in the US.

Graduate students must have a 3.000 cumulative GPA to be eligible to graduate.

Graduate students who have completed at least 9 credits and whose cumulative GPA falls below a 3.000 will be placed on academic probation and will receive written notification of this status. At this point, it is the student's responsibility to meet with his or her adviser. In order to be removed from academic probation, the student will need to achieve a cumulative GPA of 3.000 within his or her next two terms of study. Failure to do so may

subject the student to immediate dismissal from the program. Students who fail to demonstrate progress toward meeting graduation requirements in a timely manner may be placed on academic probation or be dismissed from the program.

Doctor of Audiology (AuD) Degree

The primary objective of the AuD program is to provide students with the academic course work, clinical skills, and experience (beyond that obtained with the master's degree) needed to enter the professional community and assume independent leadership roles. Graduates will be prepared for independent clinical practice and academic positions upon graduation, and will be immediately eligible for professional licensure and for Certification from the American Speech-Language and Hearing Association and American Board of Audiology Certification.

The AuD is the required entry-level degree for audiologists. This AuD program prepares entry-level audiologists to assume independent clinical and leadership roles within the professional communities of the region, state, and nation.

The Doctor of Audiology degree education program in audiology at the University of Pittsburgh is accredited by the Council on Academic Accreditation in Audiology and Speech-Language Pathology of the American Speech-Language-Hearing Association, 2200 Research Boulevard #310, Rockville, MD 20850, 800-498-2071 or 301-296-5700.

Contact Information

CSD Administrator
Department of Communication Science and Disorders
School of Health and Rehabilitation Sciences
6035 Forbes Tower
412-383-6543
Fax: 412-383-6555
E-mail: csdmissions@shrs.pitt.edu
www.shrs.pitt.edu/aud/

General Admission Requirements AuD Degree

- A baccalaureate degree from an accredited institution. Applicants who do NOT have a CSD major will need to satisfactorily complete the prerequisite coursework listed below.
- A minimum overall and prerequisite GPA of 3.0 is required. However, a GPA of 3.5 or higher is strongly recommended.
- A grade below C- in a CSD major or prerequisite course is not acceptable and must be repeated.
- Applicants who do not meet the minimum requirements for admission may be considered if strong evidence of their ability to complete a graduate program is provided.
- Ability to satisfactorily perform all of the technical standards required for this profession.
- Graduate Record Examination scores (GRE-general). The GRE **must be within the past 5 years**.

Prerequisite Coursework

Applicants should have a minimum of one 3-credit course in each of the following topic areas:

- Anatomy and Physiology of Speech and Hearing
- Language Development
- Speech and Hearing Science
- Transcription Phonetics
- Linguistics

ASHA Requirements

Please note that, in order to be eligible for clinical certification by the American Speech-Language-Hearing Association, you must meet the standards specified by the Association's Council for Clinical Certification. This includes satisfactory completion of at least one 3-credit course in each of the following areas prior to starting the graduate program: Biological Sciences (Human Biology, Anatomy & Physiology), Physical Sciences (Physics, Chemistry), Behavioral Sciences (Sociology, Psychology), Statistics (not research design).

Information for International Applicants

All international degrees will need a credential evaluation. We only accept a 4-year bachelor degree or those international degrees that are equivalent as determined by one of the following transcript evaluators: International Consultants of Delaware, Educational Credential Evaluators Inc., or Joseph Silny & Associates. **We do NOT accept evaluations by World Education Services (WES).** The program's foreign transcript policies do not apply to study abroad coursework that is itemized on a US college or university transcript (study abroad is processed in the same way as US coursework). International applicants who have earned an undergraduate or graduate degree in the United States do not need a transcript evaluation.

International applicants whose native language is not English must complete a test of English Language Proficiency within 12 months of the due date of the application. Applicants from Quebec Province are required to submit TOEFL or IELTS scores; all other Canadian applicants are exempt from the English language proficiency requirement.

Your application for admission will not be reviewed until your credential evaluation and TOEFL scores are received by CSDCAS.

Graduate students must have a 3.000 cumulative GPA to be eligible to graduate.

Graduate students who have completed at least 9 credits and whose cumulative GPA falls below a 3.000 will be placed on academic probation and will receive written notification of this status. At this point, it is the student's responsibility to meet with his or her adviser. In order to be removed from academic probation, the student will need to achieve a cumulative GPA of 3.000 within his or her next two terms of study. Failure to do so may subject the student to immediate dismissal from the program. Students who fail to demonstrate progress toward meeting graduation requirements in a timely manner may be placed on academic probation or be dismissed from the program.

Academic Standards

In addition to following the University-wide academic rules and regulations as detailed in the *General Academic Regulations* section of this bulletin, the AuD program is regulated by the *SHRS Academic Standards*, as well as the departmental *Student Handbook on Academic and Clinical Requirements*.

Doctor of Philosophy Degree in Communication Science and Disorders

Contact Information

CSD Administrator
Department of Communication Science and Disorders
School of Health and Rehabilitation Sciences
6035 Forbes Tower
412-383-6543
Fax: 412-383-6555
E-mail: csdadmissions@shrs.pitt.edu
www.shrs.pitt.edu/aud/

The PhD program in Communication Science and Disorders is oriented toward the basic scientific questions in the discipline, with an emphasis on basic and applied research.

The expectations of graduating PhD students are that they are able to conduct a program of independent, creative, scholarly research, and that they can plan and execute effective teaching at all levels of pedagogy.

Admission Requirements

Applicants will apply online using the SHRS Apply Yourself application. It is the responsibility of the applicant to complete all admission requirements prior to enrollment.

Applicants should submit their GRE scores to institution code 2927. For PhD applicants who have taken the GRE 5-10 years prior to their application, the Communication Science and Disorders PhD program will accept a copy of the official GRE scores that were sent to the applicant. After 10 years, all applicants will need to retake the examination.

For PhD applicants who completed a graduate program in the Communication Science and Disorders Department at the University of Pittsburgh, the only official transcript required at the time of application for the PhD program is the transcript that confirms completion of the first CSD graduate degree.

No one will be admitted to the CSD PhD program without a suitable adviser in their main area of specialization. Thus, anyone interested in PhD education is encouraged to contact individual faculty members whose research interests mesh most closely with theirs.

PhD applications are due by January 15th. Applicants will be interviewed by faculty members as part of the admissions process. A final admission decision depends on the availability of a suitable research adviser and a review and recommendation by the PhD Admissions Committee.

Foreign transcript evaluation must be completed by International Consultants of Delaware, Educational Credential Evaluators Inc., or Joseph Silney & Associates. **We do NOT accept transcript evaluations by World Education Services (WES).** The program's foreign transcript policies do not apply to study abroad coursework that is itemized on a US college or university transcript (study abroad is processed in the same way as US coursework).

International applicants must also submit official TOEFL scores. Your application for admission will not be reviewed until your credential evaluation and TOEFL scores are received by CSDCAS.

Financial Aid

Acceptance into the PhD program does not guarantee financial aid, but each admitted student is automatically put into a merit-based competition for available teaching assistantships, doctoral traineeships, and positions on research grants. Financial assistance is often available from a variety of sources, including teaching assistantships, PhD traineeships, and graduate research assistantships. Such appointments typically require 20 hours each week of teaching, research, and/or clinical service in exchange for a monthly stipend. A scholarship based on merit covers at least partial tuition remission, fees, and health insurance. The Department's Financial Aid Committee works with each admitted student's adviser to secure a funding opportunity that is rewarding both academically and financially. Prospective applicants who are interested in financial support should indicate this on their application for admission.

Doctoral

Communication Science and Disorders, PhD

Program Requirements

A minimum of 72 credits beyond the bachelor's degree level is needed for the PhD degree in communication science and disorders at the University of Pittsburgh. *For further detail on allowable credits, see Credit Requirements under Regulations Pertaining to Doctoral Study.*

All CSD PhD students are required to take the PhD Research Seminar (CSD 3048) and a minimum of three additional departmental PhD seminars: one in speech/language/voice/swallowing, one in hearing, and one in the student's major area of study.

CSD PhD students also take a minimum of 12 credits of coursework in statistics and experimental design, and 6 credits of PhD research practicum. In each semester, until they enter full-time dissertation status, PhD students are required to attend the departmental Proseminar (CSD 3060), to participate in poster sessions, attend invited colloquium talks, and present "think aloud" talks about their own research, at whatever stage it is in its development. Students also have the opportunity to take courses in teaching and grant preparation, and to complete teaching practica.

Four formal degree requirements must be satisfied before a student initiates PhD dissertation work:

1. No later than the second term of study, students, with the help of their major advisers, develop a proposed Plan of Study that specifies their background, goals, and tentative plans for their program of study. Students schedule a Plan of study meeting with a faculty committee, to review this document and their plans (see *Major Adviser and Advising Committees, below*).
2. Annually after the initial plan of study meeting, the student compiles an academic portfolio, until the time at which the student takes the comprehensive examination. The portfolio consists of at least three new pieces of scholarly work that are provided to the student's Plan of Study Committee prior to an annual review meeting. The student's Plan of Study will also be reviewed at these annual meetings.
3. The student must complete a pre-dissertation research project, culminating in a publishable manuscript resulting from a research practicum experience. This project must be completed prior to initiating the comprehensive examination.

4. The student must pass a comprehensive examination consisting of two substantive written projects and an open-ended oral examination.

Students on provisional or special status, or on probation, are not eligible to take the comprehensive exam.

Students must then successfully complete both the written dissertation overview (prospectus document) and oral examination of their prospectus.

After the prospectus is passed, students file an application for admission to candidacy for the Doctor of Philosophy degree. For details *see below and also Admission to Candidacy for the Doctor of Philosophy Degree in this bulletin for details.*

Major Adviser and Advising Committees

Students admitted to the PhD program are assigned a major adviser in their main area of specialization. The adviser is primarily responsible for providing assistance and advice to the student throughout all facets of the PhD program, and typically serves as the chair of the Plan of Study, Comprehensive Examination, and Dissertation Committees. Either PhD students or their advisers may initiate a change of adviser, but no student may remain in the program without an adviser.

The student, upon consultation with the major adviser, secures the agreement of at least two other departmental faculty members with graduate faculty status to serve with the adviser on the student's Plan of Study Committee. This committee initially convenes to review and make recommendations about the student's Plan of Study. Thereafter, the committee meets annually with the student to review and make recommendations about the student's portfolio and general progress in the PhD program. This committee, with or without changes in faculty membership, also administers and evaluates the student's comprehensive examination.

See Doctoral Committee under Regulations Pertaining to Doctoral Degrees for an overview of the dissertation committee's makeup and responsibilities.

Overview or Prospectus Meeting

See Overview or Prospectus Meeting under Regulations Pertaining to Doctoral Study for the regulations pertaining to this meeting and then read the following information that is specific to the PhD program in Communication Science and Disorders. After securing the adviser's approval, each PhD student must submit a written dissertation proposal to the Dissertation Committee at least two weeks prior to a formal overview meeting with that committee. (*See Dissertation and Abstract section for details on the characteristics of an appropriate dissertation.*)

Final Oral Examination

See Final Oral Examination under Regulations Pertaining to Doctoral Study and then note the following additional program-specific information.

After securing the adviser's approval, the student submits copies of the complete document to the dissertation committee at least two weeks prior to the final oral examination in defense of the dissertation.

PhD Curriculum

For the CSD PhD degree, a minimum of 72 credits beyond the bachelor's degree is needed.

Required coursework includes: the departmental PhD Research Seminar (CSD 3048); a minimum of 3 additional PhD seminars (one in speech and language, one in hearing, and one in the student's major area of study (speech/language/voice/swallowing)); a minimum of 12 credits in research design and statistics; and attendance each fall and spring term at the weekly departmental Proseminar (CSD 3060). The proseminar includes student and faculty poster sessions, a colloquium series, and a student-centered research roundtable that allows participation and problem-solving by students at various stages of their research training.

Otherwise, coursework and other experiences are individually tailored for each student, in consultation with the student's adviser and the adviser-chaired Plan of Study committee.

Doctor of Audiology, AuD

Degree Requirements

Students with bachelor's degrees in communication science and disorders can complete the program in four years, while students with a master's degree in CSD can complete the program in approximately two years. Students applying to the AuD program with a completed master's degree will be required to complete two years of study with a minimum of 30 credits (typically about 38 credits) to satisfy academic and clinical requirements for the degree. A review of successfully completed graduate coursework in the master's degree in CSD (focus in Audiology) will be conducted after being admitted to the AuD Program. Students applying to the AuD program with a completed bachelor's degree (major in CSD) will require four years of study with a minimum of 75 credits (typically about 100 credits) to satisfy academic and clinical requirements for the degree. Students with a bachelor's degree without a CSD major will have to complete an additional year of post-baccalaureate study. Other requirements include the successful completion of two comprehensive examinations, a mentored research project, and a full-time clinical externship.

Comprehensive Examinations

Students in the AuD program are required to successfully complete two comprehensive examinations before the Doctor of Audiology degree can be awarded. The Comprehensive Exam I is a formative examination that will identify strengths and/or weaknesses in the student's knowledge base. An ad hoc committee of reviewers administers this comprehensive examination.

In addition, students pursuing the AuD are required to successfully complete Comprehensive Exam II. During this examination, the student will demonstrate an ability to apply theoretical knowledge to a real clinical case with which the student has been extensively involved during clinical training. Comprehensive Exam II will have both written and oral portions. The student will identify a case from the student's own clinical experience in which they have been primarily responsible for case management. This case will be thoroughly presented in conjunction with in-depth background information, including relevant clinical research on all aspects of the case. A panel of three reviewers will be constituted to evaluate each individual student's examination performance.

All audiology students in good academic standing are expected to pass their comprehensive examination(s). However, regardless of academic standing, failure to pass either of the above examinations within three examination cycles will result in the student's dismissal from the audiology program.

AuD Curriculum

- CSD 2021 - CLINICAL PROCEDURES LAB 1-1
- CSD 2022 - CLINICAL PROCEDURES LAB 2-2
- CSD 2040 - AUDIOLOGICAL ASSESSMENT
- CSD 2041 - MANAGEMENT OF HEARING LOSS
- CSD 2042 - AUDIOLOGICAL ASSESSMENT LAB
- CSD 2044 - DIFFERENTIAL DIAGNOSIS
- CSD 2045 - PHYSIOLOGICAL ASSESSMENT
- CSD 2046 - PEDIATRIC EVALUATION
- CSD 2047 - AMPLIFICATION 1
- CSD 2051 - CLINICAL PROCEDURES LAB 1-2
- CSD 2052 - CLINICAL PROCEDURES LAB 2-3
- CSD 2053 - CLINICAL PROCEDURES LAB 2-1
- CSD 2054 - IMPLANTABLE HEARING DEVICES
- CSD 2055 - PEDIATRIC AUDIOLOGIC REHABILITATION
- CSD 2056 - AUDIOLOGY PRACTICUM NETWORK - AUD (3 terms) - Variable credits
- CSD 2057 - AUDIOLOGY PRACTICUM OUTPLACEMENT (5 terms) - Variable credits
- CSD 2060 - PROSEMINAR - MA (6 terms)
- CSD 2068 - SPEECH PRACTICUM NETWORK - AUD
- CSD 2078 - PHYSICS, PHYSIOLOGY AND PSYCHOLOGY OF SOUND
- CSD 2251 - VESTIBULAR ASSESSMENT AND REHABILITATION
- CSD 2252 - ADVANCED PHYSIOLOGICAL ASSESSMENT
- CSD 2451 - AUDIOLOGY MASTERS COMPREHENSIVE
- CSD 2454 - AMPLIFICATION 2
- CSD 2456 - SPEECH PERCEPTION ACROSS THE LIFESPAN
- Elective (2000 level) - 2 credits
- Elective (Any level) - 2 Credits

- HRS 2927 - STATISTICAL METHODS FOR HEALTH SCIENCE RESEARCH 1
- HRS 2928 - STATISTICAL METHODS FOR HEALTH SCIENCE RESEARCH 2
- CSD 2081 - RESEARCH STRATEGIES AND TACTICS
- CSD 2110 - NEUROSCIENCE OF COMMUNICATION
- CSD 2600 - INTER-PROFESSIONAL ROTATION
- CSD 2601 - SUPERVISION
- CSD 2602 - EDUCATIONAL AUDIOLOGY
- CSD 2652 - ADVANCED CLINICAL SEMINAR 3-1
- CSD 2654 - PRACTICE MANAGEMENT
- CSD 2655 - ADVANCED CLINICAL SEMINAR 4-1
- CSD 2657 - ADVANCED CLINICAL SEMINAR 3-3
- CSD 2658 - ADVANCED CLINICAL SEMINAR 4-3
- CSD 2659 - AUDIOLOGY EXTERNSHIP
- CSD 2660 - ADVANCED CLINICAL SEMINAR 4-2
- CSD 2661 - ADVANCED CLINICAL SEMINAR 3-2
- CSD 2971 - RESEARCH PRACTICUM (Fullfilled by 2 credits of CSD 2971)
- Comprehensive Examination II
- CSD 2162 - COUNSELING FOR COMMUNICATION DISORDERS
- CSD 2043 - FUNDAMENTALS OF SPEECH-LANGUAGE PATHOLOGY FOR AUDIOLOGISTS

Medical Speech-Language Pathology, CScD

Degree Requirements and Curriculum

All students enrolled in the Post Masters CScD program are required to complete 87 credits. Eight credits of advanced standing toward CSD 2520 will be awarded to those entering the program with their Certificate of Clinical Competence (CCC). Courses are chosen with the advisor and a Plan of Study will be developed to design an in-depth program of study taking into account the student's previous academic preparation and experience.

Please note that you will have **required** classes each Summer term in the program. Most of our courses are only offered once per academic year. If a student fails to successfully complete a course, the student must retake the course the next academic year. Furthermore, this may also prevent the student from registering for the advanced-level courses and delay the date of graduation.

Comprehensive Examinations

Students in the CScD program are required to successfully complete oral and written comprehensive examinations. These are cumulative examinations covering the core clinical sciences and theoretical basis supporting diagnosis and intervention. Students are required to be engaged in clinical practice throughout their program. Students are also required to demonstrate clinical decision-making and clinical practice knowledge and skills using principles of evidence-based practice.

Academic Standards

In addition to following University-wide academic rules and regulations as detailed in the General Academic Regulations section of this bulletin, the CScD program is regulated by the SHRS Academic Standards, as well as the departmental Student Handbook on Academic and Clinical Requirements.

Master's

Communication Science and Disorders - Audiology Concentration, MA/MS

Communication Science and Disorders Program Requirements

Proseminar Requirement

All students must complete the proseminar requirement, which consists of attending a specified number of scientific and professional presentations that have relevance to communication science and disorders.

Clinical Practicum

Clinical practicum requirements are met in Communication Science Disorders Clinical Network which consists of more than 100 facilities in Western Pennsylvania with which the program is affiliated. These include varied settings such as hospitals, rehabilitation centers, home based services, specialty clinics, not-for-profit clinics, early intervention, private practices, and schools. All academic course work must be completed with a minimum grade of C to satisfy requirements for the degree.

Comprehensive Exam for MA

All students in the Master of Arts program are required to pass an oral comprehensive examination in the spring of their second year. The comprehensive examination assesses students' ability to think critically, to communicate their thoughts in oral form, and to demonstrate their grasp of the major academic and clinical content provided in their graduate program.

Students seeking the Doctor of Audiology (AuD) degree must complete a second comprehensive examination which includes a written and oral component. Details about that comprehensive examination can be found in the section on the AuD degree.

Thesis Option for Master of Science (MS) degrees

Students pursuing the Master of Science degree in audiology must successfully complete a thesis project. Thesis students will have an examining committee of at least three University of Pittsburgh faculty members (including the research director, who serves as chair).

Additional requirements are outlined in the academic handbook, which is distributed to students at the beginning of their academic programs.

Concentration

This program is designed for those students who do not plan to provide clinical services, but would like to pursue a research track in audiology. Students pursuing the AuD degree (Clinical Doctorate) also may pursue a research track. The audiology concentration for the master's degree requires a minimum of 30 credits of coursework. All credits must be passed with a B grade or better in order to count towards graduation.

Audiology Curriculum

- CSD 2021 - CLINICAL PROCEDURES LAB 1-1
- CSD 2022 - CLINICAL PROCEDURES LAB 2-2
- CSD 2040 - AUDIOLOGICAL ASSESSMENT
- CSD 2041 - MANAGEMENT OF HEARING LOSS
- CSD 2042 - AUDIOLOGICAL ASSESSMENT LAB
- CSD 2044 - DIFFERENTIAL DIAGNOSIS
- CSD 2045 - PHYSIOLOGICAL ASSESSMENT
- CSD 2046 - PEDIATRIC EVALUATION
- CSD 2047 - AMPLIFICATION I
- CSD 2049 - AGING AUDITORY SYSTEMS
- CSD 2051 - CLINICAL PROCEDURES LAB 1-2

- CSD 2052 - CLINICAL PROCEDURES LAB 2-3
- CSD 2053 - CLINICAL PROCEDURES LAB 2-1
- CSD 2055 - PEDIATRIC AUDIOLOGIC REHABILITATION
- CSD 2056 - AUDIOLOGY PRACTICUM NETWORK - AUD
- CSD 2057 - AUDIOLOGY PRACTICUM OUTPLACEMENT
- CSD 2060 - PROSEMINAR - MA
- CSD 2068 - SPEECH PRACTICUM NETWORK - AUD
- CSD 2078 - PHYSICS, PHYSIOLOGY AND PSYCHOLOGY OF SOUND
- CSD 2451 - AUDIOLOGY MASTERS COMPREHENSIVE

Department of Health Information Management

Master of Science Degree in Health Informatics with a Track in Data Science or Registered Health Information Administrator or Health Care Supervision and Management

The Department of Health Information Management (HIM) offers three tracks leading to the Master of Science degree in Health Informatics, Data Science (DS), Registered Health Information Administrator (RHIA) and Health Care Supervision and Management (HSM).

Contact Information:

Bambang Parmanto, PhD, Interim Chair
 Department of Health Information Management
 6051 Forbes Tower
 412-383-6650
 Fax: 412-383-6655
 E-mail: him@pitt.edu
<http://www.shrs.pitt.edu/HIM/>

Admission Requirements for Data Science (DS), Registered Health Information Administrator (RHIA), and Health Care Supervision and Management (HSM)

- A baccalaureate degree from an accredited institution:
- A minimum grade point average (GPA) of 3.0 (on a 4.0 scale) is required. Admission may be considered for applicants with a GPA of less than 3.0 if other supporting evidence of their ability to complete the graduate program is provided.

Application Process for DS, RHIA & HSM

- Complete the SHRS ApplyYourself online application.
- Application fee of \$50 - You may pay the application fee online or elect to pay by check or money order. Make check or money order payable to the University of Pittsburgh. You will be prompted to choose your payment type at the end of the ApplyYourself application process.
- Three Letters of Recommendation are required. These recommendations should be from college level instructors or employers/professionals who have supervised your work in a paid or volunteer capacity. These individuals should be able to comment on your academic, professional and interpersonal abilities. People submitting recommendation letters on your behalf are encouraged to send their letters to our admissions office electronically through our application system. For those people who wish to submit their letter of recommendation on paper, please forward them a copy of our Recommendation Form and follow the directions for paper recommendations.
- Statement of Purpose/Essay

- Transcript(s) - Submit official transcript(s) from each college or university you have attended even if only one course was taken at that particular college or university. Course(s) posted for advanced standing on transcripts are not considered official. Please mail to the SHRS Office of Admissions, 4020 Forbes Tower, University of Pittsburgh, Pittsburgh, PA 15260.

Applications accepted on a rolling basis.

Financial Aid

There are scholarships and loan opportunities available to graduate students from the American Health Information Management Association (AHIMA). Further information can be obtained from the AHIMA web site at www.ahima.org under the career and student center tab. Additionally, the Pennsylvania Health Information Management Association (PHIMA) awards scholarships to qualified students in Pennsylvania. Further information can be obtained from PHIMA's web site at <http://www.phima.org/members/scholarships/>.

The Healthcare Information and Management Systems Society (HIMSS) also awards scholarships to HIMSS student members who have achieved academic excellence and have the potential to be future leaders in the health care information and management systems industry. Visit the HIMSS site at <http://www.himss.org/> and navigate to "Scholarships" under the Professional Development menu.

Certificate

Health Data Analytics Certificate

In the Department of Health Information Management, there are four certificate programs: Health Data Analytics, Health Information Cybersecurity, Revenue Cycle Management, and Leadership in Health Informatics.

These certificate programs can help students to open doors in new fields. All students enrolled in these certificate programs are required to complete 10 credits, that is, three 3-credit courses and one 1-credit independent study. A certificate program can be finished in one or two terms.

There are online and on-campus versions of these certificates. The curriculum and course contents are identical in these two versions. Domestic students can choose either of them according to their situation or preference before the enrollment. International students are required to attend the on-campus version of these certificates.

Program Requirements

The admission requirements for these certificate programs are identical to our Master of Science in Health Informatics (MSHI) program. All students enrolled in a certificate program are required to complete 10 credits. For students who pursue a MS degree in MSHI program, the credits obtained from these certificate program can be counted into the MS program. The required courses for each of the four certificate programs are listed below.

Around half of our courses are only offered once per academic year. In this case, if a student fails to successfully complete a course, the student must retake the course the next academic year. Furthermore, this may also prevent the student from registering for the advanced-level courses and delay the date of graduation.

Required Health Informatics Courses (10 credits)

- HI 2250 - FOUNDATIONS OF HEALTH INFORMATICS
- HI 2454 - DATA SCIENCE IN HEALTH INFORMATICS
- HI 2453 - DATA ANALYTICS AND MACHINE LEARNING IN HEALTH SCIENCES (3-Credits)
- HI 2999 - INDEPENDENT STUDY (1-Credit)

Health Information Cybersecurity Certificate

In the Department of Health Information Management, there are four certificate programs: Health Data Analytics, Health Information Cybersecurity, Revenue Cycle Management, and Leadership in Health Informatics.

These certificate programs can help students to open doors in new fields. All students enrolled in these certificate programs are required to complete 10 credits, that is, three 3-credit courses and one 1-credit independent study. A certificate program can be finished in one or two terms.

There are online and on-campus versions of these certificates. The curriculum and course contents are identical in these two versions. Domestic students can choose either of them according to their situation or preference before the enrollment. International students are required to attend the on-campus version of these certificates.

Program Requirements

The admission requirements for these certificate programs are identical to our Master of Science in Health Informatics (MSHI) program. All students enrolled in a certificate program are required to complete 10 credits. For students who pursue a MS degree in MSHI program, the credits obtained from these certificate program can be counted into the MS program. The required courses for each of the four certificate programs are listed below.

Around half of our courses are only offered once per academic year. In this case, if a student fails to successfully complete a course, the student must retake the course the next academic year. Furthermore, this may also prevent the student from registering for the advanced-level courses and delay the date of graduation.

Required Health Informatics Courses (10 credits)

HI-2450 - Security, Privacy, Legal & Ethical Issues in Health IT (3 credits)

HI-2210 - Health Information and the Health Care System (3 credits)

HI-2452 - Digital Health (3 credits)

HI-2999 - Independent Study (1 credit)

Leadership in Health Informatics Certificate

In the Department of Health Information Management, there are four certificate programs: Health Data Analytics, Health Information Cybersecurity, Revenue Cycle Management, and Leadership in Health Informatics.

These certificate programs can help students to open doors in new fields. All students enrolled in these certificate programs are required to complete 10 credits, that is, three 3-credit courses and one 1-credit independent study. A certificate program can be finished in one or two terms.

There are online and on-campus versions of these certificates. The curriculum and course contents are identical in these two versions. Domestic students can choose either of them according to their situation or preference before the enrollment. International students are required to attend the on-campus version of these certificates.

Program Requirements

The admission requirements for these certificate programs are identical to our Master of Science in Health Informatics (MSHI) program. All students enrolled in a certificate program are required to complete 10 credits. For students who pursue a MS degree in MSHI program, the credits obtained from these certificate program can be counted into the MS program. The required courses for each of the four certificate programs are listed below.

Around half of our courses are only offered once per academic year. In this case, if a student fails to successfully complete a course, the student must retake the course the next academic year. Furthermore, this may also prevent the student from registering for the advanced-level courses and delay the date of graduation.

Required Health Informatics Courses (10 credits)

HI-2210 - Health Information and the Health Care System (3 credits)

HI-2632 - Leadership and Project Management (3 credits)

HI-2231: Talent Management and Human Resources (3 credits)

HI-2999 - Independent Study (1 credit)

Revenue Cycle Management Certificate

In the Department of Health Information Management, there are four certificate programs: Health Data Analytics, Health Information Cybersecurity, Revenue Cycle Management, and Leadership in Health Informatics.

These certificate programs can help students to open doors in new fields. All students enrolled in these certificate programs are required to complete 10 credits, that is, three 3-credit courses and one 1-credit independent study. A certificate program can be finished in one or two terms.

There are online and on-campus versions of these certificates. The curriculum and course contents are identical in these two versions. Domestic students can choose either of them according to their situation or preference before the enrollment. International students are required to attend the on-campus version of these certificates.

Program Requirements

The admission requirements for these certificate programs are identical to our Master of Science in Health Informatics (MSHI) program. All students enrolled in a certificate program are required to complete 10 credits. For students who pursue a MS degree in MSHI program, the credits obtained from these certificate program can be counted into the MS program. The required courses for each of the four certificate programs are listed below.

Around half of our courses are only offered once per academic year. In this case, if a student fails to successfully complete a course, the student must retake the course the next academic year. Furthermore, this may also prevent the student from registering for the advanced-level courses and delay the date of graduation.

Required Health Informatics Courses (10 credits)

HI-2210 - Health Information and the Health Care System (3 credits)

HI-2410 - Health Vocabulary, Terminology & Classification Systems (3 credits)

HI-2230 - Financial Management and Health Care Reimbursement (3 credits)

HI-2999 - Independent Study (1 credit)

Master's

Health Informatics, MS

Data Science Track

Data Science (DS), a track in the Master of Science in Health Informatics program, is housed in the Department of Health Information Management, School of Health and Rehabilitation Sciences (SHRS).

The Data Science (DS) track prepares students responsible for the development, evaluation, and management of health information technologies and systems. Graduates of this track analyze, design, implement, and evaluation health information systems. They will also have the ability to conduct in-depth data analytics projects to improve the quality of health care and reduce the cost of health care services. Students enrolled full-time can complete the program in 3-4 consecutive semesters.

There are online and on-campus versions of this track. The curriculum and course contents are identical in these two versions. Domestic students can choose either of them according to their situation or preference before the enrollment. International students are required to attend the on-campus version of the track.

Program Requirements

All students enrolled in the Data Science track are required to complete 36 credits. Courses are chosen with the advisor and a Plan of Study will be developed to enable each student to design an in-depth study of Data Science taking into account student's previous academic preparation and experience.

Around half of our courses are only offered once per academic year. In this case, if a student fails to successfully complete a course, the student must retake the course the next academic year. Furthermore, this may also prevent the student from registering for the advanced-level courses and delay the date of graduation.

DS Curriculum

The Data Science curriculum allows students to choose from required courses and elective courses. Elective courses can be chosen from other health informatics tracks in the department, other departments in the SHRS or other academic programs within the University.

Required Health Informatics Courses (36 credits)

HI-2250 - Foundations of Health Informatics

HI-2450 - Security, Privacy, Legal & Ethical Issues in Health IT

HI-2210 - Health Information and the Health Care System

HI-2410 - Health Vocabulary, Terminology & Classification Systems

HI-2451 - Database Design and Big Data Analytics

HI-2452 - Digital Health

HI-2454 - Data Science in Health Informatics

HI-2632 - Leadership and Project Management

HI-2453 - Data Analytics and Machine Learning in Health Science

HI-2651 - Data Science Capstone

HI-2470 - Implementation Science of Health IT

HI-2650 - Practical Research & Evaluation Methods

Please note: All students are required to finish one Data Science capstone project. Before graduation, all students are also required to demonstrate body of knowledge in statistics and computer programming.

RHIA Track

The Registered Health Information Administrator (RHIA) track leading to a Master of Science degree in Health Informatics prepares students responsible for the development and management of health information systems consistent with the clinical, fiscal, administrative, ethical, and legal requirements of healthcare institutions. Graduates of this program analyze, design, implement, and evaluate health information systems. As members of the healthcare team, they interact with other healthcare professionals and administrators, and provide healthcare data for patient care, research, quality improvement, strategic planning, reimbursement, and related managerial functions.

RHIA graduates work in a variety of settings, such as hospitals, health planning agencies, computer companies, consulting firms, information systems vendors, ambulatory care centers, research centers, rehabilitation facilities, and insurance companies.

The Registered Health Information Administrator (RHIA) Option

We offer courses within the RHIA track for students who are seeking eligibility to sit for the American Health Information Management (AHIMA) credentialing examination to become a Registered Health Information Administrator (RHIA).

The RHIA concentration leading to a Master of Science degree in Health Informatics is accredited by the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM).

Results from the 2018 outcomes assessment reported to CAHIIM in the 2019 Annual Program Report (APAR) indicate:

- A 100% employer satisfaction rate
- A 100% graduate satisfaction rate
- A 100% pass rate National Certification Exam

There are online and on-campus versions of this track. The curriculum and course contents are identical in these two versions. Domestic students can choose either of them according to their situation or preference before the enrollment. International students are required to attend the on-campus version of the track.

Program Requirements - RHIA

All students enrolled in the RHIA track are required to complete 36 credits (students enrolled full-time normally complete the program in 3-4 consecutive semesters). Courses are chosen with the advisor and a Plan of Study will be developed to enable each student to design an in-depth study of Health Informatics taking into account student's previous academic preparation and experience.

Around half of our courses are only offered once per academic year. In this case, if a student fails to successfully complete a course, the student must retake the course the next academic year. Furthermore, this may also prevent the student from registering for the advanced-level courses and delay the date of graduation.

Required Courses for All Students

HI-2250 - Foundations of Health Informatics

HI-2450 - Security, Privacy, Legal & Ethical Issues in Health IT

HI-2210 - Health Information and the Health Care System

HI-2410 - Health Vocabulary, Terminology & Classification Systems

HI-2451 - Database Design and Big Data Analytics

HI-2231 - Talent Management and Human Resources

HI-2452 - Digital Health

HI-2632 - Leadership and Project Management

HI-2230 - Financial Management and Health Care Reimbursement

HI-2610 - Health Information Management Internship

HI-2470 - Implementation Science of Health IT

HI-2650 - Practical Research & Evaluation Methods

Please note, before graduation, students are required to demonstrate a body of knowledge in statistics computer programming, anatomy and physiology (HIM-1405), medical terminology, pathophysiology and pharmacology. (HRS-1020)

Program Requirements - RHIA, RHIA Option

Internship

Students in the RHIA track are required to complete an internship as part of their curriculum requirements. The overall goal of the internship is to provide students with practical experiences to apply their knowledge and skills that they learn in their respective graduate programs.

The HIM department has affiliation agreements with approximately 200+ clinical sites for student internships. The following list provides a sample of these sites:

Center for Connected Medicine

Children's Hospital of Pittsburgh - IS Department

Children's Institute of Pittsburgh

Excela Health

Highmark

M*Modal

McKesson

Oman HIM Institute

United Cerebral Palsy of Pittsburgh

University of Pennsylvania Health System

UPMC CTSI (Clinical and Translational Science Institute)

UPMC Department of Radiology

UPMC eRecord

UPMC Health Track

UPMC Interface Development

UPMC Physician Services Division

UPMC Radiology Division

UPMC Technology Development Center

Prerequisites for Graduate Internships

The following are required in order for students to be eligible to participate in an internship. The student's advisor will provide detailed information and time guidelines for completion of the requirements once the student matriculates into the graduate program.

Physical examination including proof or completion of specific immunizations

TB test, 2-step

Pennsylvania Criminal Record Check

Pennsylvania Child Abuse Clearance

FBI Background Check (includes fingerprinting)

HIPAA Training and Certification

Students must carry personal health insurance while participating in an internship

Students must carry professional student liability insurance coverage while participating in an internship. This coverage is provided by the SHRS group insurance plan and will appear as a charge on the students' tuition bill.

Some sites may have additional requirements (i.e. drug screen, influenza vaccine, or orientation programs specific to their organization).

Internship sites may not allow a student to participate in an internship at their site if the background check reports that they have been convicted of a misdemeanor; a felony; or a felonious or illegal act associated with alcohol and/or substance abuse.

Additional Information:

Travel to internship sites is the responsibility of the student. Students are expected to have a car or to provide their own transportation to all remote sites; no exceptions will be made. Not all sites are accessible by public transportation.

All expenses for transportation, parking, meals, and costs of prerequisites associated with clinical education are the responsibility of the student.

Approximate cost for clearances is \$100, and costs for physical exam and immunization status are dependent on health insurance coverage and provider costs.

Approximate cost for drug screen is \$40.

The internship is 3 credits, and requires a minimum of 180 hours of student participation.

For more information on internships students are encouraged to contact their academic advisor.

Healthcare Supervision and Management Track

Health Care Supervision and Management (HSM), a track in the Master of Science in Health Informatics program, is housed in the Department of Health Information Management, School of Health and Rehabilitation Sciences (SHRS).

The Health Care Supervision and Management (HSM) track provides students an opportunity for knowledge, skills, and career advancement. Qualified students with interests in administration and supervisory management in health care, long-term care, and rehabilitation may pursue this 36 credit track in Health Care Supervision and Management. Students enrolled full-time normally complete the program in 3-4 consecutive semesters.

This program is designed for students who wish to attain knowledge and skills at the graduate level to prepare for a supervisory management position or to upgrade competencies developed earlier in his/her career.

There are online and on-campus versions of this track. The curriculum and course contents are identical in these two versions. Domestic students can choose either of them according to their situation or preference before the enrollment. International students are required to attend the on-campus version of the track.

Program Requirements

All students enrolled in the Health Care Supervision and Management track are required to complete 36 credits. Courses are chosen with the advisor and a Plan of Study will be developed to enable each student to design an in-depth study of Health Care Supervision and Management taking into account student's previous academic preparation and experience.

Around half of our courses are only offered once per academic year. In this case, if a student fails to successfully complete a course, the student must retake the course the next academic year. Furthermore, this may also prevent the student from registering for the advanced-level courses and delay the date of graduation.

HSM Curriculum

The Health Care Supervision and Management curriculum allows students to choose from required courses and elective courses. Elective courses can be chosen from other health informatics tracks in the department, other departments in the SHRS or other academic programs within the University.

Required Health Informatics Courses (33 credits)

HI-2250 - Foundations of Health Informatics

HI-2450 - Security, Privacy, Legal & Ethical Issues in Health IT

HI-2210 - Health Information and the Health Care System

HI-2410 - Health Vocabulary, Terminology & Classification Systems

HI-2231 - Talent Management and Human Resources

HI-2452 - Digital Health

HI-2632 - Leadership and Project Management

HI-2230 - Financial Management and Health Care Reimbursement

HI-2630 - Administrative Capstone

HI-2470 - Implementation Science of Health IT

HI-2650 - Practical Research & Evaluation Methods

Electives (select 3 credits - selected with advisor from SHRS and other departments within the University)

HI-2451 - Database Design and Big Data Analytics

HI-2454 - Data Science in Health Informatics

HI-2453 - Data Analytics and Machine Learning in Health Science

HRS 2901 - INTRO TO RESEARCH METHODOLOGY

HRS 2910 - STATSTCL APPLCS/HEALTH & REHAB OR (BIOST 2011, 2041, 2042,; PSYED 2018)

HRS 2905 - ETHICAL ISSUES IN HEALTH CARE

HRS 2482 - LEGAL ASPECTS OF HEALTH CARE

HRS 2480 - DIMENSIONS OF AGING: CULT & HLTH

HRS 2708 - INDIVIDUAL, SOCIAL, AND CULTURAL EXPERIENCE OF DISABILITY

LAW 5339 - LAW OF DISABILITY DISCRIMINATION

Please note: All students are required to finish one Administrative capstone project.

Health Information Management - Health Care Supervision and Management Concentration, MS

In the Fall of 2019, the Healthcare Supervision and Management Area of Concentration was terminated. Students who were enrolled prior to the Fall 2019 term have the option to stay in the Healthcare Supervision and

Management Area of Concentration or transfer to a new major. The last term that a student can be admitted to the ARCO is Fall 2019 and the inactivation term is Fall 2021.

Health Care Supervision and Management (HSM), a concentration in the Master of Science in Health and Rehabilitation Sciences program, is housed in the Department of Health Information Management, School of Health and Rehabilitation Sciences (SHRS). **Pitt and SHRS are currently ranked the #1 college in the US to student health professions according to College Factual as listed in a recent article in USA Today.**

The Health Care Supervision and Management (HSM) concentration provides health professionals an opportunity for career advancement. Qualified students with interests in administration and supervisory management in health care, long-term care, and rehabilitation may pursue a 41-42 credit concentration in Health Care Supervision and Management. Students enrolled full-time normally complete program in 5 consecutive semesters.

This program is designed for professionals in health care who wish to attain knowledge and skills at the graduate level to prepare for a supervisory management position or to upgrade competencies developed earlier in his/her career.

Students with a special interest in long-term care for the aging or disability studies may pursue additional courses offered within SHRS and/or the Graduate School of Public Health (GSPH).

Program Requirements

All students enrolled in the Health Care Supervision and Management concentration are required to complete 41-42 credits. Courses are chosen with the advisor and a Plan of Study will be developed to enable each student to design an in-depth study of Health Care Supervision and Management taking into account student's previous academic preparation and experience.

Most of our courses are only offered once per academic year. Please also note that you will have a **required** class that is offered during Summer. If a student fails to successfully complete a course, the student must retake the course the next academic year. Furthermore, this may also prevent the student from registering for the advanced-level courses and delay the date of graduation.

HSM Curriculum and Course Descriptions

The Health Care Supervision and Management curriculum allows students to choose from required core courses and elective courses. Elective courses can be chosen from SHRS or other academic programs within the University.

Foundation & Core Course (17 credits)

- HRS 2434 - BUSINESS ISSUES AND DATA ANALYTICS IN HEALTH CARE *
- HRS 2435 - FINANCIAL MANAGEMENT IN HEALTH CARE *
- HRS 2445 - HUMAN RESOURCE MGT/LABOR RELTN *
- HRS 2465 - LEADERSHIP SKILL DEVELOPMENT *
- HRS 2421 - SECURITY, PRIVACY, LEGAL AND ETHICAL ISSUES IN HEALTH CARE *
- HRS 2920 - ADMINISTRATIVE INTERNSHIP *

Health Informatics Courses (select 6 credits)

- HRS 2420 - INTRO TO HEALTH INFORMATICS
- HRS 2490 - ELECTRONIC HEALTH RECORDS *
- HRS 2423 - CLOUD COMPUTING, HL7 AND ANALYTICS IN HEALTH CARE
- HRS 2424 - DATABASE DESIGN AND MANAGEMENT IN HEALTH CARE

- HRS 2432 - TELEMEDICINE, TELEREHABILITATION, AND E-HEALTH

*** Required Course for All Students**

Electives (select 12-13 credits - selected with advisor from SHRS and other departments within the University)

- HRS 2431 - EVALUATION METHODS IN HEALTH INFORMATICS
- HRS 2454 - LEAN SIX SIGMA AND OTHER IMPROVEMENT METHODOLOGIES IN HEALTH CARE
- HRS 2901 - INTRO TO RESEARCH METHODOLOGY
- HRS 2903 - ISSUES IN THE HEALTH SYSTEM
OR
- HRS 2902 - TOPICS IN HEALTH CARE
- HRS 2910 - STATSTCL APPLCS/HEALTH & REHAB
OR (BIOST 2011, 2041, 2042,; PSYED 2018)
- HRS 2905 - ETHICAL ISSUES IN HEALTH CARE
- HRS 2428 - CONCP SOFTWR PROJ ENGR HLTH CARE
- HRS 2482 - LEGAL ASPECTS OF HEALTH CARE
- HRS 2480 - DIMENSIONS OF AGING: CULT & HLTH
- HRS 2708 - INDIVIDUAL, SOCIAL, AND CULTURAL EXPERIENCE OF DISABILITY
- LAW 5339 - LAW OF DISABLTY DISCRIMINATION
- HRS 2425 - DATA ANALYTICS: APPLICATION IN GENOMICS AND PERSONALIZED CARE
- HRS 2426 - EVALUATION OF CLASSIFICATION SYSTEMS, REFERENCE TERMINOLOGIES & DATA CAPTURE TECHNOLOGIES IN HC
- HRS 2457 - QUALITY MANAGEMENT

Thesis Option

- HRS 2924 - GRADUATE RESEARCH PROPOSAL
- HRS 2925 - GRADUATE RESEARCH

Non-Thesis Option

Students are required to take six credits in an area in which they want to further develop their professional skills, selected from the following list of electives or from other offerings within the School and University.

Please note: All students are required to take at least 30 credits within SHRS

**** A comprehensive examination is required and should be scheduled by the advisor and student ****

Internships for Graduate Students

Graduate students in the Department of Health Information Management in the areas of Health Information Systems and Health Care Supervision & Management are required to complete an internship as part of their curriculum. The overall goal of the internship is to provide students with practical experiences to apply their knowledge and skills that they learn in their respective graduate programs.

The HIM department has affiliation agreements with approximately 200+ clinical sites for student internships. The following list provides a sample of these sites:

- Center for Connected Medicine
- Children's Hospital of Pittsburgh - IS Department
- Children's Institute of Pittsburgh
- Excela Health
- Highmark

- M*Modal
- McKesson
- Oman HIM Institute
- United Cerebral Palsy of Pittsburgh
- University of Pennsylvania Health System
- UPMC CTSI (Clinical and Translational Science Institute)
- UPMC Department of Radiology
- UPMC eRecord
- UPMC Health Track
- UPMC Interface Development
- UPMC Physician Services Division
- UPMC Radiology Division
- UPMC Technology Development Center

Prerequisites for Graduate Internships

The following are required in order for students to be eligible to participate in an internship. The student's advisor will provide detailed information and time guidelines for completion of the requirements once the student matriculates into the graduate program.

- Physical examination including proof or completion of specific immunizations
- TB test, 2-step
- Pennsylvania Criminal Record Check
- Pennsylvania Child Abuse Clearance
- FBI Background Check (includes fingerprinting)
- HIPAA Training and Certification
- Students must carry personal health insurance while participating in an internship
- Students must carry professional student liability insurance coverage while participating in an internship. This coverage is provided by the SHRS group insurance plan and will appear as a charge on the students' tuition bill.
- Some sites may have additional requirements (i.e. drug screen, influenza vaccine, or orientation programs specific to their organization).
- Internship sites may not allow a student to participate in an internship at their site if the background check reports that they have been convicted of a misdemeanor; a felony; or a felonious or illegal act associated with alcohol and/or substance abuse.

Additional Information:

- Travel to internship sites is the responsibility of the student. Students are expected to have a car or to provide their own transportation to all remote sites; no exceptions will be made. Not all sites are accessible by public transportation.
- All expenses for transportation, parking, meals, and costs of prerequisites associated with clinical education are the responsibility of the student.
- Approximate cost for clearances is \$100, and costs for physical exam and immunization status are dependent on health insurance coverage and provider costs.
- Approximate cost for drug screen is \$40.
- The internship is 3 credits, and requires a minimum of 180 hours of student participation.

For more information on internships students are encouraged to contact their academic advisor.

Health Information Management - Health Information Systems Concentration, MS

In the Fall of 2019, the Health Information Systems Area of Concentration was terminated. Students who were enrolled prior to the Fall 2019 term have the option to stay in the Health Information Systems Area of Concentration or

transfer to a new major. The last term that a student can be admitted to the ARCO is Fall 2019 and the inactivation term is Fall 2021.

The Health Information Systems (HIS) concentration leading to a Master of Science degree in Health and Rehabilitation Sciences prepares professionals responsible for the development and management of health information systems consistent with the clinical, fiscal, administrative, ethical, and legal requirements of healthcare institutions. Graduates of this program analyze, design, implement, and evaluate health information systems. As members of the healthcare team, they interact with other healthcare professionals and administrators, and provide healthcare data for patient care, research, quality improvement, strategic planning, reimbursement, and related managerial functions.

HIS graduates work in a variety of settings, such as hospitals, health planning agencies, computer companies, consulting firms, information systems vendors, ambulatory care centers, research centers, rehabilitation facilities, and insurance companies.

Why choose HIS at PITT!:

- **PITT and SHRS are currently ranked a top ten college in the US to study health professions according to College Factual as listed in a recent article in *USA Today*.**
- **Our Health Information Systems Masters program is ranked among the best in the nation for its quality and affordability by *MBA Healthcare Management*.**

The HIS Concentration Registered Health Information Administrator (RHIA) Option

We offer specialized courses within the HIS concentration for students who are seeking eligibility to sit for the American Health Information Management (AHIMA) credentialing examination to become a Registered Health Information Administrator (RHIA).

The Health Information Systems concentration leading to a Master of Science degree in Health and Rehabilitation Sciences is accredited by the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM).

Results from the 2015 outcomes assessment reported to CAHIIM in the 2016 Annual Program Report (APAR) indicate:

- A 100% employer satisfaction rate
- A 100% graduate satisfaction rate
- A 93% pass rate National Certification Exam

Program Requirements - HIS

All students enrolled in the Health Information Systems concentration are required to complete 41-42 credits (students enrolled full-time normally complete program in five consecutive semesters). Courses are chosen with the advisor and a Plan of Study will be developed to enable each student to design an in-depth study of Health Informatics taking into account student's previous academic preparation and experience.

Most of our courses are only offered once per academic year. Please also note that you will have **required** classes offered during the Summer. If a student fails to successfully complete a course, the student must retake the course the next academic year. Furthermore, this may also prevent the student from registering for the advanced-level courses and delay the date of graduation.

Health Informatics & Foundation Courses (select 29-30 credits)

- HRS 2420 - INTRO TO HEALTH INFORMATICS *
- HRS 2421 - SECURITY, PRIVACY, LEGAL AND ETHICAL ISSUES IN HEALTH CARE *
- HRS 2422 - COMPUTER PROGRAMMING FOR HEALTH INFORMATICS *
- HRS 2423 - CLOUD COMPUTING, HL7 AND ANALYTICS IN HEALTH CARE
- HRS 2424 - DATABASE DESIGN AND MANAGEMENT IN HEALTH CARE *

- HRS 2425 - DATA ANALYTICS: APPLICATION IN GENOMICS AND PERSONALIZED CARE
- HRS 2426 - EVALUATION OF CLASSIFICATION SYSTEMS, REFERENCE TERMINOLOGIES & DATA CAPTURE TECHNOLOGIES IN HC
- HRS 2428 - CONCP SOFTWR PROJ ENGR HLTH CARE *
- HRS 2431 - EVALUATION METHODS IN HEALTH INFORMATICS
- HRS 2432 - TELEMEDICINE, TELEREHABILITATION, AND E-HEALTH
- HRS 2434 - BUSINESS ISSUES AND DATA ANALYTICS IN HEALTH CARE
- HRS 2439 - HEALTH INFOR SYSTEMS INTERNSHIP *
- HRS 2490 - ELECTRONIC HEALTH RECORDS *
- HRS 2901 - INTRO TO RESEARCH METHODOLOGY
- HRS 2910 - STATSTCL APPLCS/HEALTH & REHAB
OR (BIOST 2011, 2041, 2042; PSYED 2018)
- INFSCI 2150 - INFORMATION SECURITY AND PRIVACY ^
- INFSCI 2731 - SECURITY IN E-COMMERCE ^
- INFSCI 2621 - SECURITY MANAGEMENT AND COMPUTER FORENSICS
- INFSCI 2620 - DEVELOPING SECURE SYSTEMS

Health Management Courses (select 6 credits)

- HRS 2435 - FINANCIAL MANAGEMENT IN HEALTH CARE
- HRS 2445 - HUMAN RESOURCE MGT/LABOR RELTN
- HRS 2465 - LEADERSHIP SKILL DEVELOPMENT
- HRS 2454 - LEAN SIX SIGMA AND OTHER IMPROVEMENT METHODOLOGIES IN HEALTH CARE
- HRS 2903 - ISSUES IN THE HEALTH SYSTEM
OR
- HRS 2902 - TOPICS IN HEALTH CARE
- HRS 2905 - ETHICAL ISSUES IN HEALTH CARE

*** Required Course for All HIS Students**

^ Additionally required courses for students interested in enhanced Security & Privacy content.

Thesis Option (6 credits)

- HRS 2924 - GRADUATE RESEARCH PROPOSAL
- HRS 2925 - GRADUATE RESEARCH

Non-Thesis Option (select 6 credits)

Electives to be taken from above or at other schools within the University.

Please note: All students are required to take at least 30 credits within SHRS

****A comprehensive Examination is required and should be scheduled by the advisor and student.****

Program Requirements - HIS, RHIA Option

All students enrolled in the Health Information Systems/RHIA Option concentration are required to complete 41-42 credits (students enrolled full-time normally complete program in five consecutive semesters). Courses are chosen with the advisor and a Plan of Study will be developed to enable each student to design an in-depth study of Health Informatics taking into account student's previous academic preparation and experience.

Most of our courses are only offered once per academic year. Please also note that you will have **required** classes offered during the Summer. If a student fails to successfully complete a course, the student must retake the course the next academic year. Furthermore, this may also prevent the student from registering for the advanced-level courses and delay the date of graduation.

Health Informatics & Foundation Courses (23-24 credits)

- HRS 2421 - SECURITY, PRIVACY, LEGAL AND ETHICAL ISSUES IN HEALTH CARE *

- HRS 2422 - COMPUTER PROGRAMMING FOR HEALTH INFORMATICS *
- HRS 2424 - DATABASE DESIGN AND MANAGEMENT IN HEALTH CARE *
- HRS 2428 - CONCP SOFTWR PROJ ENGR HLTH CARE *
- HRS 2439 - HEALTH INFOR SYSTEMS INTERNSHIP *
- HRS 2490 - ELECTRONIC HEALTH RECORDS *
- HRS 2903 - ISSUES IN THE HEALTH SYSTEM *

OR

- HRS 2902 - TOPICS IN HEALTH CARE *
- HRS 2910 - STATSTCL APPLCS/HEALTH & REHAB *
OR (BIOST 2011, 2041, 2042; PSYED 2018)

Health Management Courses (6 credits)

- HRS 2435 - FINANCIAL MANAGEMENT IN HEALTH CARE *
- HRS 2445 - HUMAN RESOURCE MGT/LABOR RELTN *
- HRS 2465 - LEADERSHIP SKILL DEVELOPMENT
- HRS 2454 - LEAN SIX SIGMA AND OTHER IMPROVEMENT METHODOLOGIES IN HEALTH CARE
- HRS 2905 - ETHICAL ISSUES IN HEALTH CARE

RHIA Option (11 credits)

- HIM 1405 - MEDICAL TERMINOLOGY LAB *^
- HRS 1020 - ANATOMY AND PHYSIOLOGY *^
- HRS 2416 - INTRODUCTION TO HEALTH INFORMATION & THE HEALTH CARE SYSTEM *
- HRS 2433 - CLASSIFICATION SYSTEMS IN HEALTH CARE *
- HRS 2457 - QUALITY MANAGEMENT *
- HRS 2456 - REIMBURSEMENT SEMINAR *
- HRS 2482 - LEGAL ASPECTS OF HEALTH CARE *

Electives/Additional Coursework

- HRS 2420 - INTRO TO HEALTH INFORMATICS
- HRS 2423 - CLOUD COMPUTING, HL7 AND ANALYTICS IN HEALTH CARE
- HRS 2425 - DATA ANALYTICS: APPLICATION IN GENOMICS AND PERSONALIZED CARE
- HRS 2426 - EVALUATION OF CLASSIFICATION SYSTEMS, REFERENCE TERMINOLOGIES & DATA CAPTURE TECHNOLOGIES IN HC
- HRS 2431 - EVALUATION METHODS IN HEALTH INFORMATICS
- HRS 2432 - TELEMEDICINE, TELEREHABILITATION, AND E-HEALTH
- HRS 2434 - BUSINESS ISSUES AND DATA ANALYTICS IN HEALTH CARE
- HRS 2901 - INTRO TO RESEARCH METHODOLOGY

IMPLEMENTATION DATE: 9/1/2016

*** Required Courses for RHIA Option Students**

^Undergraduate courses do not count towards the 41 required graduate credits. These courses can be taken prior to admission or while enrolled in the program.

Please Note: All students are required to take at least 30 credits within SHRS.

****A comprehensive Examination is required and should be scheduled by the advisor and student.****

Internships for Graduate Students

Graduate students in the Department of Health Information Management in the areas of Health Information Systems and Health Care Supervision & Management are required to complete an internship as part of their curriculum. The overall goal of the internship is to provide students with practical experiences to apply their knowledge and skills that they learn in their respective graduate programs.

The HIM department has affiliation agreements with approximately 200+ clinical sites for student internships. The following list provides a sample of these sites:

- Center for Connected Medicine
- Children's Hospital of Pittsburgh - IS Department
- Children's Institute of Pittsburgh
- Excela Health
- Highmark
- M*Modal
- McKesson
- Oman HIM Institute
- United Cerebral Palsy of Pittsburgh
- University of Pennsylvania Health System
- UPMC CTSI (Clinical and Translational Science Institute)
- UPMC Department of Radiology
- UPMC eRecord
- UPMC Health Track
- UPMC Interface Development
- UPMC Physician Services Division
- UPMC Radiology Division
- UPMC Technology Development Center

Prerequisites for Graduate Internships

The following are required in order for students to be eligible to participate in an internship. The student's advisor will provide detailed information and time guidelines for completion of the requirements once the student matriculates into the graduate program.

- Physical examination including proof or completion of specific immunizations
- TB test, 2-step
- Pennsylvania Criminal Record Check
- Pennsylvania Child Abuse Clearance
- FBI Background Check (includes fingerprinting)
- HIPAA Training and Certification
- Students must carry personal health insurance while participating in an internship
- Students must carry professional student liability insurance coverage while participating in an internship. This coverage is provided by the SHRS group insurance plan and will appear as a charge on the students' tuition bill.
- Some sites may have additional requirements (i.e. drug screen, influenza vaccine, or orientation programs specific to their organization).
- Internship sites may not allow a student to participate in an internship at their site if the background check reports that they have been convicted of a misdemeanor; a felony; or a felonious or illegal act associated with alcohol and/or substance abuse.

Additional Information:

- Travel to internship sites is the responsibility of the student. Students are expected to have a car or to provide their own transportation to all remote sites; no exceptions will be made. Not all sites are accessible by public transportation.
- All expenses for transportation, parking, meals, and costs of prerequisites associated with clinical education are the responsibility of the student.
- Approximate cost for clearances is \$100, and costs for physical exam and immunization status are dependent on health insurance coverage and provider costs.
- Approximate cost for drug screen is \$40.
- The internship is 3 credits, and requires a minimum of 180 hours of student participation.

For more information on internships students are encouraged to contact their academic advisor.

Department of Occupational Therapy

Doctor of Occupational Therapy (OTD)

The Doctor of Occupational Therapy (OTD) Program is an entry-level educational program, which prepares students for careers as occupational therapists.

The OTD Program is a three-year (9 term) professional course of study including fieldwork, a capstone project, and an experiential preceptorship.

Admission to the OTD Program is only available on a full-time basis. The OTD Program begins the first week in June of each year.

*The entry-level occupational therapy doctoral degree program has been granted Preaccreditation Status by the Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association (AOTA), located at 4720 Montgomery Lane, Suite 200, Bethesda, MD 20814-3449. ACOTE's telephone number c/o AOTA is (301) 652-AOTA and its web address is www.acoteonline.org. The program must complete an on-site evaluation and be granted Accreditation Status before its graduates will be eligible to sit for the national certification examination for the occupational therapist administered by the National Board for Certification in Occupational Therapy (NBCOT). After successful completion of this exam, the individual will be an Occupational Therapist, Registered (OTR). In addition, all states require licensure in order to practice; however, state licenses are usually based on the results of the NBCOT certification examination. Note that a felony conviction may affect a graduate's ability to sit for the NBCOT certification examination or attain state licensure.

The OTD Program requires that students complete fieldwork education, and an experiential preceptorship at facilities external to the University of Pittsburgh. PLEASE NOTE: All OTD students are required to obtain the following annually - PA criminal record check, PA child abuse history clearance, PA DHS and PA DOE fingerprint background checks, personal health insurance, health screening, drug screening, influenza vaccination, CPR/AED training, and first aid training.

**On 8/16/2019, the following accreditation information was updated in the published catalog. In an effort to provide accurate information the update was made on 8/21/2019.*

Admission Requirements and Application Process

Baccalaureate Degree

Students are admitted into the OTD Program after successful completion of a baccalaureate degree with a minimum cumulative GPA of 3.00 (based on a 4.00 scale).

Prerequisite Courses

Complete the following prerequisite courses within the past 5 years with a minimum grade of B and a minimum GPA in these prerequisites of 3.00 (based on a 4.00 scale).

- Human Anatomy & Physiology (with a laboratory component), 8 credits
- Lifespan Human Development, 3 credits
- Psychopathology/Abnormal Psychology, 3 credits
- Statistics, 3 credits

Note: AP credits are not accepted as fulfillment of prerequisite courses

Graduate Record Examination (GRE)

GRE[®] General Test scores within the past 5 years (at or above the 50th percentile preferred). GRE scores must be sent to the "University of Pittsburgh OTCAS" using institution code 1894. Visit the GRE Web site for more information about the GRE.

Experience in Occupational Therapy

Complete a minimum of 40 hours of volunteer or paid work experience. These experiences should occur in at least two different occupational therapy practice areas (e.g., children and youth/pediatrics, health and wellness, productive aging/geriatrics, rehabilitation, mental health, work/industry, home care).

Letters of Recommendation

Submit three letters of recommendation attesting to the applicant's academic and professional abilities (including one from an occupational therapist and one from a college-level instructor). Letters of recommendation are submitted through the Occupational Therapy Centralized Application Service (OTCAS).

Self-Evaluation Essays

Demonstrate evidence of graduate level writing skills in responses to Pitt-OT essay questions, and a personal statement, discussing your strengths, skills, and experiences that will contribute to your success in the OTD Program and your professional goals for becoming an occupational therapist. All essays are submitted through OTCAS.

Technical Standards/Essential Skills

Attest to satisfactory performance of the technical standards/essential skills required for successful completion of the OTD curriculum. Students admitted to the OTD Program must review the Technical Standards and submit a signed form at the time of matriculation.

OTD - Technical Standards

Application Information

All applicants must apply to the OTD Program online using the Occupational Therapy Centralized Application Service (OTCAS). To learn more about the OTCAS application process and to create an OTCAS account, please visit the OTCAS portal.

Applicants are encouraged to apply early in the application cycle, which begins in mid-July each year. Prerequisite courses must be completed by January 1. Official transcripts must be sent directly to OTCAS. Letters of recommendation are submitted electronically through OTCAS. The deadline for applying to the OTD Program is February 1; however, applicants are encouraged to apply before this deadline as the Department of Occupational Therapy begins reviewing complete and verified applications in November for the program starting the following June. Applications are reviewed when all materials, including transcripts and letters of recommendation, have been received and verified by OTCAS and GRE scores are available. OTCAS uses a verification process that can take several weeks. OTCAS will verify your documents before releasing them to the University of Pittsburgh. Applicants should confirm their status as verified with OTCAS.

For questions about the receipt, processing, and verification of an application, please contact OTCAS Customer Service at 617-612-2860, otcasinfo@otcas.org.

International Applicants

- Academic Credential Evaluations - The Academic Credential Evaluation must include a course by course evaluation and be submitted with your application to OTCAS. If an international applicant has earned an undergraduate or graduate degree in the United States, the Academic Credential Evaluation is not required.
- Verification of English Language Proficiency - Applicants for whom English is not their first language must take the iBT (the Internet-based version) of the TOEFL (Test of English as a Foreign Language) or the IELTS (International English Language Testing System), or have a master's degree from an English-speaking university. The minimum TOEFL score accepted is 90 and the minimum IELTS score is Band 7.0. TOEFL scores must be sent electronically through Educational Testing Service (ETS) to institution code 2927. IELTS scores must be mailed to the Department of Occupational Therapy, University of Pittsburgh, 5012 Forbes Tower, Pittsburgh, PA 15260.

The School of Health and Rehabilitation Sciences has specific requirements for international applicants.

PLEASE NOTE. Applicants who already have a baccalaureate degree in occupational therapy and are interested in obtaining a master's degree should apply to the Master of Science (MS) in Occupational Therapy Program.

Master of Science (MS) in Occupational Therapy

The Master of Science (MS) in Occupational Therapy is a one-year (3-term) graduate program housed within the Department of Occupational Therapy. This advanced practice program is designed for those with a baccalaureate degree in occupational therapy.

Post-professional graduate studies in this field enable occupational therapists to pursue advanced skills in clinical practice, management, education, research, or health and disability policy.

Admission Requirements and Application Process

Qualified applicants for the Master of Science (MS) Program in Occupational Therapy must meet the following admission requirements:

- Bachelor's degree in occupational therapy. For international students, a bachelor's degree or diploma must be from a school/university approved by the World Federation of Occupational Therapists (WFOT) in the year that the applicant graduated and/or national governmental institutions that approve/accredit occupational therapy programs to grant a degree in occupational therapy (e.g., Ministry of Health).
- Minimum cumulative grade point average of 3.00 (based on a 4.00 scale).
- Evidence of graduate level writing skills in a self-evaluation essay that discusses goals, strengths, skills, and experiences that will contribute to success in the program and in the profession. The essay should also include a brief statement discussing interest in the field of study and reasons for applying to the University of Pittsburgh.
- Documented evidence of knowledge of rehabilitation through previous paid work experiences, internships or field experiences, or volunteer work experiences.
- Three letters of recommendation, preferably from individuals who have taught the applicant in an academic setting and/or supervised clinical activities. Letters of recommendation should address academic, professional and personal attributes, and potential for successful graduate education.
- Official transcripts from all colleges/universities attended. For international students, original or certified (notarized) copies of all original language academic records (mark sheets, transcripts) from all postsecondary institutions attended. Where the official original documents are issued in a language other than English, certified English translations must also be submitted. Certified copies of the original certificates or diplomas awarded at the completion of studies must also be submitted.
- Interview (personal or virtual) with the MS Program Director and at least one other faculty member from the Department of Occupational Therapy.

In addition, internationally educated students will be required to provide:

- An Academic Credential Evaluation.
- An official score report (from ETS) of the Test of English as a Foreign Language (TOEFL). A minimum score of 550 on the written test, 213 on the computer-based test, or 80 on the internet-based test is required from all applicants whose native language is not English and/or who have not completed an academic degree from a college or university in the U.S. where the method of instruction is English. International English Language Testing System (IELTS) scores are also accepted. The minimum IELTS score is 6.5. Exemption can be applied for:
 1. applicants who have completed an undergraduate or graduate degree from a regionally accredited institution in the U.S., or
 2. citizens of a country where the official language is English.

Application Information

All applicants must:

- Complete the School of Health and Rehabilitation Sciences ApplyYourself online application;
- Submit the application fee of \$50 (U.S.); and
- Submit required documents (Admission Requirements).

Application Deadlines

Applications are accepted for enrollment beginning in the Summer term only (May). The deadline for submitting the application and all materials is February 1.

For information about our program, please contact the Department of Occupational Therapy at OTpitt@shrs.pitt.edu.

Doctor of Clinical Science (CScD) in Occupational Therapy

The Doctor of Clinical Science (CScD) Program in Occupational Therapy provides doctoral level training in advanced practice and clinical education. The CScD Program offers five areas of concentration: Master Practitioner (Geriatric, Musculoskeletal, Neurologic, or Pediatric Practice), and Clinical Education. Core courses focus on assessment, intervention, evidence-based protocols and guidelines, and data-based decision making. Each core course is paired with a colloquium or clinical rotation that provides students with mentored opportunities to apply their skills in the appropriate setting. Cognate courses focus on theory, evidence, and data collection in the student's chosen area of concentration.

Admission Requirements and Application Process

The CScD in Occupational Therapy is an advanced practice doctoral degree designed for occupational therapists who are seeking advanced knowledge and skills. There are no prerequisite courses for this degree however, applicants must have an entry-level baccalaureate or master's degree in occupational therapy from a program accredited by the Accreditation Council for Occupational Therapy Education (ACOTE) or approved by the World Federation of Occupational Therapy (WFOT).

Occupational Therapists with Baccalaureate Degrees

Occupational therapists with a baccalaureate degree in occupational therapy, and no additional graduate degrees, should apply to the Master of Science (MS) in Occupational Therapy. Credits in the MS program will satisfy the requirements for the first 30 credits of the required 72 credits of the CScD Program.

Occupational Therapists with Master's Degrees

Occupational therapists with 1) an entry-level master's degree in occupational therapy, or 2) a baccalaureate degree in occupational therapy and an advanced master's degree in occupational therapy (or another field) may be able to transfer up to 30 credits from their master's degree, providing that these credits meet requirements in the CScD curriculum.

All Applicants

In addition to the admission requirements, applicants must provide evidence of:

- National certification in occupational therapy (NBCOT) or eligibility
- Pennsylvania state licensure in occupational therapy or eligibility
- Minimum cumulative graduate GPA of 3.00 on a 4.00 point scale
- Graduate level writing skills in an essay that addresses (a) rationale for pursuing an advanced practice doctorate, (b) chosen area of concentration, and (c) how the program is likely to change the applicant's practice
- Professional skills and conduct, collegiality, oral and written communication skills, and leadership through two letters of recommendation

Application Information

All applicants must:

- Complete the School of Health and Rehabilitation Sciences ApplyYourself online application;
- Submit the application fee of \$50 (U.S.);
- Submit required documents (Admission Requirements).

International Applicants

- An Academic Credential Evaluation.
- An official score report (from ETS) of the Test of English as a Foreign Language (TOEFL). A minimum score of 550 on the written test, 213 on the computer-based test, or 80 on the internet-based test is required from all applicants whose native language is not English and/or

who have not completed an academic degree from a college or university in the U.S. where the method of instruction is English. International English Language Testing System (IELTS) scores are also accepted. The minimum IELTS score is 6.5. Exemption can be applied for:

1. applicants who have completed an undergraduate or graduate degree from a regionally accredited institution in the U.S., or
2. citizens of a country where the official language is English.

Application Deadlines

Applications are accepted on a rolling basis for students intending to start the program in July of the same calendar year.

For More Information

Contact the Department of Occupational Therapy at (412) 383-6620 or OTpitt@shrs.pitt.edu.

Master of Occupational Therapy (MOT)

The Department of Occupational Therapy now offers a Doctor of Occupational Therapy (OTD) Program.

The Master of Occupational Therapy (MOT) Program is only available to candidates with a University of Pittsburgh Freshman Guarantee for Occupational Therapy who began undergraduate studies at the University of Pittsburgh in Fall of 2016. Candidates with Freshman Guarantee status should contact the Department of Occupational Therapy at OTpitt@shrs.pitt.edu or 412-383-6620 to inquire about the MOT application process.

The MOT Program prepares students for entry-level practice as occupational therapists. The MOT Program is accredited by the Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association (AOTA), located at 4720 Montgomery Lane, Suite 200, Bethesda, MD 20814-3449. ACOTE's telephone number, c/o AOTA, is 301-652-AOTA and its Web address is www.acoteonline.org.

Graduates of the Program are eligible to sit for the National Certification Examination for the Occupational Therapist, administered by the National Board for Certification in Occupational Therapy (NBCOT). After successful completion of this examination, the graduate will be an Occupational Therapist, Registered (OTR). In addition, most states require licensure to practice; however, state licenses are usually based on the results of the NBCOT Certification Examination. A felony conviction may affect a graduate's ability to sit for the NBCOT Certification Examination or obtain a state license.

PLEASE NOTE: The MOT Program requires that students complete fieldwork education at facilities external to the University of Pittsburgh. All MOT students are required to obtain the following annually - PA criminal record check, PA child abuse history clearance, PA DHS and PA DOE fingerprint background checks, personal health insurance, health screening, drug screening, influenza vaccination, CPR/AED training, and first aid training.

Admission Requirements and Application Process

Admission Requirements

The MOT Program is only available to candidates with a University of Pittsburgh Freshman Guarantee for Occupational Therapy who began undergraduate studies at the University of Pittsburgh in Fall of 2016.

Baccalaureate Degree

Students are admitted into the MOT Program after successful completion of a baccalaureate degree and successfully maintaining the Freshman Guarantee requirements.

Prerequisite Courses

Complete the following prerequisite courses with a minimum grade of C:

- Human anatomy & physiology (with a laboratory component), 4 credits
- Behavioral sciences (psychology, sociology, and/or anthropology), 6 credits
- Statistics, 3 credits

Note: AP credits are not accepted as fulfillment of prerequisite courses

Graduate Record Examination (GRE)

Complete the GRE[®] General Test. Please arrange to send your GRE scores to the University of Pittsburgh using institution code 1894. Visit the GRE Web site for more information about the GRE.

Experience in Occupational Therapy

Complete a minimum of 20 hours of volunteer or paid work experience in at least two different occupational therapy practice areas (e.g., pediatrics, geriatrics, medical rehabilitation, psychiatric rehabilitation, home healthcare, school system).

Letters of Reference

Submit three letters of reference (one from an occupational therapist, and preferably one from a college-level instructor). Letters of Reference must be submitted directly to the Department of Occupational Therapy by the recommender. References can be emailed to OTpitt@shrs.pitt.edu or mailed to:

Department of Occupational Therapy
Bridgeside Point I
100 Technology Dr., Suite 350
Pittsburgh, PA 15219

Self-Evaluation Essays

Demonstrate evidence of graduate level writing skills in an essay (personal statement), discussing your strengths, skills, and experiences that will contribute to your success in the MOT Program and your professional goals for becoming an occupational therapist. The Self-Evaluation Essay is submitted to the Department of Occupational Therapy with the application.

Technical Standards/Essential Skills

Attest to satisfactory performance of the technical standards/essential skills required for successful completion of the MOT curriculum. Students admitted to the MOT Program must review the Technical Standards and submit a signed form at the time of matriculation.

Technical Standards/Essential Skills

Application Information

Applicants to the MOT Program apply by contacting the Department of Occupational Therapy at OTpitt@shrs.pitt.edu and requesting an application.

The MOT Program begins in June each year. To be considered for admission your application must be submitted by October 15. Prerequisite courses must be completed by January 1. The Department of Occupational Therapy begins reviewing complete applications and offering admission in November for the program starting the following June. Applications are complete when all materials, including letters of recommendation, have been received and GRE scores are available.

Official transcripts must be sent directly to the Department of Occupational Therapy at:

Department of Occupational Therapy
Bridgeside Point I

100 Technology Dr., Suite 350
Pittsburgh, PA 15219

For questions about the receipt, and processing of your application, please contact OTpitt@shrs.pitt.edu.

Program Requirements

The MOT Program is a two-year professional course of study requiring 78 credits, including fieldwork education. The MOT Program begins in June each year.

Certification

Graduates of the program will be eligible to sit for the National Certification Examination for the Occupational Therapist, administered by the National Board for Certification in Occupational Therapy, Inc. (NBCOT). After successful completion of this examination, the graduate will be an Occupational Therapist, Registered (OTR). In addition, most states require licensure to practice; however, state licenses are usually based on the results of the NBCOT Certification Examination. A felony conviction may prevent a graduate's ability to sit for the NBCOT Certification Examination or attain a state licensure.

Contact Information

Department of Occupational Therapy
School of Health and Rehabilitation Sciences
Bridgeside Point I
100 Technology Dr., Suite 350
Pittsburgh, PA 15219
412-383-6620
Fax: 412-383-6613
E-mail: OTpitt@shrs.pitt.edu

Doctoral

Doctor of Clinical Science (CScD)

Program Requirements

The Doctor of Clinical Science (CScD) Program in Occupational Therapy requires 72 post-baccalaureate credits. Students with an entry-level master's degree in occupational therapy or a baccalaureate degree in occupational therapy and an advanced level master's degree in occupational therapy or another field may be eligible to transfer 30 credits from their master's degree, leaving a remaining 42 credits, thus being able to complete the program in 4 terms or 13 months. Students without a master's degree will be required to take all 72 credits, culminating in a longer program of study.

Curriculum and Course Descriptions

The program requires the completion of 72 credits (up to 30 credits may be transferred from a master's degree, potentially leaving a remaining 42 credits in the CScD program). Each student will be advised and evaluated by a doctoral committee who will oversee the development, implementation and grading of Preliminary and Comprehensive Examinations necessary to complete the program. The plan of study will be customized to each student based on his or her preferred area of concentration, and will be comprised of core courses and cognate courses. Required courses are held in the summer, fall, and spring terms.

Clinical Science Doctoral Committee

Each student will be supervised by a doctoral committee that will be formed by the end of the first term in the program. The doctoral committee will be comprised of 3 faculty, and at least 2 faculty must be appointed in the Department of Occupational Therapy. This committee will oversee the development, implementation and grading of the preliminary and comprehensive examinations.

Preliminary Examination

The preliminary examination is a written examination posed by members of the doctoral committee. Questions will address assessment concepts, intervention/education concepts, and evidence in the student's chosen area of concentration. Students must successfully pass the preliminary examination before they can propose and receive approval for their capstone project.

Comprehensive Examination

A capstone project will be developed and implemented by the student in collaboration with the doctoral committee. The comprehensive examination is the culminating written summary and oral defense of the capstone project. Students must successfully pass both the written and oral components of the comprehensive examination to complete the CScD program.

Plan of Study

Core Courses

All students will take the following eight core courses:

- OT 3000 - Advancements in Functional Assessment
- OT 3001 - Advancements in Functional Assessment Colloquium
- OT 3100 - Evidence Analysis for Improving Clinical Interventions
- OT 3101 - Evidence Analysis for Improving Clinical Interventions Colloquium
- OT 3200 - Evidence-Based Protocols and Practice Guidelines
- OT 3201 - Evidence-Based Protocols and Practice Guidelines: Clinical Rotation
- OT 3300 - Data-Based Decision Making for Clinical Practice
- OT 3301 - Data-Based Decision Making for Clinical Practice: Clinical Rotation

Cognate Courses

Cognate courses are specific to the student's chosen area of concentration or track.

Area of Concentration: Master Practitioner (Geriatrics, Pediatrics, Musculoskeletal, Neurological)

- OT 3400 - Master Practitioner Cognate Seminar 1
- OT 3500 - Master Practitioner Cognate Seminar 2
- OT 3600 - Master Practitioner Cognate Seminar 3
- OT 3700 - Master Practitioner Cognate Practicum and Capstone

Area of Concentration: Clinical Educator

- OT 3401 - Clinical Educator Cognate Seminar 1
- OT 3501 - Clinical Educator Cognate Seminar 2
- OT 3601 - Clinical Educator Cognate Seminar 3
- OT 3701 - Clinical Educator Cognate Practicum and Capstone

Academic Standards

In addition to following University-wide academic rules and regulations as detailed in the General Academic Regulations section of this Catalog, the CScD program is regulated by the School of Health and Rehabilitation Sciences Academic Standards, as well as the departmental Student Handbook on Academic and Clinical Requirements.

Doctor of Occupational Therapy (OTD)

Degree Requirements

The OTD Program is a three-year (9 term) professional course of study requiring 108 credits, including fieldwork education, an experiential preceptorship, and a capstone project. Students in the OTD Program must successfully complete all didactic coursework, Level II fieldwork, and pass a competency examination prior to the commencement of the experiential preceptorship. Students must complete Level II fieldwork and the experiential preceptorship within 24 months following completion of the didactic portion of the program.

Curriculum and Course Descriptions

Plan of Study

Term 1 - Summer Term - 8 Credits

Foundational Skills

- OT 2200 - Foundations of Occupation
- OT 2201 - Body Functions and Structures: Anatomy**
- OT 2202 - Therapeutic Approaches 1**
- OT 2203 - Clinical Seminar 1

Term 2 - Fall Term - 15 Credits

Assessment and Analysis

- OT 2204 - Human Performance Analysis**
- OT 2205 - Neurobehavioral Science**
- OT 2206 - Clinical Conditions 1
- OT 2207 - Principles of Assessment**
- OT 2208 - Critical Appraisal of Evidence
- OT 2209 - Clinical Seminar 2

Term 3 - Spring Term - 15 Credits

Intervention I

- OT 2210 - Psychosocial/Cognitive Theory and Practice**
- OT 2211 - Activity/Context Adaptation Theory and Practice**
- OT 2212 - Clinical Conditions 2
- OT 2213 - Occupational Therapy and the Health System
- OT 2214 - Therapeutic Approaches 2**
- OT 2215 - Fieldwork Education A (FW 1)**
- OT 2216 - Clinical Seminar 3

Term 4 - Summer Term - 8 Credits

Intervention II

- OT 2217 - Neurorehabilitation Theory and Practice**
- OT 2218 - Biomechanical Theory and Practice**
- OT 2219 - Fieldwork Education B (FW 1)**
- OT 2220 - Clinical Seminar 4

Term 5 - Fall Term - 13 Credits

Intervention III

- OT 2221 - Developmental Theory and Practice**
- OT 2222 - Productive Aging Theory and Practice**
- OT 2224 - Management of Occupational Therapy Practice
- OT 2225 - Project Development 1
- OT 2226 - Fieldwork Education C (FW 1)**
- OT 2227 - Clinical Seminar 5

Term 6 - Spring Term - 13 Credits

Clinical Synthesis I

- OT 2228 - Fieldwork Education D (FW 2)**
- OT 2229 - Fieldwork Education E (FW 2)**

Term 7 - Summer Term - 7 Credits

Clinical Synthesis II

- OT 2229 - Fieldwork Education E (FW 2)**

Term 8 - Fall Term - 15 Credits

Leadership I

- OT 3203 - Advanced Concepts in Clinical Reasoning
- OT 3204 - Advanced Concepts in Health Policy and Advocacy
- OT 3205 - Leadership Development
- OT 3206 - Advanced Theory and Practice**
- OT 3207 - Project Development 2

Term 9 - Spring Term - 14 Credits

Leadership II

- OT 3208 - Experiential Preceptorship (FW 3)**
- OT 3209 - Professional Development Seminar

**Course includes laboratory, fieldwork, or experiential component.

PLEASE NOTE: The OTD Program requires that students complete fieldwork education, and an experiential preceptorship at facilities external to the University of Pittsburgh. All OTD students are required to obtain the following annually - PA criminal record check, PA child abuse history clearance, PA DHS and PA DOE fingerprint background checks, personal health insurance, health screening, drug screening, influenza vaccination,

CPR/AED training, and first aid training. Additionally, in order to become licensed, many states will inquire as to whether the applicant has been convicted of a misdemeanor, a felony, or a felonious or illegal act associated with alcohol and / or substance abuse.

Fieldwork and Experiential Preceptorship

Fieldwork education and the Experiential Preceptorship are essential parts of professional doctoral preparation and are integrated as components of the curriculum design. They are an extension of the OTD Program within the clinical/community setting. The fieldwork experience provides the OTD student with the opportunity to learn professional responsibilities through modeling by qualified and experienced personnel and to practice these responsibilities in a supervised setting. The Experiential Preceptorship provides an in-depth professional experience and the completion of a culminating (capstone) project. Fieldwork education and the Experiential Preceptorship are only conducted in sites that have a signed agreement (Memorandum of Understanding) with the School of Health and Rehabilitation Sciences. This agreement formally identifies the responsibilities of the University and the site.

Fieldwork education includes Level I and Level II experiences. Level I fieldwork occurs during Term 3 (OT 2215 - Fieldwork Education A), Term 4 (OT 2219 - Fieldwork Education B), and Term 5 (OT 2226 - Fieldwork Education C). Level I fieldwork is designed to enrich didactic coursework through direct observation and participation in selected aspects of the occupational therapy process. Level I fieldwork is supervised by qualified personnel (e.g., currently licensed or otherwise regulated occupational therapy practitioners, psychologists, physician assistants, teachers, social workers, nurses, and others). OTD students are assigned to Level I fieldwork sites in the Greater Pittsburgh Area by the Academic Fieldwork Coordinator in collaboration with the occupational therapy faculty. The qualifications of individuals supervising students during Level I fieldwork are reviewed by the Academic Fieldwork Coordinator to ensure that a meaningful learning experience can be provided.

Level II fieldwork is completed in Terms 6 and 7 (OT 2228 - Fieldwork Education D; OT 2229 - Fieldwork Education E). Level II fieldwork is distinct from Level I fieldwork. Students must successfully complete Level I fieldwork experiences prior to enrolling in Level II fieldwork. Level II fieldwork is an in-depth experience in delivering occupational therapy services to clients in traditional and/or emerging settings consistent with our OTD Program's curriculum design. Each OTD student is assigned to specific Level II fieldwork sites to ensure exposure to a variety of clients across the life span and to a variety of settings. Students can complete Level II fieldwork in a minimum of one setting if it is reflective of more than one practice area, or in a maximum of four different settings. The OTD Program only uses sites within the United States that allow for supervision by an occupational therapist who meets state regulations and has a minimum of one year of practice experience, subsequent to the requisite initial certification. Level II fieldwork is a minimum of the equivalent of 24 full-time work weeks. Level II fieldwork may be completed on a part-time basis as long as it is at least 50% of a full-time equivalent at the site. The OTD student is assigned to a Level II fieldwork site by the Academic Fieldwork Coordinator and signs the Level II Fieldwork Acknowledgment Agreement. The performance of a student who does not successfully complete Level II fieldwork is critically reviewed by the Academic Fieldwork Coordinator and occupational therapy faculty. Satisfactory completion of targeted interventions by the student may be required prior to enrolling in a subsequent Level II fieldwork. The faculty reserves the right to place a student at a site in the Greater Pittsburgh Area based on the student's academic performance and/or professional behavior.

After successful completion of Level II fieldwork (OT 2228; OT 2229), the OTD student engages in didactic coursework and training of advanced skills beyond the generalist level of an occupational therapist. OTD students enroll in OT 3208-Experiential Preceptorship (doctoral experiential component) (Term 9) after they have successfully completed all didactic coursework, Level I and Level II fieldworks, and a competency requirement. The Experiential Preceptorship (OT 3208) is a 16 week (640 hour) in-depth experience in clinical practice skills, research skills, administration, leadership, program and policy development, advocacy, and/or education and includes the completion of a culminating (capstone) project. The focus of the Experiential Preceptorship is on the development of skills for increased autonomy as a contributor to advancing occupational therapy practice. Preceptorships are completed in a novel practice setting or a traditional setting with a novel program, and have a connection with community issues or problems. Students are assigned a faculty mentor who oversees their Experiential Preceptorship, including the development of learning objectives and plans for supervision. The Experiential Preceptorship is distinct from Level I and II fieldwork and is the final step in the preparation of the OTD student for entry-level practice.

These learning experiences (Fieldwork education and Experiential Preceptorship) prepare the OTD student to assume the roles of practitioner, manager, and contributor upon graduation from the academic program. Prior fieldwork, volunteer, and/or work experience hours cannot be applied towards the Experiential Preceptorship hours, and a student's current work setting cannot serve as a site for his/her Experiential Preceptorship. The Experiential Preceptorship may be completed on a part-time basis.

The culminating (capstone) project is a multi-faceted investigative assignment that students begin in Term 3. It is designed to encourage students to think critically, solve challenging problems, collaborate with other professionals, and to develop advanced skills in communication, research, teamwork, planning, leadership, self-reliance, professionalism, and advocacy - skills that will prepare them to respond positively and confidently to the many opportunities and challenges in today's evolving and increasing complex practice settings. Although, the learning objectives for the Experiential Preceptorship and culminating project address all three roles of the occupational therapist - practitioner, manager, and contributor - the focus is on the development of skills for increased autonomy as a contributor to advancing occupational therapy practice. The projects address community issues or problems, and are implemented in novel practice settings.

Level II fieldwork (OT 2228; OT 2229) and the Experiential Preceptorship (OT 3208) must be completed within 24 months following completion of the didactic portions of the OTD Program. OTD students are responsible for securing all required resources in preparation for and during Level I and II fieldworks and the Experiential Preceptorship including but not limited to transportation, health screenings and associated testing, health insurance, drug screening, influenza vaccination, CPR/AED training, first aid training, liability insurance, background checks and clearances, parking, housing, food, and clothing.

Academic Standards

In addition to following University-wide academic rules and regulations as detailed in the General Academic Regulations section of this Catalog, the OTD Program is regulated by the School of Health and Rehabilitation Sciences Academic Standards, as well as the policies and procedures in the SHRS Graduate Student Handbook and the OTD Student Manual.

Master's

Master of Occupational Therapy (MOT)

The Department of Occupational Therapy now offers a Doctor of Occupational Therapy (OTD) degree program.

The Master of Occupational Therapy (MOT) degree program is only available to candidates with a University of Pittsburgh Freshman Occupational Therapy Guarantee who began undergraduate studies at the University of Pittsburgh in Fall of 2016. Candidates with Freshman Occupational Therapy Guarantee status should contact the Department of Occupational Therapy at OTpitt@shrs.pitt.edu or 412-383-6620.

Degree Requirements

The entry-level MOT Program is a two-year professional course of study requiring 78 credits, including fieldwork education.

Certification

Graduates of the Program are eligible to sit for the National Certification Examination for the Occupational Therapist, administered by the National Board for Certification in Occupational Therapy (NBCOT). After successful completion of this examination, the graduate will be an Occupational Therapist, Registered (OTR). In addition, most states require licensure to practice; however, state licenses are usually based on the results of the NBCOT Certification Examination. A felony conviction may affect a graduate's ability to sit for the NBCOT Certification Examination or obtain a state license.

Curriculum and Course Descriptions

There are a total of 78 credits for the MOT Program and a minimum GPA of 3.00 (based on a 4.00 scale) is required for graduation. Most courses in the MOT curriculum require the successful completion of one or more prerequisite courses (see individual course descriptions for prerequisites).

Plan of Study

Term 1* - Summer Term - 7 Credits

- OT 2100 - Foundations of Occupation Science and Occupational Therapy**
- HRS 2022 - Human Anatomy**
- OT 2203 - Clinical Seminar 1

Term 2 - Fall Term - 15 Credits

- OT 2101 - Human Movement Analysis**

- OT 2104 - Clinical Psychiatry
- OT 2105 - Clinical Medicine
- OT 2106 - Clinical Research for Occupational Therapy
- OT 2109 - Neurobehavioral Science / MOT **
- OT 2207 - Principles of Assessment **
- OT 2209 - Clinical Seminar 2
- OT 2113 - Rehabilitation Theory and Practice**

Term 3 - Spring Term - 15 Credits

- OT 2107 - Psychosocial/Cognitive Theory and Practice / MOT **
- OT 2108 - Clinical Neurology and Orthopedics
- OT 2111 - Occupational Therapy and the Health Care System
- OT 2113 - Rehabilitation Theory and Practice / MOT **
- OT 2214 - Therapeutic Approaches 2 **
- OT 2216 - Clinical Seminar 3

Term 4 - Summer Term - 7 Credits

- OT 2112 - Neurorehabilitation Theory and Practice**
- OT 2114 - Biomechanical Theory and Practice / MOT **
-

Term 5 - Fall Term - 14 Credits

- OT 2115 - Developmental Theory and Practice / MOT **
- OT 2116 - Integrative Capstone Seminar
- OT 2117 - Management of Occupational Therapy Practice / MOT
- OT 2118 - Special Topics in Occupational Therapy Theory and Practice **
- OT 2227 - Clinical Seminar 5

Terms 6 & 7 - Spring and Summer Terms - 20 Credits***

- OT 2119 - OT Fieldwork Education A (FW 2)
- OT 2120 - OT Fieldwork Education B (FW 2)

* Term 1 begins in early June.

** Includes laboratory component with associated fee.

*** Fieldwork A and B must be completed within 3 years of completing didactic coursework. A misdemeanor or felony charge or conviction may affect a student's ability to complete courses with a fieldwork component.

PLEASE NOTE: The MOT Program requires that students complete fieldwork education at facilities external to the University of Pittsburgh. All MOT students are required to obtain the following annually - PA criminal record check, PA child abuse history clearance, PA DHS and PA DOE fingerprint background checks, personal health insurance, health screening, drug screening, influenza vaccination, CPR/AED training, and first aid training. Additionally, in order to become licensed, many states will inquire as to whether the applicant has been convicted of a misdemeanor, a felony, or felonious or illegal act associated with alcohol and/or substance abuse.

Academic Standards

In addition to following University-wide academic rules and regulations as detailed in the General Academic Regulations section of this Catalog, the MOT Program is regulated by the School of Health and Rehabilitation Sciences Academic Standards, as well as the departmental Student Manual.

Master of Science (MS) in Occupational Therapy

Program Requirements

The program begins in the Summer term (May) each year and requires the completion of 33 credits (9 credits in Professional Foundations; 12 credits in Assessment/Analysis; 12 credits in Intervention). A Comprehensive Examination is required at the end of the Spring term and prior to graduation.

Curriculum and Course Descriptions

Plan of Study:

The program requires the completion of 33 credits (9 credits in Professional Foundations; 12 credits in Assessment/Analysis; 12 credits in Intervention).

The following is a typical plan of study for students enrolled in the Master of Science (MS) Program in Occupational Therapy (OT).

Summer Term - 9 Credits

- OT 2200 - Foundations of Occupation
- OT 2202 - Therapeutic Approaches 1
- OT 2218 - Biomechanical Theory & Practice
- OT 2203 - Clinical Seminar 1
- OT 2241 - Clinical Preceptorship 1 OR HRS 2594 - Research Preceptorship

Fall Term - 12 Credits

- OT 2221 - Developmental Theory and Practice OR OT 2222 Productive Aging Theory and Practice
- OT 2207 - Principles of Assessment
- OT 2224 - Management of Occupational Therapy Practice
- OT 2208 - Critical Appraisal of Evidence
- OT 2209 - Clinical Seminar 2
- OT 2242 - Clinical Preceptorship 2 OR HRS 2594 - Research Preceptorship

Spring Term - 12 Credits

- OT 2210 - Psychosocial/Cognitive Theory and Practice
- OT 2213 - Occupational Therapy and the Health System
- OT 2240 - Special Topics in Occupational Therapy
- OT 2214 - Therapeutic Approaches 2
- OT 2216 - Clinical Seminar 3
- OT 2243 - Clinical Preceptorship 3 OR HRS 2594 - Research Preceptorship

Comprehensive Examination:

Each student must successfully complete a Comprehensive Examination. This examination is used to determine mastery of the core content in the curriculum.

Preceptorship

Preceptorships provide advanced experiential learning in an area of occupational therapy practice for the purpose of advancing skills and knowledge in that practice area. For internationally educated occupational therapists a clinical preceptorship can also be customized for the purpose of developing familiarity with the U.S. health care system.

MS students have taken advantage of preceptorships to gain advanced skills (e.g., burns rehabilitation), participate in program development activities (e.g., designing an energy conservation and work simplification program for individuals with chronic respiratory diseases), develop teaching modules for entry-level program courses (e.g., assistive technology, neuroscience and neurorehabilitation), develop familiarity with health and disability policy, and design and implement scholarly projects.

For all preceptorship experiences, in addition to the site mentor, students are assigned a faculty mentor who guides them through the preceptorship. The student and faculty mentor meet prior to the start of the preceptorship to discuss goals for the preceptorship, a plan of action for achieving the goals, and the evaluation process. The student and faculty mentor meet throughout the preceptorship to discuss the student's progress. Students find the preceptorships to be rewarding experiences that advance their clinical skills and career development.

Department of Physical Therapy

The Department of Physical Therapy offers three academic programs of study:

- DPT program leading to the DPT degree
- Joint DPT/PhD program leading to a DPT degree and a PhD in Bioengineering
- M.S. in Health & Rehabilitation Sciences with a concentration in neuromuscular or musculoskeletal physical therapy

Doctoral

Physical Therapy, DPT

Doctor of Physical Therapy (DPT) Degree

The Doctor of Physical Therapy (DPT) program is the entry-level educational program which prepares students for careers as physical therapists. Upon successful completion of the curriculum, a student is eligible for the licensure examination, which is required to be a practicing physical therapist. The goal of the DPT curriculum is to prepare students to become self-directed, self accountable physical therapists who can function in a cost-effective manner in all settings, and with persons of all ages. Graduates of the program will be prepared to enhance human movement and function through the use of evidence-based practice principles. Physical therapy graduates will have a foundation on which to base further knowledge and skills in specialty areas and to contribute to development of the art and science of physical therapy.

Contact Information

M. Kathleen Kelly, PhD, PT
Vice Chair, DPT Program
Department of Physical Therapy
School of Health and Rehabilitation Sciences
Bridgeside Point 1, Suite 210
Pittsburgh, PA 15219-3130
412-383-6637
Fax: 412-648-5970
E-mail: ptinfo@shrs.pitt.edu
www.shrs.pitt.edu/dpt/

Application Process

Admission to the Doctor of Physical Therapy program is only available on a full-time basis. The DPT program begins the first week of June each year. All applicants must apply to the program through the PT Centralized Application Service (PTCAS). This information is located on the Department website.

Admissions Requirements

To be eligible to apply to the DPT program, applicants must have earned a bachelor's degree, taken and successfully passed all prerequisite coursework, taken the Graduate Record Exam (GRE-general) within the last five years, and must demonstrate evidence of experience in a physical therapy setting in either a volunteer or paid capacity.

- Graduate Record Examination - (GRE -general). GRE scores must be sent to institution code 7754
- Minimum GPA of 3.0 (based on a 4.0 scale)
- 3 letters of recommendation: 1 from a licensed physical therapist (from applicant's volunteer or work experience in a PT setting); 1 from a college level professor; 1 from either of the following: a licensed physical therapist or a supervisor/employer (preferably in a healthcare or related setting).
- Demonstrated evidence of adequate exposure to the field of physical therapy and an appreciation of the breadth, depth, and scope of practice. This can be accomplished through either volunteer or paid work experience in a physical therapy setting; there is no minimum number of hours required. It is preferable for applicants to show evidence of the willingness to work with a variety of patients in different physical therapy settings
- The Department faculty have outlined the Technical Standards deemed essential for successful completion of the DPT curriculum. Students admitted to the DPT program must review the Technical Standards and submit a signed form at the time of matriculation
- Please note that many clinical sites will require a Child Abuse clearance (Act 33), Criminal Background check (Act 34), and a drug screen prior to participation in a clinical education experience. **If you do not** have a clean background check for either Act 33/34 clearance, or a clean drug screen you may not be able to participate in Clinical Education and therefore will not be able to meet the DPT requirements for graduation.

Additionally, in order to become licensed, many states will inquire as to whether the applicant has been convicted of a misdemeanor, a felony, or a felonious or illegal act and if you have a record you may not be able to become licensed to practice your profession after graduation.

Prerequisite Coursework (minimum credit hours listed is based on a semester system equivalent)

- Chemistry I and II sequence with labs, 8 credit hours
- Physics I and II sequence with labs, 8 credit hours
- Biology I and II sequence with labs, 8 credit hours
- Anatomy (human, vertebrate, comparative or anatomical kinesiology), 3 credit hours
- Physiology (human physiology preferred), 3 credit hours
*A two course sequence of anatomy/physiology may meet the anatomy and physiology requirements as long as there is a total of 6 credit hours
**Science courses must be for science majors or pre-med majors. Introductory or remedial courses are not accepted as prerequisites.
- Two courses in Psychology: should include a general psychology course and a specialized psychology course such as: developmental psychology, abnormal psychology, psychology of disability, sports psychology - 6 credit hours
- Statistics, 3 credit hours
- English Writing (English composition or an upper-division writing course), 3 credit hours

At the time of application no more than 2 courses can be outstanding and must be completed prior to starting the program. Courses MUST BE completed within the past 5 years.

Academic Standards

In addition to the University-wide academic rules and regulations as detailed in the *General Academic Regulations* section of this catalog, the DPT program is regulated by the *SHRS Academic Standards*.

Statute of Limitations

All requirements of the DPT must be completed within three years. Extension of the statute of limitations may be granted if there are extenuating circumstances. Such requests, listing reasons for the extension and the amount of additional time needed, must be approved by the department chair.

Comprehensive Examinations

Students in the DPT program are required to pass a written comprehensive examination before the Doctor of Physical Therapy degree can be awarded. The written comprehensive examination is a cumulative examination covering the core clinical sciences and focusing on physical therapy practice.

Degree Requirements

The Doctor of Physical Therapy program is a three-year (8 semester*) professional course of study including clinical internships.

**From a Academic Proposal approved on September 18th, 2019 the terms were reduced from 9 to 8. This changed was made on 9/30/2019.*

DPT Curriculum

Our rigorous curriculum is built around 4 key areas: basic science, clinical science, leadership & professional development, and critical inquiry. The DPT plan of study integrates the basic sciences and clinical practice, emphasizes evidence based practice and includes a comprehensive array of course offerings in musculoskeletal, neuromuscular, integumentary, cardiopulmonary, geriatric, and pediatric physical therapy, as well as course content related to leadership & professional development.

We want to make sure our graduates are well prepared to enter the workforce so we complement our didactic education program with a clinical program that includes more than 65 weeks of clinical internships. The curriculum is designed to emphasize early and intensive integration of our students into the clinical environment throughout their educational program. Our students begin their clinical affiliations during the 2nd semester in the program and have a 1 year internship at the end of their didactic phase of the plan of study.

Joint Degree

Physical Therapy/Bioengineering, DPT/PhD

The Doctor of Physical Therapy (DPT) - PhD in Bioengineering program combines the entry-level DPT leading to licensure as a physical therapist, with a PhD in Bioengineering that will prepare the student to become an independent researcher. The program will integrate clinical and research experiences, with students receiving mentorship from faculty in the departments of Physical Therapy and Bioengineering. Students should have a Bachelor's degree or higher in engineering or engineering-related discipline, with a strong interest in physical therapy.

Contact Information

Patrick Sparto, PhD, PT
Co-Director, DPT-PhD Program
Department of Physical Therapy
Bridgeside Point 1, Suite 210
Pittsburgh, PA 15219-3130
Phone: 412-383-6732
Fax: 412-648-5970
E-mail: psparto@pitt.edu

Application Process

Applications will need to be submitted through the PT Centralized Application Service (PTCAS) by end of November for admission to the program the following June. The application is reviewed by faculty in both departments.

Admission Requirements

Students will need to meet the admission requirements of both programs. Applicants must have a minimum of a Bachelor's degree in a field of engineering or closely related (e.g. physics, or applied mathematics, kinesiology). Applicants must demonstrate evidence of exposure to the field of PT through volunteer or work experience. Applicants must submit 4 letters of reference: one physical therapist with whom the student has

volunteered or worked for, two academic advisors, and one research supervisor. A minimum GPA of 3.0 is required but competitive applicants typically have a 3.5 GPA or greater. Applicants must take the GRE exam; typically, admitted students have GRE scores greater than the 50th percentile.

Prerequisite Coursework (minimum credit hours listed is based on a semester system equivalent)

- Chemistry I and II sequence with labs, 8 credit hours
- Physics I and II sequence with labs, 8 credit hours
- Biology I and II sequence with labs, 8 credit hours
- Anatomy (human, vertebrate, comparative or anatomical kinesiology), 3 credit hours
- Physiology (human physiology preferred), 3 credit hours
 *A two course sequence of anatomy/physiology may meet the anatomy and physiology requirements as long as there is a total of 6 credit hours
 **Science courses must be for science majors or pre-med majors. Introductory or remedial courses are not accepted as prerequisites.
- Two courses in Psychology: should include a general psychology course and a specialized psychology course such as: developmental psychology, abnormal psychology, psychology of disability, sports psychology - 6 credit hours
- Statistics, 3 credit hours
- English Writing (English composition or an upper-division writing course), 3 credit hours

At the time of application no more than 2 courses can be outstanding and must be completed prior to starting the program. Courses MUST BE completed within the past 5 years.

Academic Standards

In addition to the University-wide academic rules and regulations as detailed in the *General Academic Regulations* section of this bulletin, the DPT program is regulated by the *SHRS Academic Standards*.

Curriculum Overview

Students will follow the typical plan of study for DPT students for the initial eight terms (i.e. 2 2/3 years) of the program. Then students will follow the plan of study for PhD students in Bioengineering. Clinical internships and research experiences will be performed throughout the program. At a minimum, the program will take 6 years to complete. After completing the didactic and clinical requirements of the DPT program, the student will be allowed to take the licensing exam. Students are required to write and orally defend a dissertation to complete their PhD degree.

DPT Curriculum

The course requirements for the DPT include the following:

- Basic Science (Anatomy, Neuroscience, Exercise Physiology, Pharmacology)-16 credits
- Clinical Science (Kinesiology, Musculoskeletal PT, Neuromuscular PT, Cardiopulmonary PT, Patient Management, Human Disease, Geriatrics Growth and Development)-52 credits
- Critical Inquiry (Research Methods, Evidence-Based Practice) -9 credits
- Leadership and Professional Development-6 credits
- Clinical Education-28 credits

Total number of credit hours: 111 credits. Students are required to pass a written comprehensive examination before the Doctor of Physical Therapy degree can be awarded. The written comprehensive examination is a cumulative examination covering the core clinical sciences and focusing on physical therapy practice.

Courses	Credits
Basic Science (Anatomy, Neuroscience, Exercise Physiology, Pharmacology)	16
Clinical Science (Kinesiology, Musculoskeletal PT, Neuromuscular PT, Cardiopulmonary PT, Patient Management, Human Disease, Geriatrics Growth and Development)	52

Critical Inquiry (Research Methods, Evidence-Based Practice)	9
Leadership and Professional Development	6
Clinical Education	28
Total:	111

PhD Requirements

The course requirements for the PhD in bioengineering for the combined program include the following:

- Bioengineering Track Courses-9 credits
- Graduate Electives-6 credits
- Seminar-5 credits total-4 credits must be Bioengineering Seminar
- Graduate Engineering Mathematics-3 credits
- Statistics for Bioengineers-3 credits
- Societal, Political, and Ethical Issues in Bioengineering-3 credits
- Teaching Practicum-2 credits
- Grant Writing in Bioengineering-1 credit
- Doctoral Dissertation Research-40 credits

Total number of credit hours: 72 credits minimum (plus the credits associated with the remedial courses, as applicable.) Students typically take the PhD preliminary exam after their first year in the program, and PhD proposal (comprehensive examination) is presented generally at the end of the second year. A final public PhD defense is made by each PhD candidate based on the student's research work.

Master's

Physical Therapy - Musculoskeletal Physical Therapy Concentration, MS

This program is designed for the practicing physical therapy professional who has already earned an entry-level degree in physical therapy. This post-professional graduate plan of study enables physical therapists to improve their clinical knowledge and clinical skills through a specific program of advanced physical therapy practice and scholarship. The Master of Science in Health and Rehabilitation Science program offers a choice of concentrations in Physical Therapy: Musculoskeletal Physical Therapy and Neuromuscular Physical Therapy. This program is designed to provide advanced clinical skills in the areas of musculoskeletal and neuromuscular physical therapy. The program leads to a professional clinical degree at the post baccalaureate level. The program is 12 months in length and 33 credit hours.

Contact Information

Program Director
Department of Physical Therapy
School of Health and Rehabilitation Sciences
Bridgeside Point 1
100 Technology Drive Room 242
Pittsburgh, PA 15219
Phone: 412-383-8169
Fax: 412-648-5970
E-mail: ptinfo@shrs.pitt.edu

Application Process

All applicants must:

- Apply online using the SHRS ApplyYourself application
- Submit the application fee of \$50 (US)
- Submit an essay-a description of educational and long-term professional goals
- Submit three letters of recommendation. These references can be from a college instructor/professor, academic advisor, supervisor or employer, etc. The letters should address the applicant's academic, professional and personal attributes and potential for successful graduate study
- Submit official transcripts/marksheets from all colleges and universities attended.

Admission Requirements

For admission to full graduate status an applicant must demonstrate:

- A minimum grade point average (GPA) of 3.0 from their entry-level professional physical therapy program (equivalent GPA determined via credential evaluation)
- Evidence of potential for success in a graduate program that can be demonstrated through past work experiences, continuing education, and letters of recommendation

Admissions decisions will be based on an overall evaluation of all credentials submitted and the availability of space in the class.

Additional requirements for International Applicants:

Academic Credential Evaluation

- Evaluations are accepted from International Consultants of Delaware, Inc. (ICD), Educational Credential Evaluators, Inc. (ECE) or Joseph Silney & Associates, Inc. (JS&A)
- A course by course evaluation including a grade point average equivalent is required
- A final transcript/marksheet and diploma (degree certificate) showing completion of the undergraduate degree must be submitted prior to starting the program
- If an international student has earned an undergraduate or graduate degree in the United States, this evaluation is not required
- If you are a US Citizen who earned their degree outside the US an academic credential evaluation IS required
- We do not accept WES evaluations

English Language Proficiency Scores

The University of Pittsburgh will accept the following as verification of english language proficiency:

- TOEFL - minimum scores accepted are 80 ibt (internet based test) or 550 pbt (paper based test). TOEFL scores must be sent via ETS to the University of Pittsburgh, institution code 2927
- IELTS - minimum score accepted is Overall Band 6.5. IELTS scores must be mailed directly from the testing center to SHRS Office of Admissions, 4020 Forbes Tower, University of Pittsburgh, Pittsburgh, PA, 15260

Verification of English Language Proficiency is required unless the following apply:

- The applicant is a citizen of a country whose ONLY official language is English
- The applicant has completed a degree at a regionally accredited institution in the U.S.
- The applicant is not a citizen of a country whose official language is English but has completed a degree program at an institution outside of the U.S. where the language of instruction is English and where the official national language of the country in which the institution is located is English

For detailed information about these requirements and additional helpful information for international applicants please visit the International Applicants information on the SHRS website.

Note: Application can be submitted while the first professional degree is in progress provided the applicant will be able to provide evidence of successful degree completion prior to starting the program.

Application deadline: April 15. Applications submitted and/or completed after the deadline will be reviewed on a case by case basis. Please contact admissions@shrs.pitt.edu.

We encourage international student applications.

Program Requirements

Examination and Testing

Throughout the plan of study, a series of written and/or oral-practical examinations are integrated within the formal course work. These examinations are used to determine mastery of the core elements of the plan of study.

The written examination will cover the levels of "application and analysis" and "synthesis and analysis" so as to gauge the student's ability to utilize information in their clinical decision making.

The practical examinations will focus on the clinical application of therapeutic assessment and treatment techniques. Students will be expected to demonstrate appropriate patient handling, awareness of safety issues, application of technique, and decision-making rationale at the level of an advanced clinician.

Failure to meet any of the above requirements may result in the student not being recommended for graduation from the program.

Curriculum and Course Descriptions

Students in the MS in Health and Rehabilitation Sciences can choose from either a Musculoskeletal PT concentration or a Neuromuscular PT concentration. Upon completion of either one, students will be awarded a Master of Science (MS) degree in Health and Rehabilitation Sciences.

The MS in Health and Rehabilitation Sciences requires the minimum completion of 33 credits. Students must maintain an overall 3.0 GPA in their required plan of studies in order to be considered a candidate for graduation.

Musculoskeletal Concentration Curriculum

Fall

- HRS 2314 - Fundamentals of Neuroscience for the Orthopedic Clinician, 4 credits
- HRS 2362 - Evidence Based Practice - Clinical Considerations for the Lower Extremity, 3 credits
- HRS 2372 - Advanced Clinical Practice, The Lower Quarter, 3 credits
- HRS 2907 - Clinical Investigations, 2 credit

Spring

- HRS 2307 - Falls & Balance Dysfunction: PT Management and Intervention, 3 credits
- HRS 2309 - Analysis Neuromusculoskeletal Signs/Symptoms in Clinical Decision Making, 3 credits
- HRS 2361 - Evidence Based Practice - Clinical Considerations for the Lumbo Pelvic Spine, 3 credits
- HRS 2373 - Advanced Clinical Practice: The Upper Quarter, 3 credits

Summer

- HRS 2308 - Clinical Practice Seminar, 2 credits
- HRS 2374 - Clinical Rounds and Case Presentations, 1 credit
- HRS 2380 - Evidence Based Practice - Clinical Considerations for the Cervical and Thoracic Spine, 3 credits
- HRS 2381 - Evidence Based Practice - Clinical Considerations for the Upper Extremity, 3 credits

*

Note that each course in the plan of study is offered only once during the academic year, therefore, any departure from completing a course in its planned sequence, (e.g. failure to receive a passing grade of 'C' or better; leave of absence from program) will result in a one year delay in completing the course, the remaining program requirements, and the year of graduation.

Physical Therapy - Neuromuscular Physical Therapy Concentration, MS

This program is designed for the practicing physical therapist professional who has already earned an entry-level degree in physical therapy. This post-professional graduate plan of study enables physical therapists to improve their clinical knowledge and clinical skills through a specific program

of advanced physical therapy practice and scholarship. The Master of Science in Health and Rehabilitation Science program offers a choice of concentrations in Physical Therapy: Musculoskeletal Physical Therapy and Neuromuscular Physical Therapy. This program is designed to provide advanced clinical skills in the areas of musculoskeletal and neuromuscular physical therapy. The program leads to a professional clinical degree at the post baccalaureate level. The program is 12 months in length and 33 credit hours.

Contact Information

Program Director
Department of Physical Therapy
School of Health and Rehabilitation Sciences
Bridgeside Point 1
100 Technology Drive Suite 210
Pittsburgh, PA 15219
Phone: 412-383-8169
Fax: 412-648-5970
E-mail: ptinfo@shrs.pitt.edu

Application Process

All applicants must:

- Apply online using the SHRS ApplyYourself application;
- Submit the application fee of \$50 (US);
- Submit an essay-a description of educational and long-term professional goals;
- Submit three letters of recommendation. These references can be from a college instructor/professor, academic advisor, supervisor or employer, etc. The letters should address the applicant's academic, professional and personal attributes and potential for successful graduate study;
- Submit official transcripts/marksheets from all colleges and universities attended.
- Additional requirements for international applicants- including academic credential evaluation and English language proficiency requirements.

Admission Requirements

For admission to full graduate status an applicant must demonstrate:

- A minimum grade point average (GPA) of 3.0 from their entry-level professional physical therapy program (equivalent GPA determined via credential evaluation)
- Evidence of potential for success in a graduate program that can be demonstrated through past work experiences, continuing education, and letters of recommendation

Admissions decisions will be based on an overall evaluation of all credentials submitted and the availability of space in the class.

Additional requirements for International Applicants:

Academic Credential Evaluation

- Evaluations are accepted from International Consultants of Delaware, Inc. (ICD), Educational Credential Evaluators, Inc. (ECE) or Joseph Silney & Associates, Inc. (JS&A)
- A course by course evaluation including a grade point average equivalent is required
- A final transcript/marksheet and diploma (degree certificate) showing completion of the undergraduate degree must be submitted prior to starting the program
- If an international student has earned an undergraduate or graduate degree in the United States, this evaluation is not required
- If you are a US Citizen who earned their degree outside the US an academic credential evaluation IS required

English Language Proficiency Scores

The University of Pittsburgh will the following as verification of english language proficiency:

- TOEFL - minimum scores accepted are 80 ibt (internet based test) or 550 pbt (paper based test). TOEFL scores must be sent via ETS to the University of Pittsburgh, institution code 2927

- IELTS - minimum score accepted is Overall Band 6.5. IELTS scores must be mailed directly from the testing center to SHRS Office of Admissions, 4020 Forbes Tower, University of Pittsburgh, Pittsburgh, PA, 15260

Verification of English Language Proficiency is required unless the following apply:

- The applicant is a citizen of a country whose ONLY official language is English
- The applicant has completed a degree at a regionally accredited institution in the U.S.
- The applicant is not a citizen of a country whose official language is English but has completed a degree program at an institution outside of the U.S. where the language of instruction is English and where the official national language of the country in which the institution is located is English

For detailed information about these requirements and additional helpful information for international applicants please visit the International Applicants information on the SHRS website.

Note: Application can be submitted while undergraduate degree is in progress provided the applicant will be able to provide evidence of successful degree completion prior to starting the program.

Application deadline: April 15. Applications submitted and/or completed after the deadline will be reviewed on a case by case basis. Please contact admissions@shrs.pitt.edu.

We encourage international student applications.

Program Requirements

Examination and Testing

Throughout the plan of study, a series of written and/or oral-practical examinations are integrated within the formal course work. These examinations are used to determine mastery of the core elements of the plan of study.

The written examination will cover the levels of "application and analysis" and "synthesis and analysis" so as to gauge the student's ability to utilize information in their clinical decision making.

The practical examinations will focus on the clinical application of therapeutic assessment and treatment techniques. Students will be expected to demonstrate appropriate patient handling, awareness of safety issues, application of technique, and decision-making rationale at the level of an advanced clinician.

Failure to meet any of the above requirements may result in the student not being recommended for graduation from the program.

Curriculum and Course Descriptions

Students in the MS in Health and Rehabilitation Sciences can choose from either a Musculoskeletal PT concentration or a Neuromuscular PT concentration. Upon completion of either one, students will be awarded a Master of Science (MS) degree in Health and Rehabilitation Sciences. The MS in Health and Rehabilitation Sciences requires the minimum completion of 33 credits. A comprehensive examination sequence is required following completion of the core coursework in each of the separate concentrations. Students must maintain an overall 3.0 GPA in their required plan of studies in order to be considered a candidate for graduation.

Neuromuscular Concentration Curriculum

Fall

- HRS 2305 - Advanced Neuroscience, 4 credits
- HRS 2306 - Motor Learning and Control of Movement/Health Promotion, 3 credits
- HRS 2372 - Advanced Clinical Practice: The Lower Quarter, 3 credits
- HRS 2907- Clinical Investigations, 2 credits

Spring

- HRS 2307 - Falls & Balance Dysfunction: PT Management and Intervention, 3 credits

- HRS 2309 - Analysis Neuromusculoskeletal Signs/Symptoms in Clinical Decision Making, 3 credits
- HRS 2356 - Concepts and Principles Related to Sensorimotor Control, 3 credits
- HRS 2373 - Advanced Clinical Practice: The Upper Quarter, 3 credits

Summer

- HRS 2312 - Seminar in Neurologic PT, 2 credits
- HRS 2364 - Evidence Based Medical & Physical Therapy Interventions for Persons with Neuromuscular Disease, 3 credits
- HRS 2365 - Case Studies of Persons with Neuromuscular Disorders, 3 credits
- HRS 2374 - Clinical Rounds and Case Presentations, 1 credit
- Comprehensive Exam Sequence

*

Note that each course in the plan of study is offered only once during the academic year, therefore, any departure from completing a course in its planned sequence, (e.g. failure to receive a passing grade of 'C' or better; leave of absence from program) will result in a one year delay in completing the course, the remaining program requirements, and the year of graduation.

Department of Rehabilitation Science and Technology

Master of Science in Clinical Rehabilitation and Mental Health Counseling & Master of Science Degree in Health and Rehabilitation Sciences with a Concentration in Rehabilitation Counseling

Contact Information

Michael McCue, PhD
 Professor, Counseling Program Director
 Department of Rehabilitation Sciences and Technology
 5040 Forbes Tower
 412-383-6589
 Fax: 412-383-6597
 E-mail: mmccue@pitt.edu
<http://www.shrs.pitt.edu/people/michael-mccue>

Program 1: Master of Science in Clinical Rehabilitation and Mental Health Counseling

<http://www.shrs.pitt.edu/mscrmh/>

Overview

Clinical Rehabilitation and Mental Health Counseling is a program that blends the important concepts of rehabilitation and mental health counseling to provide a strong, cohesive training program for clinical and professional counselors. Clinical Rehabilitation and Mental Health Counselors are uniquely qualified to work with individuals with disabilities, particularly those who are experiencing psychiatric disabilities or other mental and behavioral health concerns.

The mission of our program is to improve individual and community mental health and rehabilitation outcomes through the clinical education and training of outstanding professional counselors. Our program integrates counseling, clinical services, research, and advocacy with a strengths-based, empowerment focus.

This program prepares students for clinical practice in rehabilitation and mental health counseling. The two-year, 60-credit hour curriculum includes courses on foundations of rehabilitation and mental health counseling, human development across culture and the lifespan, individual, group, family and couples counseling, substance abuse, evidence based practice in counseling, crisis management, risk assessment and disaster preparedness, clinical assessment and diagnosis, case conceptualization and treatment planning, medical and psycho-social aspects of disability, case management, vocational and career development, job development and placement, and assistive technology. Individualized and group professional mentorship over a students to years of study is a hallmark of the program.

Graduates meet eligibility criteria for national certification in rehabilitation counseling (i.e., certified rehabilitation counselor, CRC), professional counseling (National Counselor Certification, NCC and satisfy the educational requirements for licensure as a professional counselor (LPC).

Prerequisites

The curriculum of study for clinical rehabilitation and mental health counseling relies upon having experienced a strong undergraduate education that has provided a sound foundation in knowledge, methods, and attitudes. Students must possess foundational knowledge of the concepts and terminology in medical, psychological, and sociological sciences on which to build the knowledge and skills of the rehabilitation and mental health counseling curriculum.

Students must have the ability to communicate in a clear, organized, and logical fashion with appropriate grammar, both verbally and in writing.

Admission is available on a full-time or part-time basis. Exceptions may be granted to outstanding students who do not meet all of the prerequisite requirements.

Admission Requirements

- Baccalaureate degree in psychology, human services, rehabilitation sciences, social sciences, or related field of study from an accredited post-secondary institution
- Minimum overall undergraduate GPA of 3.00.
- Applicants must demonstrate that they possess foundation knowledge of the concepts and terminology in medical, psychological, and sociological sciences on which to build the rehabilitation counseling curriculum. Students must have the ability to communicate in a clear, organized, and logical fashion with appropriate grammar, both verbally and in writing.

All applicants must:

- Complete the SHRS ApplyYourself online application
- Submit the \$50 application fee (U.S.)
- Submit official transcripts from all colleges and universities attended
- Submit a minimum of three letters of recommendation - Preferably from individuals who have instructed you in academic settings and/or supervised research activities
- Submit a personal statement - Description of educational and long-term professional goals
- Curriculum Vitae or Resume
- Participate in an interview - Applicants may be required to complete a group interview with the counseling faculty as a part of the application process. Face to face interviews are preferred but other means can be arranged if indicated.

This program requires that student's complete clinical internships at facilities external to the University, and such facilities may require a criminal background check, an Act 33/34 clearance, and a drug screen to determine whether the student is qualified to participate in the clinical internships. Additionally, in order to become licensed, many states will inquire as to whether the applicant has been convicted of a misdemeanor, a felony, or a felonious or illegal act associated with alcohol and/or substance abuse.

Program 2: Master of Sciences in Health and Rehabilitation Sciences with a Concentration in Rehabilitation Counseling

Overview

The program curriculum is designed to permit the student to obtain the essential knowledge, skills, and attitudes necessary to function effectively as a professional rehabilitation counselor. The curriculum includes courses on rehabilitation research, foundations of vocational rehabilitation, counseling services, medical, psychological and social aspects of disability, case management, vocational and career development, assessment, job development and placement, rehabilitation science and assistive technology, and disability studies.

Prerequisites

The curriculum of study for rehabilitation counseling is based upon having experienced a strong undergraduate education that has provided a sound foundation in knowledge, methods, and attitudes. Students must possess foundational knowledge of the concepts and terminology in medical, psychological, and sociological sciences on which to build the rehabilitation counseling curriculum.

Students must have the ability to communicate in a clear, organized, and logical fashion with appropriate grammar, both verbally and in writing.

Admission is available on a full-time or part-time basis. Provisional special status may be granted to outstanding students who do not meet all of the prerequisite requirements.

Admission Requirements

- Required credits/degrees: Completion of a baccalaureate degree from an accredited institution (no specific major) from a curriculum with a distribution of studies in psychology, counseling, and social sciences
- Required quality point average: 3.0

Prerequisite Courses

- Psychology, counseling, or human development, 6 credits
- Statistics, 3 credits
- English composition or technical writing, 3 credits

Application Requirements

All applicants must:

- Complete the SHRS ApplyYourself online application;
- Submit the application fee of \$50 (U.S.);
- Submit an essay—a description of educational and long-term professional goals;
- The applicant should demonstrate knowledge of rehabilitation through previous work experiences, internships, field experiences, or volunteer work experiences;
- Submit three letters of reference, preferably from individuals who have instructed you in academic settings and/or supervised research activities. These letters should address the applicant's academic, professional, and personal attributes and potential for meaningful graduate study;
- Submit official transcripts from all colleges and universities you have attended;
- Additional requirements for international applicants.

Note: Application can be submitted when course requirements are in progress.

Please note this program requires that you complete clinical internships at facilities external to the University, and such facilities will or may require a criminal background check, an Act 33/34 clearance, and perhaps a drug screen to determine whether you are qualified to participate in the clinical internships. Additionally, in order to become licensed, many states will inquire as to whether the applicant has been convicted of a misdemeanor, a felony, or a felonious or illegal act associated with alcohol and/or substance abuse.

Admission Requirements and Application Process

<http://www.shrs.pitt.edu/msrc/admission>

The curriculum of study for rehabilitation counseling is based upon having experienced a strong undergraduate education that has provided a sound foundation in knowledge, methods, and attitudes.

Specific requirements for admission to rehabilitation counseling are:

1. A Baccalaureate degree. (No specific major is mandated; however, prerequisite study for post baccalaureate advanced education should include a well-rounded general education that includes a distribution of studies in psychology, counseling and social sciences) Computer literacy is essential.
2. Prerequisite coursework includes foundation courses in the following areas:
 - o Psychology, counseling, or human development (2 courses)
 - o Statistics or research design
 - o English composition or Technical Writing
3. Students must possess foundation knowledge of the concepts and terminology in medical, psychological, and sociological sciences on which to build the rehabilitation counseling curriculum.
4. The applicant must have a minimum overall GPA of 3.00, and a 3.00 in the prerequisite courses
5. The applicant should demonstrate knowledge of rehabilitation through previous work experiences, internships or field experience, or volunteer work experience.

Applications are accepted on a rolling basis.

Curriculum and Course Descriptions

<https://www.shrs.pitt.edu/RST/msrc.aspx?id=157>

The program curriculum is designed to permit the student to obtain the essential knowledge, skills, and attitudes necessary to function effectively as a professional rehabilitation counselor.

Master of Science Degree in Health and Rehabilitation Sciences with a Concentration in Rehabilitation Science and Technology (RST)

Contact Information

Bethany Semancik
University of Pittsburgh
6425 Penn Avenue, Suite 401
Pittsburgh, PA 15206
412-624-6256
E-mail: bls200@pitt.edu
<http://www.shrs.pitt.edu/RST/>

Admission Requirements and Application Process

<https://www.shrs.pitt.edu/RST/MSRST.aspx?id=324>

Required credits/degrees: Bachelor's degree

Required quality point average (QPA): 3.0

Other admission criteria: The applicant must demonstrate knowledge of rehabilitation science and technology through volunteer or work experience.

Prerequisites:

- Statistics- 3 credits
- English Composition- 3 credits
- Human Anatomy and Physiology- 3 credits

*prerequisite waivers are permitted, pending applicants can demonstrate proof of equivalent knowledge/experience

Application Procedures

Application Requirements

All applicants must:

- Complete the SHRS ApplyYourself online application;
- Submit the application fee of \$50 (U.S.);
- Submit an essay-a description of educational and long-term professional goals;
- Submit three letters of reference, preferably from individuals who have instructed you in academic settings and/or supervised research activities. These letters should address the applicant's academic, professional, and personal attributes and potential for meaningful graduate study;
- Submit official transcripts from all colleges and universities you have attended;
- Additional requirements for international applicants.

Note: Application can be submitted when course requirements are in progress.

Please note this program requires that you complete clinical internships at facilities external to the University, and such facilities will or may require a criminal background check, an Act 33/34 clearance, and perhaps a drug screen to determine whether you are qualified to participate in the clinical internships. Additionally, in order to become licensed, many states will inquire as to whether the applicant has been convicted of a misdemeanor, a felony, or a felonious or illegal act associated with alcohol and/or substance abuse.

Master of Science Degree in Physician Assistant Studies

The Physician Assistant Degree program prepares students to become highly qualified physician assistants. The University of Pittsburgh graduates will go on to serve as tomorrow's leaders in patient centered care, education and professional service.

Physician Assistants (PAs) are health care professionals licensed to practice medicine with physician supervision. PAs practice primary and specialty patient care in medical and surgical settings throughout the United States and worldwide. In order to practice, Physician Assistants must graduate from an accredited educational program and become certified through an examination by the National Commission on Certification of Physician Assistants (NCCPA).

The University of Pittsburgh Physician Assistant Studies Program received Accreditation by the Accreditation Review Commission on Education for the Physician Assistant, Inc. (ARC-PA) in March of 2012, following a site visit in September 2011. This program was awarded continuing accreditation through March of 2018. Students are admitted into the program upon successful completion of: an undergraduate degree at an accredited institution and fulfillment of all prerequisites.

Contact Information

Aileen Brasacchio, MEd
Physician Assistant Studies
School of Health and Rehabilitation Sciences
3010 William Pitt Way (this will change in mid-august)
Pittsburgh, PA 15238
412-383-0883

Fax: 412-624-7934
E-mail: amb001@pitt.edu

Webpage: <http://www.shrs.pitt.edu/pa>

Admission Requirements/Application Process

<https://www.shrs.pitt.edu/PA/PAProgram.aspx?id=755&nav=756>

Applications are accepted through CASPA each year from mid April to November 1. Students are admitted each spring semester.

Master of Science in Prosthetics and Orthotics

Contact Information

Meghan Wander
Department of Rehabilitation Science and Technology
6425 Penn Ave., Ste. 401
Pittsburgh, PA 15206
412-624-6366
Fax: 412-624-6501
E-mail: mew135@pitt.edu
<http://www.shrs.pitt.edu/po/>

Program Overview

Orthotics and Prosthetics is the evaluation, fabrication and custom fitting of artificial limbs and orthopedic braces. Orthopedic braces, or orthoses, are used to stabilize or unload joints, normalize motion and stresses on tissue, substitute for muscle weakness or paralysis, and assist in normal growth, development and function. Orthoses can be applied to the head, neck, trunk, or limbs. Artificial limbs, or prostheses, are used to replace missing limbs or portions of limbs, and to restore more normal function of the upper or lower extremities.

Orthotists and prosthetists work in a variety of settings, including private practice, hospitals, rehabilitation facilities, nursing homes, and home health settings. Orthotists and prosthetists are currently in high demand, and the demand is expected to increase in the future.

Orthotists and prosthetists are part of the health care team, and as such, work with physicians, therapists, and other health care professionals to provide the orthotic and prosthetic needs of patients. Orthotists and prosthetists are responsible for 1) performing a comprehensive assessment of the patient's orthotic/prosthetic needs, 2) creating a comprehensive orthotic/prosthetic treatment plan to meet the needs and goals of the patient, 3) performing the necessary procedures to deliver the appropriate orthotic/prosthetic services, which may include fabrication of the orthosis/prosthesis, 4) providing continuing patient care and periodic evaluation to assure/maintain/ document optimal fit and function of the orthosis/prosthesis, 5) participating in personal and professional development through continuing education, training, research and organizational affiliations, and 6) developing, implementing and/or monitoring policies and procedures regarding human, business, and organizational management.

The MSPO Program is five consecutive terms in length, including one summer term, and requires a total of 66 credits. It is designed to meet all standards for accreditation by the National Commission on Orthotic and Prosthetic Education (NCOPE) and for preparing students to complete residencies and take the American Board of Certification in Orthotics and Prosthetics examinations.

The curriculum includes clinical internships at various internship sites which are available in the Pittsburgh area and throughout the country. The first set of internships are integrated into the curriculum and are completed within the Pittsburgh area. During the last term of the Program, the student completes a more extensive internship, and the student may have to relocate out of the Pittsburgh area during this term. We can work with the student to set up additional internship sites for this final term if necessary.

Accreditation Status

The Master of Science Program in Prosthetics and Orthotics has been granted accreditation by the National Commission on Orthotic and Prosthetic Education (NCOPE). Our graduates are fully eligible for NCOPE residencies, and, upon successful completion of an NCOPE residency, they are fully eligible to take the certification examinations of the American Board for Certification in Orthotics, Prosthetics & Pedorthics (ABC).

Admission Requirements and Application Process

<https://www.shrs.pitt.edu/RST/MSPO.aspx?id=681&SBP=4876>

Prerequisite courses

1. Baccalaureate Degree. No specific major is mandated; however, the degree should include a well-rounded general education with a distribution of courses in the sciences, mathematics, psychology, social sciences, and humanities.
2. Prerequisite coursework includes foundation courses in the following areas:

• Physics with lab	4 credits
• Biology with lab	4 credits
• Chemistry with lab	4 credits
• General Psychology	3 credits
• Mathematics (algebra or higher)	3 credits
• Human anatomy	3 credits
• Human physiology	3 credits
• Statistics	3 credits
3.

*These courses may not be taken in an online or e-learning setting. Candidates who apply to the program with the latter will be asked to retake said courses prior to enrolling in the program.
4. Recommended minimum overall grade point is a 3.0 grade-point average in all college-level courses and a 3.0 average in prerequisite courses. Applicants with less than a 3.0 but with other outstanding qualifications will be considered.
5. Demonstration of knowledge of the profession of orthotics and/or prosthetics through volunteer or work experience. We suggest 250 hour minimum of O&P shadowing to allow the practitioner plenty of time to write a recommendation.
6. Recommendations: (Three): At least one academic reference from a college instructor, and at least two references from a health-care professional (preferably a certified orthotist or prosthetist).
7. Essay describing background leading to the choice of this profession and long-term goals.
8. Completed Application form.
9. Official transcriptions from all college level course work.
10. Graduate Record Exam General Test (institution code - 2927).

Applicants applying to the Prosthetics and Orthotics (MS) program will apply online using the Orthotics &

Prosthetics Centralized Application Service, known as OPCAS, <https://portal.opcas.org/> submit one copy of their official transcript, letters of recommendation, and other required information directly to OPCAS.

To be assured inclusion in the review process, applications should be completed by the date posted on the MSPO website (<http://www.shrs.pitt.edu/po>). Application information which must be submitted includes:

- Completed application form
- Official transcriptions of all college-level courses
- Letters of recommendation (three)
 - At least one from a college instructor
 - At least two from a health care professional (preferably a certified orthotist or prosthetist)

- Essay describing background leading to your choice of this profession and your long-term goals.
- Graduate Record Exam Scores (General GRE) (Institution Code 2927)
- Record of work, shadowing, or volunteer experience related to the profession of orthotics and prosthetics

Please note that the University of Pittsburgh's program requires that you complete clinical internships at facilities external to the University, and such facilities will or may require a criminal background check, an Act 33/34 clearance, and perhaps a drug screen to determine whether you are qualified to participate in the clinical internships. Additionally, in order to become licensed, many states will inquire as to whether the applicant has been convicted of a misdemeanor, a felony, or a felonious or illegal act associated with alcohol and/or substance abuse.

Admissions process, application deadline and prerequisites requirements are available on the Prosthetics and Orthotics webpage.

The School of Health and Rehabilitation Sciences does not require a supplemental application. It is the responsibility of the applicant to complete all admission requirements prior to enrollment.

Tuition and Fees

Tuition and Fee rates for the MSPO program can be found at the following websites:

Tuition

- Pennsylvania Residents: <http://ir.pitt.edu/graduate-tuition/>
- Out-of-State Students: http://ir.pitt.edu/historicalRates-Fees/20162017_pgh_grad_out_state.pdf

University Fees:

- <http://ir.pitt.edu/graduate-tuition/>

In addition to University Fees, some of the MSPO courses have lab fees associated with them. Current Fees are available on the Prosthetics and Orthotics webpage.

Certificate

Assistive Technology Certificate

The Department of Rehabilitation Science and Technology has developed an innovative program that prepares individuals to be well-versed in assistive technology, and able to either work directly with persons with disabilities or participate in a research environment related to assistive technology and rehabilitation.

Eligibility

To be eligible for admission into the certificate program, a student must:

- currently be enrolled in a Master of Science or PhD program in RST, physical or occupational therapy, communication science and disorders, or engineering program or
- possess an MS, PhD, or MD degree in an appropriate health-related or technology field.

Program Requirements

The certificate will be awarded upon completion of a Master's or higher degree and completion of 15 credits. The following courses are required:

- HRS 2704 - FUNDMS REHAB ENGR AND TECHN 1

- HRS 2705 - PRACT REHAB ENGR & ASSISTV TECHN
- HRS 2708 - INDIVIDUAL, SOCIAL, AND CULTURAL EXPERIENCE OF DISABILITY
- HRS 2921 - CLINICAL INTERNSHIP or
- HRS 2748 - ASSISTIVE TECHNOLOGY PRACTICUM

And at least three credits must be completed from any combination of the following courses:

(or other courses if approved by the Chair of the Department of Rehabilitation Science and Technology)

- HRS 2709 - MANUEL WHEELCHAIR DESIGN
- HRS 2711 - COMPUTER ACCESS
- HRS 2724 - ASSISTIVE TECHNOLOGY FUNDING AND POLICY
- HRS 3705 - WHEELCHAIR BIOMECHANICS
- HRS 3702 - SOFT TISSUE BIOMECHANICS
- HRS 3710 - CLINICAL APPLICATIONS AND SEATING

Disability Studies Certificate

The School of Health and Rehabilitation Sciences offers a 15-credit certificate program in disability studies. This multidisciplinary field of inquiry examines how psychosocial and societal participation issues potentially affect the estimated 45 million people with disabilities.

Eligibility

Students enrolled in MS, PhD, or MD degree programs in health-related or technology fields and professionals working in a variety of fields (minimum of bachelor degree required) are eligible to apply for this certificate program. Admission is offered on a rolling basis.

Program Requirements

The certificate will be awarded upon completion of the following courses. These 15 credits can be taken over two or more semesters:

- HRS 2708 - INDIVIDUAL, SOCIAL, AND CULTURAL EXPERIENCE OF DISABILITY
- LAW 5339 - LAW OF DISABILITY DISCRIMINATION or
- HRS 2905 - ETHICAL ISSUES IN HEALTH CARE or
- HRS 2902 - TOPICS IN HEALTH CARE
- HRS 2475 - DISABILITY RELATIONS AND SERVICES INTERNSHIP

Master's

Rehabilitation Science and Technology - Clinical Rehabilitation and Mental Health Counseling, MS in CRMHC

Clinical Rehabilitation and Mental Health Counseling is a program that blends the important concepts of rehabilitation and mental health counseling to provide a strong, cohesive training program for clinical and professional counselors. Clinical Rehabilitation and Mental Health Counselors are uniquely qualified to work with individuals with disabilities, particularly those who are experiencing psychiatric disabilities or other mental and behavioral health concerns.

This program prepares students for clinical practice in rehabilitation and mental health counseling. The five semester, 60-credit hour curriculum includes courses on foundations of rehabilitation and mental health counseling, human development across culture and the lifespan, individual, group, family and couples counseling, substance abuse, evidence based practice in counseling, crisis management, risk assessment and disaster preparedness, clinical assessment and diagnosis, case conceptualization and treatment planning, medical and psycho-social aspects of disability, case management, vocational and career development, job development and placement, and assistive technology. Individualized and group professional mentorship over five terms of study is a hallmark of the program.

This program prepares students to practice the profession of rehabilitation and mental health counseling. The five term, 60-credit hour curriculum is accredited by the Council for Accreditation of Counseling and Related Education Programs (CACREP) through October 2023.

Graduates meet the education eligibility criteria for national certification in counseling (i.e., national certified counselor, NCC, or certified rehabilitation counselor, CRC) and the pre-clinical service and educational requirements for licensure as a professional counselor (LPC).

Requirements:

Curriculum and Course Descriptions

Fall Term - Year 1

- COUN 2731 - FOUNDATIONS OF REHABILITATION & MENTAL HEALTH COUNSELING
- COUN 2733 - COUNSELING SKILLS & TECHNIQUES
- COUN 2730 - CULTURAL CONSIDERATIONS IN COUNSELING
- COUN 2742 - LEGAL, ETHICAL & PROFESSIONAL ISSUES IN COUNSELING
- COUN 2755 - CLINICAL COUNSELING MENTORSHIP
- COUN 2738 - DIAGNOSIS & TREATMENT OF COGNITIVE AND MENTAL HEALTH DISORDERS

Spring Term - Year 1

- COUN 2739 - GROUP COUNSELING
- COUN 2734 - COUNSELING THEORIES AND TECHNIQUES
- COUN 2737 - CLINICAL, DIAGNOSTIC AND FUNCTIONAL ASSESSMENT IN COUNSELING
- COUN 2755 - CLINICAL COUNSELING MENTORSHIP
- COUN 2744 - EVIDENCE BASED PRACTICE IN COUNSELING

Summer Term - Year 1

- COUN 2746 - COUNSELING PRACTICUM

Fall Term - Year 2

- COUN 2740 - CLINICAL APPLICATIONS IN COUNSELING
- COUN 2715 - MEDICAL & PSYCHOLOGICAL ASPECTS OF DISABILITY
- COUN 2741 - CASE CONCEPTUALIZATION & TREATMENT PLANNING
- COUN 2750 - CLINICAL COUNSELING CAPSTONE
- COUN 2732 - HUMAN DEVELOPMENT ACROSS THE LIFESPAN
- COUN 2749 - CLINICAL COUNSELING INTERNSHIP

Spring Term - Year 2

- COUN 2743 - FAMILY AND COUPLES COUNSELING
- COUN 2735 - CAREER COUNSELING & VOCATIONAL ISSUES

- COUN 2736 - CRISIS COUNSELING, RISK MANAGEMENT AND DISASTER PREPAREDNESS
- COUN 2723 - ASSISTIVE TECHNOLOGY TO PROMOTE MENTAL & PHYSICAL FUNCTIONING
- COUN 2745 - SUBSTANCE ABUSE AND ADDICTIONS COUNSELING
- COUN 2749 - CLINICAL COUNSELING INTERNSHIP
- COUN 2751 - CLINICAL COUNSELING CAPSTONE EXAM

Clinical Capstone Examination

All Counseling students are required to pass a clinical competency examination. The Clinical Counseling Capstone Exam requires student demonstration of knowledge and skills that reflect entry-level competencies of a rehabilitation and mental health counselor. Students are assessed on knowledge and skills accumulated through coursework and clinical experiences. The Capstone requires students to synthesize and apply advanced concepts into clinical practice.

The Capstone employs a clinical case study approach. Students are charged with researching and completing a written review on a client issue or population with the expectation of demonstrating expertise. Students are then provided a case study in their area of expertise to demonstrate their knowledge and skills. Students are expected to analyze and synthesize case materials for case conceptualization and then develop appropriate, realistic, and evidence-based intervention plans. Students are expected to apply appropriate counseling techniques included in their intervention plan via role-play simulations. Successful completion of the Capstone is needed for the student to demonstrate mastery of graduate study and to advance to the final phase of their graduate training - internship.

Rehabilitation Science and Technology - Physician Assistant Studies, MS

Program Requirements

Prerequisite course work

- Anatomy with lab and Physiology, two semesters*
 - This requirement may be met by taking either one semester of Anatomy with lab and one semester of Physiology or two semesters of Anatomy & Physiology combined, each with a lab.
- Biology with lab, two semesters*
- Chemistry with lab, two semesters*
- English Composition/Writing, two semesters
- Microbiology with lab, one semester*
- Organic Chemistry with lab, one semester*
- Psychology, Introduction, one semester
- Psychology, Upper Level, one semester
- Statistics, one semester
- Medical Terminology, one semester, at least one college credit (certification courses not accepted)

*Prerequisite Science Courses cumulative GPA of 3.0 or higher is required

Other admission criteria

Successful completion of an undergraduate degree at an accredited institution

- A valid Healthcare Provider BLS course certification from AHA. CPR certification must be maintained throughout the two year program.
- Overall grade-point average (GPA) of 3.0 (based on a 4.0 scale) in all college-level course work and a minimum (GPA) of 3.0 (based on a 4.0 scale) in the prerequisite science courses marked above with an asterisk (*).
- Three letters of recommendation, one from a former college/university instructor and one from a supervisor of the required clinical experience.
- A minimum of 500 hours of hands-on patient care experience.

The patient care experience must be direct, "hands-on" patient contact e.g., RN, EMT or paramedic, patient care attendant or nurse's aide, clinic assistant, Peace Corps volunteer or other cross-cultural health care experience, therapist, clinical research assistant, respiratory therapist/aide, medical assistant, PT/OT assistant.

All coursework, requirements, and degree must be completed by August 31st each year in order to be considered for a seat in the class that will begin the following January.

Although not required, the following will be considered when determining the applicant's candidacy score:

- Biochemistry with lab, one semester
- Advanced Biology Courses
- Calculus, one semester
- Nutrition, one semester
- Shadowing a PA

The program is two full years (six consecutive semesters) and classes start each January (spring semester). Applications will be considered until the class is filled. Students are highly encouraged to apply early. The program does not offer advanced standing. All courses within the curriculum are required. No credit is granted for pre-admission experiential learning. Only full-time students are admitted.

Interview Process

Applications for admission will be reviewed by the PA Program Admissions Committee. Candidates selected will be required to meet with the Admissions Committee. The University of Pittsburgh's PA program finds the personal interview to be a necessary and important component to the admission process. The faculty looks for such personal attributes as maturity, empathy, compassion, motivation, ability to communicate, cultural sensitivity, critical thinking skills and the potential to achieve career fulfillment within the PA role. Interviews will be conducted on campus to provide the candidate and faculty an opportunity to meet and discuss the program objectives, student's goals, rationale for choosing the PA profession and more specifically the program at the University of Pittsburgh.

Plan of Study

The Physician Assistant curriculum is comprised of a rigorous 24 month Master of Science Program. The goals and objectives of our program are guided by the criteria set forth in the Standards and Guidelines for an Accredited Educational Program for the Physician Assistant as established by ARC-PA. The first three semesters (12 months) are made up of classroom instruction. Course content is presented through traditional lecture, integrated instruction, case based and hands on skills labs. The clinical year is comprised of rotations in internal medicine, primary care, emergency medicine, general surgery, women's health, pediatrics, and behavioral health. The curriculum is presented by practicing physician assistants, medical and surgical physicians and providers who have the expertise in their respective specialty.

Each course in the program is offered only once during the academic year, therefore, any departure from completing a course in its planned sequence (e.g. failure to receive a passing grade of 'C' or better; leave of absence from program) will result in the delay of completion of program requirements and graduation from the program.

Didactic Year 1:

Semester 1:

Course Credits

- PAS 2101 - INTRODUCTION TO THE PHYSICIAN ASSISTANT PROFESSION
- PAS 2102 - HUMAN ANATOMY
- PAS 2105 - HEALTH POLICY
- PAS 2106 - INTERPRETING AND EVALUATING THE MEDICAL LITERATURE
- PAS 2108 - Introduction to Clinical Medicine with Lab, 3 credits

PAS 2109 Medical Physiology and Pathophysiology, 4 Credits

Semester Total Credits: 15

Semester 2:

Course Credits

- PAS 2104 - GENETIC AND MOLECULAR MECHANISMS OF HEALTH AND DISEASE
- PAS 2107 - PATIENT EDUCATION AND COUNSELING
- PAS 2201 - HISTORY TAKING AND PHYSICAL EXAMINATION 1
- PAS 2202 - CLINICAL MEDICINE 1
- PAS 2203 - DIAGNOSTIC & THERAPEUTIC PROCEDURES I IN MEDICINE 1
- PAS 2204 - PHARMACOLOGY 1

Semester Total Credits: 15

Semester 3:

Course Credits

- PAS 2301 - HISTORY TAKING AND PHYSICAL EXAMINATION 2
- PAS 2302 - CLINICAL MEDICINE 2
- PAS 2303 - DIAGNOSTIC AND THERAPEUTIC PROCEDURES IN MEDICINE 2
- PAS 2304 - PHARMACOLOGY 2
- PAS 2305 - HEALTH ISSUES ACROSS THE LIFESPAN
- PAS 2306 - FUNDAMENTALS OF SURGERY

Semester Total Credits: 15

Year 1 Total Credits: 45

Clinical Year 2:

Clinical Year 2

The schedules presented in Semesters 4, 5, and 6 are an example. The actual clinical schedule and order a student will complete the identified discipline specific rotation may vary.

Semester 4:

Course Credits

- PAS 2701 - CLINICAL ROTATION 1
- PAS 2702 - CLINICAL ROTATION 2
- PAS 2703 - CLINICAL ROTATION 3

Semester Total Credits: 12

Semester 5:

Course Credits

- PAS 2704 - CLINICAL ROTATION 4
- PAS 2705 - CLINICAL ROTATION 5
- PAS 2706 - CLINICAL ROTATION 6

Semester Total Credits: 12

Semester 6:

Course Credits

- PAS 2707 - CLINICAL ROTATION 7
- PAS 2713 - CLINICAL ROTATION 8 ELECTIVE 2
- PAS 2709 - CLINICAL ROTATION 9
- PAS 2712 - SUMMATIVE EVALUATION

Semester Total Credits: 13

Year 2 Total Credits: 37

Program Credits Total: 82

Certification

Graduates of the professional program are eligible to sit for the Physician Assistant National Certification Exam (PANCE) administered by the National Commission on Certification of the Physician Assistant (NCCPA). All States and the District of Columbia have legislation governing the qualifications or practice of physician assistants. All jurisdictions require physician assistants to pass the Physician Assistant National Certifying Examination. Only those successfully completing the examination may use the credential "Physician Assistant-Certified." To remain certified, PAs must complete 100 hours of continuing medical education every 2 years. Every 10 years, they must pass a recertification examination.

Rehabilitation Science and Technology - Prosthetics & Orthotics Concentration, MS

Program Requirements/Minimum Credits

Students enrolled in the MSPO Program are required to complete 65 credits to meet degree requirements. The curriculum meets all requirements for students to do NCOPE residencies and take the American Board of Certification in Prosthetics, Orthotics, and Pedorthics certification examinations. Specific courses include:

Fall term, year one

- HRS 2771 - FUNCTIONAL ANATOMY AND KINESIOLOGY
- HRS 2772 - PATHOLOGY IN ORTHOTICS AND PROSTHETICS
- HRS 2773 - INTRODUCTION TO MATERIALS, EQUIPMENT, AND FABRICATION
- HRS 2901 - INTRO TO RESEARCH METHODOLOGY
- HRS 2776 - PROFESSIONAL ISSUES IN PROSTHETICS AND ORTHOTICS
- HRS 2779 - PATIENT MANAGEMENT IN ORTHOTICS AND PROSTHETICS
- HRS 2774 - REHABILITATION BIOMECHANICS FOR THE HEALTH CARE PROFESSIONS

Spring term, year one

- HRS 2883 - TRANS-TIBIAL PROSTHETICS
- HRS 2785 - LOWER EXTREMITY ORTHOTICS 1
- HRS 2727 - CAPSTONE FOR PROSTHETICS AND ORTHOTICS
- HRS 2775 - INTRODUCTION TO EVIDENCE - BASED PRACTICE IN ORTHOTICS AND PROSTHETICS
- HRS 2905 - ETHICAL ISSUES IN HEALTH CARE

Summer term, year one

- HRS 2786 - LOWER EXTREMITY ORTHOTICS 2
- HRS 2783 - SPINAL ORTHOTICS
- HRS 2921 - CLINICAL INTERNSHIP (4 hours/week) = 56 hours, 1 credit
- HRS 2885 - TRANS-FEMORAL PROSTHETICS

Fall term, year two

- HRS 2781 - UPPER EXTREMITY ORTHOTICS
- HRS 2881 - UPPER EXTREMITY PROSTHETICS
- HRS 2708 - INDIVIDUAL, SOCIAL, AND CULTURAL EXPERIENCE OF DISABILITY
- HRS 2903 - ISSUES IN THE HEALTH SYSTEM
- HRS 2704 - FUNDMS REHAB ENGR AND TECHN 1
- HRS 2921 - CLINICAL INTERNSHIP (4 hours/week) = 60 hours, 1 credit

Spring term, year two

- HRS 2921 - CLINICAL INTERNSHIP (280 hours)
- HRS 2926 - SCHOLARLY PAPER
- HRS 2777 - PRACTICE MANAGEMENT IN PROSTHETICS AND ORTHOTICS

Program Total = 65 credits

*Each course is offered only once during the academic year, therefore, any departure from completing a course in its planned sequence (for example: failure, for any reason, to satisfactorily complete a required course; an unresolved "G" or "Incomplete" grade) will result in a one year delay in completing the course, the remaining program requirements, and the year of graduation.

Comprehensive Exam

At the beginning of the final term of study, a comprehensive examination will be given, covering all aspects of the Program. Students will be required to pass this examination prior to graduation.

Thesis/Non-thesis Options

All MSPO students are required to complete at least a Capstone Project, under the direction of a faculty advisor and an additional faculty reader. However, as a substitute for the Capstone Project, the student may elect to complete a master's thesis, under the direction of a faculty advisor and thesis committee. Students electing to pursue the thesis option will complete 3 credits of Graduate Research Proposal (HRS 2924) in place of the 3 credit Capstone Project (HRS 2926) and will also complete 3 credits of Graduate Research (HRS 2925).

Rehabilitation Science and Technology - Rehabilitation Science and Technology (RST) Concentration, MS

Program Requirements/Minimum Credits

All students enrolled in the RST concentration are required to complete 44 credits to meet degree requirements. Students must complete a common set of core courses

- HRS 2704 - FUNDMS REHAB ENGR AND TECHN 1
- HRS 2705 - PRACT REHAB ENGR & ASSISTV TECHN
- HRS 2706 - INTRODUCTION TO REHABILITATION ENGINEERING DESIGNS
- HRS 2708 - INDIVIDUAL, SOCIAL, AND CULTURAL EXPERIENCE OF DISABILITY
- HRS 2718 - PROJECT BASED TECHNOLOGY DESIGN
- HRS 2724 - ASSISTIVE TECHNOLOGY FUNDING AND POLICY
- HRS 2901 - INTRO TO RESEARCH METHODOLOGY
- HRS 2905 - ETHICAL ISSUES IN HEALTH CARE
- HRS 2921 - CLINICAL INTERNSHIP
- A set of relevant electives

Note:

The curriculum covers basic science, engineering principles, assistive technology, pathology, rehabilitation, and consumer advocacy.

Students must complete all core courses. Other units may be taken as electives to meet the required number of credits for graduation.

Thesis/Non-Thesis Options

Students in the rehabilitation science and technology program are encouraged to pursue graduate research by completing a master's thesis under the direction of a faculty advisor and thesis committee. However, a non-thesis option of a scholarly paper is also available.

RST students who choose the scholarly paper option may take about one year to complete the program. The scholarly paper may take the format of a literature review, program development, or other product as approved by members of the student's Scholarly Paper Committee.

Department of Sports Medicine and Nutrition

Students who choose to pursue Pitt's Coordinated Master in Nutrition and Dietetics degree are ahead of the game! In 2024, all Registered Dietitian/Nutritionists (RDNs) entering the field will be required to have a masters level degree to enter the profession. The Masters curriculum is a combination of didactic coursework and supervised practice which includes required competencies and student elective courses affording graduates a strong foundation in medical nutrition therapy and eligibility to sit for the Registration Exam for Dietitians.

The Sports Medicine (SM) program focuses on enhancing the knowledge base in the prevention, assessment, treatment and rehabilitation of athletic injuries and illness. Athletic Trainers, other health care professionals and individuals interested in sports medicine will find the curriculum well-suited to meet their post-professional goals and objectives. Several graduate assistantships are available for applicants who are Certified Athletic Trainers.

The Wellness and Human Performance (WHP) program is designed for students seeking graduate training to develop knowledge and skills related to nutrition and exercise in maintaining and improving health and physical performance. Primary areas of focus pertain to education and training in sports nutrition, health and wellness coaching, and the use of nutrition and exercise for the prevention and management of obesity and related chronic diseases.

Joint Degree

Nutrition and Dietetics, BS/MS

Students who choose to pursue Pitt's Dietitian Nutritionist Program degree are ahead of the game! In 2024, all Registered Dietitian/Nutritionists (RDNs) entering the field will be required to have a masters level degree to enter the profession. The program is a competency-based educational program that integrates experiential learning with didactic coursework to enable students to demonstrate the higher level of competence that will be needed for future practice as a Registered Dietitian Nutritionist.

Interested students will apply in the Spring Term of each year to begin the MS as juniors or graduate students in Fall Term. For incoming Pitt freshmen, a guaranteed admit will be available to enable students to complete the BS/MS degree in 5-years by following the recommended course schedule.

For more information, please contact:

Deborah A. Hutcheson, DCN, RDN, LDN
Program Director, Dietitian Nutritionist Program
4036 Forbes Tower
412-383-6747
Fax: 412-383-6636
E-mail: dhutches@pitt.edu

About

The Dietitian Nutritionist Program, housed within the Department of Sports Medicine and Nutrition, is a graduate degree program accredited by the Accreditation Council for Education in Nutrition and Dietetics (ACEND) as a Future Education Model Graduate Degree Program. The Dietitian Nutritionist Program is a competency based educational program that integrates experiential learning with didactic coursework to enable students to demonstrate the higher level of competence that will be needed for future practice as Registered Dietitian Nutritionists.

This accelerated program offers points of entry for:

- qualified undergraduates
- post-baccalaureate candidates
- graduates of Didactic Programs in Dietetics (DPD)

Undergraduate students will earn both Bachelor of Science and Master of Science degrees. Students who enter the program with a bachelor's degree will earn a Master of Science. Preparation for a career in dietetics as a Registered Dietitian Nutritionist (RDN) requires the following:

- completion of an approved 4-year college degree program (accredited by ACEND)
- completion of an accredited supervised practice experience (providing a minimum of 1200 hours)*
- successful performance on the national Registration Examination for Dietitians**

No matter your professional goals in the Dietetics profession, this program offers an entry level advanced degree option to provide a competitive edge for today's health care environment. Upon successful completion of the master's program graduates are eligible to take the national registration examination for Dietitians. Graduates passing the registration exam are eligible for licensure in Pennsylvania by the Board of Nursing. For licensing information please visit Instructions for Licensed Dietitian-Nutritionist (LDN) Applicants.

*This program provides experiential supervised practice required to become an RDN. The experiential supervised practice sites are randomly assigned and public transportation is not available to all sites. All students should anticipate the necessity of having a car accessible to them for both years of the program. Please review the experiential practice information.

**The credentialing exam requirements are set by the Commission on Dietetic Registration (CDR).

For more information on becoming an RDN, visit www.eatright.org.

Program Requirements

Admission

There are three ways to enter the Dietitian Nutritionist Program. As an undergraduate, a post-baccalaureate, and as a graduate of a Didactic Program in Dietetics (DPD).

Prerequisite Requirements for Undergraduate & Post Baccalaureate Students

Completion of the following courses for a letter grade:

- General Chemistry 1 & 2 with lab, 8 credits
- Organic Chemistry 1 & 2, 6 credits (CHEM 0350, 3 credits, taken at Pitt will fulfill the requirement)
- Foundations of Biology 1, 3 credits
- Foundations of Biology 2, (genetics content) or Intro to Genetics, 3 credits
- Biology lab, 1 credit
- Intro to Microbiology, 3 credits (Food Microbiology will not fulfill the requirement)
- *Biochemistry, 3 credits
- Algebra (or higher math), 3 credits
- Statistics, 4 credits
- English Composition, 3 credits
- English Writing (W course), 3 credits
- *Introduction to Nutrition, 3 credits
- +Intro to Dietetics, 2 credits
- +Food and Culture, 3 credits
- Introduction to Psychology, 3 credits
- Communications, 3 credits
- Business, or Economics, 3 credits
- Humanities or Social Science, 3 credits
- Electives, 6 (*Elective credits may be split in to multiple courses ie. Freshman Program, Physical Education, First Aid/CPR, etc.)

*These courses need to have been completed within the past five years.

+These courses can be taken in the first year of the Dietitian Nutritionist Program for BS and Post Baccalaureate entryway students.

Additional Requirements for DPD Students

Additional Prerequisites for students who have completed, or who are currently completing, a Didactic Program in Dietetics (DPD) are outlined below:

- Nutrition Assessment, 3 credits
- Nutrition Education, 3 credits
- Nutrient Metabolism, 3-6 credits
- Food Applications with Lab, 4 credits
- Food Service Management, 3 credits
- Life Cycle Nutrition, 3 credits
- Nutrition Therapy, 3 credits

Additional Requirements

- Minimum cumulative and prerequisite GPA of 3.0 (based on 4.0)
- A minimum grade of C- in all courses designated as prerequisites taken at the University of Pittsburgh; a C or better is required for transfer.

Application Deadline

March 15; however, we encourage students to apply prior to the deadline as the program will begin reviewing applications and interviewing in January.

All applicants must:

- Complete the SHRS ApplyYourself application;
- Submit a self-evaluation essay, discussing strengths, skills and experiences that will contribute to success in the program and your professional goals as a registered dietitian;
- Submit resume demonstrating evidence of adequate exposure to the field of dietetics and an appreciation of the breadth, depth and scope of practice. This can be accomplished through either volunteer or paid work experience in a nutrition and dietetics related settings; there is no minimum number of hours required;
- Submit three letters of recommendation: one from a registered dietitian, one from a supervisor in volunteer or work experience and one from a college professor. These letters should address the applicant's academic, professional and personal attributes and potential for meaningful graduate study. At least one letter should speak to your leadership experience and commitment to service;
- Submit official transcripts from all colleges and universities attended; a minimum cumulative grade point average of 3.0 based on a 4.0 scale is required.

Applications can be submitted when course requirements are in progress.

Admission is for the fall term only.

International Applicants

International applicants please review specific requirements [here](#).

Technical Standards

All candidates and graduates must possess the essential physical, cognitive and behavioral abilities considered necessary for students admitted to this program to achieve the knowledge, skills and competencies of an entry-level dietitian. Candidates with disabilities will be considered on a case by case basis. The following link provides detailed information on the technical standards.

Please note that this program requires students to complete portions of their education (e.g., supervised practice experiences) at facilities external to the University to meet requirements for graduation. Many of these external facilities require screening measures such as, but not limited to, criminal background check, child abuse clearance, health appraisal, fingerprint-based background check and/or drug test prior to placement at the facility. The results of these requirements may limit and potentially eliminate placement options for the student which can, in turn, result in an inability to meet graduation requirements. Additionally, conviction of a misdemeanor, felony, or felonious or illegal act abuse may prevent the student from becoming credentialed and/or licensed to practice in the field.

The University of Pittsburgh, as an educational institution and as an employer, values equality of opportunity, human dignity, and racial/ethnic and cultural diversity. Accordingly, the University prohibits and will not engage in discrimination or harassment on the basis of race, color, religion, national origin, ancestry, sex, age, marital status, familial status, sexual orientation, disability, or status as a disabled veteran or a veteran of the Vietnam era. Further, the University will continue to take affirmative steps to support and advance these values consistent with the University's mission. For information on University equal opportunity and affirmative action programs and complaint/grievance procedures, contact the Office of Affirmative Action, 901 William Pitt Union, University of Pittsburgh, Pittsburgh, PA 15260, 412-648-7860/412-648-7860.

The Dietitian Nutritionist Program is accredited by the Accreditation Council for Education in Nutrition and Dietetics (ACEND) the accrediting agency for the Academy of Nutrition and Dietetics (A.N.D.), (ACEND@eatright.org), phone (1-800-877-1600 or 1-800-877-1600 x5400), or mail (120 South Riverside Plaza, Suite 2190, Chicago, IL 60606-6995).

Program Mission, Goals and Objectives

The mission of the Coordinated Program is the development of graduates with the competence and advanced skills to practice effectively as entry-level Registered Dietitian Nutritionists (RDN) to enhance the health and wellbeing of individuals and diverse populations. In addition, the vision is to lead among dietetics programs in advancing knowledge, skills, and evidence-based practice of RDNs.

The program goals are:

1. Development of graduates with the competence and advanced skills to practice effectively as entry-level Registered Dietitian Nutritionists (RDN).
2. To prepare entry-level graduates with advanced knowledge and skills that contribute to the evidence-informed practice of RDNs.

Program outcomes are available upon request.

Curriculum

Students entering as a junior or with a baccalaureate degree that is not from a Didactic Program in Dietetics (DPD) will complete 93-95 credits during this three-year program. Didactic Program in Dietetics (DPD) graduates will complete Year 2 & Year 3 of the program fulfilling a 60-credit course of study.

First Year

Fall Term

- HRS 1000 - INTRODUCTION TO RESEARCH
- NUTR 1602 - NUTRITION ASSESSMENT
- NUTR 1620 - NUTRIENT METABOLISM
- NUTR 1622 - LIFE CYCLE NUTRITION
- HRS 1023 - HUMAN PHYSIOLOGY
- NUTR 1600 - INTRODUCTION TO DIETETICS (if not taken previously)

Spring Term

- NUTR 1605 - PRINCIPLES OF NUTRITION EDUCATION AND COUNSELING
- NUTR 1610 - FOOD SCIENCE 1
- NUTR 1613 - FOOD SCIENCE 1 LABORATORY
- NUTR 1630 - NUTRITION THERAPY 1
- NUTR 1604 - FOOD SERVICE MANAGEMENT WITH LAB
- Elective or NUTR 1612 - FOOD AND CULTURE (if not taken previously)

DPD graduates enter here.

- NUTR 1625 - NUTRITION THERAPY

Second Year

Fall Term

- HRS 2004 - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN or
- HRS 2650 - EXERCISE PHYSIOLOGY + HRS 2999 Independent Study (with advisor permission)
- HRS 2623 - ADVANCED MEDICAL NUTRITION THERAPY 1
- HRS 2631 - NUTRITION FOCUSED PHYSICAL EXAMINATION
Elective, 3 credits
- HRS 2635 - PROFESSIONAL DEVELOPMENT

Spring Term

- HRS 2624 - ADVANCED MEDICAL NUTRITION THERAPY 2

- HRS 2625 - NUTRITION COUNSELING METHODS
- HRS 2646 - INTRODUCTION TO FUNCTIONAL NUTRITION WITH LAB
- HRS 2655 - RESEARCH METHODS AND APPLIED STATISTICS
Elective, 3 Credits

Undergraduate students will receive a BS in Nutrition Science after successful completion of the Year 2.

Third Year

Fall Term

- HRS 2654 - Practicum in Dietetics 1, 1 credit
- HRS 2647 - Experiential Practice: Community Nutrition, 3 credits
- HRS 2648 - Experiential Practice 1, 10 credits
- HRS 2649 - QI Research Project Development, 1 credit

Credits / Units: 15

Spring Term

- HRS 2008 - ENTREPRENEUR SKILLS FOR NUTRITION PROFESSIONALS
- HRS 2656 - Practicum in Dietetics, 1 credit
- HRS 2651 - Experiential Practice 2, 7 credits
- HRS 2652 - Experiential Practice 3, 3 credits
- HRS 2653 - QI Research Project, 1 credit

All students will receive a Master in Science after successful completion of Year 3.

*Courses may vary dependant on transfer courses accepted.

*Each course is offered only once during the academic year, therefore, any departure from completing a course in its planned sequence (for example: failure, for any reason, to satisfactorily complete a required course; an unresolved "G" or "Incomplete" grade) will result in a one year delay in completing the course, the remaining program requirements, and the year of graduation.

Master's

Nutrition and Dietetics, MS

Students who choose to pursue Pitt's Coordinated Program are ahead of the game! In 2024, all Registered Dietitian/ Nutritionists (RDNs) entering the field will be required to have a master's level degree to enter the profession. The Coordinated Program will graduate its final class in Spring Term 2020.

Beginning in fall 2019, the department will offer an accelerated entry-level graduate program, the Dietitian Nutritionist Program, which will provide both the didactic and the supervised experiential practice competencies to meet eligibility requirements for the National Registration Examination for Registered Dietitians/Nutritionists. Interested students will apply in the Spring Term of each year to begin the MS as juniors or graduate students in Fall Term. For incoming Pitt freshmen, a guaranteed admit will be available to enable students to complete the BS/MS degree in 5-years by following the recommended course schedule.

All applicants are directed to the Dietitian Nutritionist Program beginning in fall 2019.

For more information, please contact:
Deborah A. Hutcheson, DCN, RDN, LDN
Program Director, Coordinated Program
4036 Forbes Tower
412-383-6747
Fax: 412-383-6636
E-mail: dhutches@pitt.edu

The Coordinated Program curriculum is a combination of didactic coursework and supervised practice which includes required competencies and student elective courses affording graduates a strong foundation in medical nutrition therapy and eligibility to sit for the Registration Exam for Dietitians.

About

The Coordinated Program is a two-year Master of Science program is a is a two-year Master of Science program housed within the Department of Sports Medicine and Nutrition.

Program Summary
53 credits (full-time only)
2 years (4 terms)
Program starts fall term only

Preparation for a career in dietetics as an Registered Dietitian/Nutritionist (RDN) requires the following:

- Completion of an approved 4-year college degree program (accredited by ACEND) such as our Pitt undergraduate program*
- Completion of an accredited supervised practice experience (providing a minimum of 1200 hours)**
- Successful performance on the national Registration Examination for Dietitians

No matter your professional goals in the Dietetics profession, this program offers an entry level advanced degree option to provide a competitive edge for today's health care environment. Upon successful completion of the Masters program graduates are eligible to take the national registration examination for Dietitians. Graduates passing the registration exam are eligible for licensure in Pennsylvania by the Board of Nursing. For licensing information please visit Instructions for Licensed Dietitian-Nutritionist (LDN) Applicants.

**This program provides the 1200 hours of supervised practice required to become an RDN. The supervised practice sites are randomly assigned and public transportation is not available to all sites. All students should anticipate the necessity of having a car accessible to them for both years of the program. Please review the supervised practice information.

The Coordinated Program is accredited by the Accreditation Council for Education in Nutrition and Dietetics (ACEND) of the Academy of Nutrition and Dietetics, 120 South Riverside Plaza, Suite 2190, Chicago, IL, 60606-6995, 800/877-1600 or 312/899-0040. For more information on becoming an RDN, visit www.eatright.org.

Registration

This graduate curriculum provides students with a Master of Science degree and the accredited supervised practice component. The Coordinated Program offers supervised experiences in a variety of major health care and community settings including the renowned University of Pittsburgh Health Care System (UPMC). Upon successful completion of the program, graduates are eligible for the National Registration Examination for Dietitians.

Graduation Requirements

Graduation from the Coordinated Master in Nutrition and Dietetics requires completion of 53 credits as follows:

- 26 credit hours of core academic requirements.
- 20 credit hours of supervised practice. This will provide the minimum of 1200 hours of supervised practice as specified by ACEND.
- 7 credit hours of research requirements.

Program Mission and Goals

The mission of the Coordinated Program is the development of graduates with the competence and advanced skills to practice effectively as entry-level Registered Dietitian Nutritionists (RDN) to enhance the health and wellbeing of individuals and diverse populations. In addition, the vision is to lead among dietetics programs in advancing knowledge, skills, and evidence-based practice of RDNs.

The program goals are:

1. Development of graduates with the competence and advanced skills to practice effectively as entry-level Registered Dietitian Nutritionists (RDN).
2. To prepare entry-level graduates with advanced knowledge and skills that contribute to the evidence-informed practice of RDNs.

Program outcomes are available upon request.

First Year

Fall Term

- HRS 2008 - ENTREPRENEUR SKILLS FOR NUTRITION PROFESSIONALS
- HRS 2631 - NUTRITION FOCUSED PHYSICAL EXAMINATION
- HRS 2999 - INDEPENDENT STUDY
- HRS 2004 - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN
- PSYED 2018 - STATISTICS 1: DESCRIPTIVE AND INFERENTIAL STATISTICS

Spring Term

- HRS 2633 - PROFESSIONAL DEVELOPMENT
- HRS 2634 - FOOD SERVICE MANAGEMENT WITH LAB
- HRS 2625 - NUTRITION COUNSELING METHODS
- HRS 2901 - INTRO TO RESEARCH METHODOLOGY
- HRS 2640 - SUPERVISED PRACTICE : COMMUNITY NUTRITION

Second Year

Fall Term

- HRS 2623 - ADVANCED MEDICAL NUTRITION THERAPY 1
- HRS 2641 - SUPERVISED PRACTICE: FOOD SERVICE MANAGEMENT
- HRS 2642 - SUPERVISED PRACTICE: CLINICAL 1
- HRS 2637 - PRACTICAL APPLICATIONS OF MEDICAL NUTRITION THERAPY 1

Spring Term

- HRS 2624 - ADVANCED MEDICAL NUTRITION THERAPY 2
- HRS 2643 - SUPERVISED PRACTICE: CLINICAL 2
- HRS 2644 - SUPERVISED PRACTICE: MANAGEMENT OF NUTRITION CARE
- HRS 2645 - SUPERVISED PRACTICE MANAGEMENT IN LONG-TERM CARE
- HRS 2638 - PRACTICAL APPLICATIONS OF MNT 2

Total Program Credits: 53

*Courses may vary dependent on transfer courses accepted.

*Each course is offered only once during the academic year, therefore, any departure from completing a course in its planned sequence (for example: failure, for any reason, to satisfactorily complete a required course; an unresolved "G" or "Incomplete" grade) will result in a one year delay in completing the course, the remaining course requirements, and the year of graduation.

Sports Medicine and Nutrition - Sports Medicine Concentration, MS

The Sports Medicine (SM) program focuses on enhancing the knowledge base in the prevention, assessment, treatment and rehabilitation of athletic injuries and illness. Athletic Trainers, other health care professionals, and individuals interested in sports medicine will find the curriculum well-suited to meet their post-professional goals and objectives. Several graduate assistantships are available for applicants who are Certified Athletic Trainers.

For more information, please contact:

Katelyn Allison, PhD, ACSM EP-C
Co-Director, MS in Sports Medicine
Department of Sports Medicine and Nutrition
412-383-6530
E-mail: katelyn.allison@pitt.edu
<https://www.shrs.pitt.edu/MSSM>

Mary E. Murray, EdD, ATC
Co-Director, MS in Sports Medicine
Department of Sports Medicine and Nutrition
School of Health and Rehabilitation Sciences
5065 Forbes Tower
412-624-0278
Fax: 412-383-6636
E-mail: mmurray1@pitt.edu

About

The Sports Medicine (SM) concentration leading to a Master of Science degree in Health and Rehabilitation Sciences is a two-year graduate program housed within the Department of Sports Medicine and Nutrition.

Program Summary
36 credits (full-time-only)
4 terms
Program starts fall term only

Sports medicine is a multidisciplinary field that focuses on health care issues for athletes and physically active individuals. The SM program has a research focus and provides a core curriculum that is central to the pathokinesiology of joint injury and the principles by which restoration of joint function is accomplished. Graduates of the program seek appointments in both clinical and educational settings at colleges and universities, high schools and private sports medicine clinics. Individuals who have successfully completed our program include athletic trainers, physical therapists, bioengineers and exercise physiologists.

Graduate assistantships are available to applicants who are athletic trainers and include appointments at the University of Pittsburgh. The yearly assistantships include tuition remission and stipend.

Research

Students are provided with a research experience within the Neuromuscular Research Laboratory/Warrior Human Performance Research Center that focuses on issues central to clinical research in orthopedics and sports medicine. Research includes the use of electromyography, motion analysis, isokinetic dynamometry, physiological, proprioceptive, and balance assessment modalities for the purpose of defining and restoring function as well as optimizing performance in military personnel, injured athletes, and in physically active individuals.

The NMRL boasts:

- 30 years of comprehensive, relevant sports medicine research as part of the University of Pittsburgh
- A 10-year history of Department of Defense (DoD) Human Performance Operation and Injury Prevention Research
- Unique understanding of DoD Human Performance Operation and Injury Prevention needs
- Multi-disciplinary, team-centric approaches to research
- Cutting-edge and innovative research capabilities

Admission Requirements:

All applicants must:

- Complete the SHRS ApplyYourself online application
- Submit the application fee of \$50 (U.S.)
- Submit a self-evaluation essay addressing your purpose for applying to the program, your ability to successfully complete the program, and your goals (short and long term)
- Submit three letters of reference, preferably from individuals who have instructed you in academic settings and/or supervised research activities. These letters should address the applicant's academic, professional, clinical (as appropriate) and personal attributes; as well as potential for meaningful graduate study
- Submit official transcripts from all colleges/universities attended
- Additional requirements for international applicants can be found on the SHRS website

Application deadline is March 15.

Applicants applying for a Clinical Graduate Assistantship must apply by January 15. There is a mandatory, on-campus, interview with program faculty to be considered for the assistantship. You will be contacted by the department to schedule if qualified. FAQ

Both MS and PhD students may be eligible for the following Scholarships

George I. Carson Graduate Fellowship of the University of Pittsburgh

Funds from the George I. Carson Graduate Fellowship are awarded to graduate students who are or were affiliated with an athletics program at the University of Pittsburgh as undergraduate and are or will be students at a University of Pittsburgh graduate or professional school. The recipients must be of high moral character, or outstanding undergraduate academic achievement, and demonstrate the potential for outstanding graduate study. Deadline for application will be approximately May 1 for the upcoming fall term and spring term. Students may apply for both the fall and the spring at the same time using the May deadline.

Sports Medicine Resource Fund

This graduate scholarship was created to help defray the cost of professional development activities. Eligible students are those individuals who have completed their undergraduate Athletic Training degree at the University of Pittsburgh and are now continuing their education at Pitt through the Master's in Sports Medicine Program. This \$1000 scholarship can be used toward travel and attendance at a professional meeting.

Freddie H. Fu, MD Graduate Research Award

The award is named for and presented in honor of Freddie H. Fu, MD for continued support of research in the field of Sports Medicine. The purpose of this award is to encourage graduate research activity by recognizing exceptional student research projects and defraying some of the expenses associated with the student research. The number of awards presented each year will be contingent on the number of quality proposals submitted and monies available.

American College of Sports Medicine (ACSM)

The ACSM provides research grants and scholarships from various endowments and funds including education, minority scholarships, and Foundation Research Grants. For more information.

NATA Research and Education Foundation Graduate/Doctoral Scholarship

The National Athletic Trainers' Association provides a number of scholarships to eligible students on the basis of academic and clinical excellence as well as participation in campus and community activities that demonstrate qualities of leadership and service. Applicants must be student members of the NATA by November 1 of the year preceding submission of the application, be enrolled in an accredited curriculum program and intend to pursue the profession of athletic training as their means of livelihood and have a minimum GPA of 3.2 or higher. Completed applications must include a statement of support by a certified athletic trainer and verification of academic standing. The amount of each scholarship is \$2300.00. Applications will be posted on the NATA website approximately September 1. Go to NATA Foundation for additional application information. Deadlines for portions of the application begin in January. Learn more about this scholarship.

NATA Research & Education Foundation Master's/Doctoral Research Grant

[View more about this grant.](#)

Financial Aid

Graduate assistantships are available to master's candidates who are athletic trainers and include appointments at the University of Pittsburgh. The yearly assistantships include tuition remission and stipend.

Academic Standards

An average of at least B (GPA=3.00) is required in all courses that make up the MS emphasis in sports medicine. A student who receives a grade lower than a C is required to retake the course according to School of Health and Rehabilitation Sciences policy.

Student Scholarship Appointment Standards

The Department of Sports Medicine and Nutrition, in accordance with the University of Pittsburgh and School of Health and Rehabilitation Sciences, defines a student scholarship as a teaching assistant, teaching fellow, graduate student assistant, or student employee trainee (TA/TS/GSA/SET). Although student scholarship appointments may not be made for more than one year, a student may be reappointed. While it is impossible to guarantee reappointments, most students making satisfactory progress toward a graduate degree and whose teaching or other service performance is satisfactory will receive at least one renewal of their appointment or an offer of other financial assistance. If it is impossible to offer renewal or other appointments, priority will be given to those with superior academic, teaching, and service qualifications.

The criteria for reappointment are the quality of assigned work and academic achievement. Unsatisfactory academic performance is a cumulative GPA below 3.00 or completion of fewer than 9 credits of graduate work per term. As such, students who have a cumulative GPA below 3.00 at the time of scholarship reappointment will not receive reappointment of their scholarship. This policy is in accordance with the University of Pittsburgh Policy Statement for Teaching Assistants, Teaching Fellows, and Graduate Student Assistants.

Program Requirements

The concentration in sports medicine requires a student to successfully complete a minimum of 36 credits and is available with a thesis and non-thesis option. Master's degree candidates must successfully defend a thesis research project or scholarly paper (non-thesis track) in the second year for completion of the program.

[Curriculum and Course Descriptions](#)

Sports Medicine Core (Required)

- HRS 3896 - RESEARCH SEMINAR SPORTS MEDICINE
- HRS 2869 - ANATOMICAL BASIS SPORTS MEDICINE
- HRS 3898 - LAB TECHNIQUES SPORTS MEDICINE 1
- HRS 2867 - PATHOKIN ORTHOPADC/ATHL INJURIES
- HRS 3897 - LAB TECHNIQUES SPORTS MEDICINE 2
- HRS 2655 - RESEARCH METHODS AND APPLIED STATISTICS

- HRS 2908 - MUSCULOSKELETAL ASSESSMENT AND INJURY PREVENTION
- HRS 2017 - INJURY EPIDEMIOLOGY
- HRS 2868 - SEMINAR IN SPORTS MEDICINE

Electives (Highly Recommended - Others Available)

- HRS 2650 - EXERCISE PHYSIOLOGY
- HRS 2922 - TEACHING INTERNSHIP
- HRS 2921 - CLINICAL INTERNSHIP
- HRS 2628 - NUTRITION AND PERFORMANCE WITH LAB
- HRS 2629 - DIETARY SUPPLEMENTS FOR HEALTH AND PERFORMANCE
- HRS 2660 - ADVANCED HUMAN PERFORMANCE AND TESTING
- HRS 2706 - INTRODUCTION TO REHABILITATION ENGINEERING DESIGNS
- HRS 2999 - INDEPENDENT STUDY

Thesis Track

- HRS 2925 - GRADUATE RESEARCH

Nonthesis Track

- HRS 2926 - SCHOLARLY PAPER

Sports Medicine and Nutrition - Sports Science Concentration, MS

The Sports Science concentration in the Master of Science in Health and Rehabilitation Sciences program is designed for students seeking graduate training to advance their knowledge and skills related to understanding and improving sports performance. Primary areas of focus pertain to education and training in sports science, nutrition, sports medicine, and research. The curriculum integrates coursework, research, and practical application experiences pertaining to multiple aspects of athletic and human performance. All students will complete a 1 year sports science practical experience with a designated sports team or organization and will also have access to the Sports Medicine and Nutrition research facilities and faculty.

For more information, please contact:

Matthew Darnell, PhD, RD, SCC, CSSD
 Program Director, MS in Sports Science
 Department of Sports Medicine and Nutrition
 Neuromuscular Research Laboratory
 Warrior Human Performance Research Center
 3860 South Water Street
 412-246-0475
 E-mail: med30@pitt.edu
<https://www.shrs.pitt.edu/msss>

About

The Sports Science (SS) Concentration leading to a Master of Science degree in Health and Rehabilitation Sciences is a one-year graduate program housed within the Department of Sports Medicine and Nutrition.

Program Summary

33 credits (Full or part-time)
1-3 years (varies)
Program starts fall term only

The curriculum integrates coursework, research, and practical application experiences pertaining to multiple aspects of athletic and human performance.

Students will have access to the Department of Sports Medicine and Nutrition research facilities and faculty.

Admission Requirements

Prerequisites (satisfactory grades must be earned in all courses)

- Exercise Physiology (3 credits)
- Introduction to Nutrition (3 credits)
- Introduction to Statistics (3 credits)
- Human Anatomy and Physiology I (3 credits)

Applications may be submitted while prerequisite coursework is in progress.

Additional Requirements

Bachelor's degree from an accredited institution.

Minimum undergraduate GPA of 3.0 (out of 4.0). Admission may be considered for applicants with a GPA of less than 3.0 if other supporting evidence of their ability to complete the graduate program is provided.

An interview may be required.

Application Procedures

Application Deadline: March 15. If spots are available after the deadline applications will be considered on a rolling basis until the class is full.

Application Deadline for highly competitive practical experience positions: January 15. Some of the practical experiences are highly competitive and may require an on-campus interview. Qualified applicants will be contacted by the department to schedule an interview.

All applicants must:

- Complete the SHRS ApplyYourself online application
- Submit the application fee of \$50 (U.S.)
- Submit an essay - a description of professional and educational goals that are realistically attainable during enrollment in the graduate program
- Submit three letters of reference, preferably from individuals who have instructed you in academic settings and/or supervised research activities. These letters should address the applicant's academic, professional and personal attributes and potential for meaningful graduate study.
- Submit official transcripts from all colleges/universities you **have attended**
- Additional requirements for international applicants

Curriculum:

Sports Science MS Curriculum (33 credits)

- HRS 2868 - SEMINAR IN SPORTS MEDICINE
- HRS 3896 - RESEARCH SEMINAR SPORTS MEDICINE
- HRS 3898 - LAB TECHNIQUES SPORTS MEDICINE 1
- HRS 3897 - LAB TECHNIQUES SPORTS MEDICINE 2
- HRS 2650 - EXERCISE PHYSIOLOGY
- HRS 2628 - NUTRITION AND PERFORMANCE WITH LAB
- HRS 2629 - DIETARY SUPPLEMENTS FOR HEALTH AND PERFORMANCE
- HRS 2660 - ADVANCED HUMAN PERFORMANCE AND TESTING

Applied Sports Science Experience (9 credits)

- HRS 2661 - SPORTS SCIENCE PRACTICUM 1, 3 credits
- HRS 2662 - SPORTS SCIENCE PRACTICUM 2, 3 credits
- HRS 2663 - SPORTS SCIENCE PRACTICUM 3 (Capstone), 3 credits

Capstone Project

Master's degree candidates must successfully complete a capstone project in the last term for completion of the program. The capstone project may be a data-based project, a literature review, program development, or other project as approved by members of the student's advisory committee.

Sample Curriculum Plan

Fall Term		Credits	Spring Term		Credits
Year 1	HRS 3898 - Laboratory Techniques in Sports Science & Medicine I	3	HRS 3897 - Laboratory Techniques in Sports Science & Medicine II		3
	HRS 3896 - Research Seminar in Sports Science & Medicine	3	HRS 2868 Seminar in Sports Science & Medicine		3
	HRS 2650 Exercise Physiology	3	HRS 2660 - Advanced Human Performance and Testing		3
	HRS 2628 - Nutrition and Performance with Lab	3	HRS 2629 - Dietary Supplements for Health & Performance		3
	HRS 2661 - Sports Science Practicum 1	3	HRS 2662 - Sports Science Practicum 2		3
Total		15	Total		15

Summer Term	Credits
Summer 1 HRS 2663 - Sports Science Practicum 3	3
Total	3

Sports Science Practicum

The Sports Science Practicum provides students with a valuable one year supervised practice experience with a designated sports team or organization. The practicum offers students the opportunity to apply their knowledge of sports science, performance, and testing/monitoring in an

athletic setting. This involves planned learning experiences with an athletic team at various stages of the training program and season. Students will have the opportunity to observe and then model the functions of a performance specialist. Through the combination of planned learning activities and professional interaction, the students will demonstrate increasing level of proficiency in providing and evaluating comprehensive training to athletes and teams within the athletic setting.

Sports Medicine and Nutrition - Wellness and Human Performance Concentration, MS

The Advanced MS in HRS will focus on wellness and human performance for those students seeking graduate training to develop knowledge and skills related to nutrition and exercise in maintaining and improving health and physical performance. The Advanced Program will include the integration of course work, practical applications, and research pertaining to nutritional aspects of health, fitness, and athletic training/performance. This Advanced MS Program in HRS with a concentration in wellness and human performance will parallel the Advanced MS with a concentration in sports medicine and provide students with access to the sports medicine research facilities and faculty.

The Wellness and Human Performance (WHP) program is designed for students seeking graduate training to develop knowledge and skills related to nutrition and exercise in maintaining and improving health and physical performance. Primary areas of focus pertain to education and training in sports nutrition, health and wellness coaching, and the use of nutrition and exercise for the prevention and management of obesity and related chronic diseases.

For more information, please contact:

Matthew Darnell, PhD, RD, CSSD, SCCC
Program Director, MS in Wellness and Human Performance
Department of Sports Medicine and Nutrition
Neuromuscular Research Laboratory
Warrior Human Performance Research Centers
3860 South Water Street
412-246-0475
Fax: 412-246-0461
E-mail: med30@pitt.edu
<http://www.shrs.pitt.edu/mswhp>

About

The Wellness and Human Performance (WHP) concentration leading to a Master of Science degree in Health and Rehabilitation Sciences is a two-year graduate program housed within the Department of Sports Medicine and Nutrition.

Program Summary
38 credits (full or part-time)
2 - 4 years (varies)
Program starts fall term only

The curriculum integrates coursework, research and practical application pertaining to nutritional aspects of health, fitness, and athletic training/performance.

Students will have access to the Department of Sports Medicine and Nutrition research facilities and faculty.

Note: This program is NOT an avenue to acquire the RDN (registered dietitian/nutritionist) credential.

Admission Requirements:

For admission to full, unrestricted status, the applicant must have completed an undergraduate degree program with an overall grade point average (GPA) of 3.0 or better (based on a 4.0 scale).

An applicant with a GPA of less than 3.0 in overall undergraduate and professional programs but with favorable professional credentials may be admitted on provisional status upon recommendation of the admissions committee.

Application Deadline: March 15.

Prerequisite Courses:

Students must have a bachelor's degree in any field and the following prerequisites or their equivalents in order to be eligible to apply:

- Physiology, 4 credits
- Introduction to Nutrition, 3 credits

Application Procedures:

All applicants must:

- Complete the SHRS ApplyYourself online application
- Submit the application fee of \$50 (U.S.)
- Submit an essay-a description of professional and educational goals that are realistically attainable during enrollment in the graduate program
- Submit three letters of reference, preferably from individuals who have instructed you in academic settings and/or supervised research activities. These letters should address the applicant's academic, professional and personal attributes and potential for meaningful graduate study
- Submit official transcripts from all colleges/universities you have attended
- International Applicants are required to submit an Academic Credential Evaluation. View more information on the SHRS website
- A visit to the school for an interview may be required if requested by the Admissions Committee.

Note: Application can be submitted when course requirements are in progress

Program Requirements

This degree requires the completion of a minimum of 38 credits.

Core Requirements: 26 credits

- HRS 2004 - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN
- HRS 2650 - EXERCISE PHYSIOLOGY
- HRS 2600 - NUTRITION RESEARCH SEMINAR
- HRS 2625 - NUTRITION COUNSELING METHODS
- HRS 2660 - ADVANCED HUMAN PERFORMANCE AND TESTING
- HRS 2627 - DIET & EXERCISE CHRONIC DISEASE MGT
- HRS 2628 - NUTRITION AND PERFORMANCE WITH LAB
- HRS 2629 - DIETARY SUPPLEMENTS FOR HEALTH AND PERFORMANCE
- HRS 2646 - INTRODUCTION TO FUNCTIONAL NUTRITION WITH LAB

Research: 6 Credits

- HRS 2901 - INTRO TO RESEARCH METHODOLOGY *
- PSYED 2018 - STATISTICS 1: DESCRIPTIVE AND INFERENTIAL STATISTICS

Note:

* Required

Additional Requirements: 6 Credits

- HRS 2999 - INDEPENDENT STUDY
- Electives in a designated specialty area (3)

Rehabilitation Science Doctor of Philosophy (PhD)

Doctoral

Rehabilitation Science, PhD

Program Requirements

A minimum of 72 credits beyond the bachelor's degree level is needed for the PhD degree at the University of Pittsburgh. Some areas of focus within the PhD Program may require more than 72 credits. Up to 30 credits taken at the graduate level towards a master's degree may be accepted for transfer. In recognition of graduate study beyond the master's degree, no more than 12 additional credits may be accepted at the time of admission to meet the minimum credit requirement. Credit transfer requests are evaluated by the Associate Dean of Graduate Studies after matriculation.

In all cases, at least 36 credits must be completed as a PhD student at the University of Pittsburgh. No undergraduate credits (1000 level courses) may be applied towards the doctoral degree. Please note, credits transferred from another institution may not be used to substitute for credits of courses required in the degree study plan. For example, credits transferred for a statistics course taken at another institution will not count toward the 9 credits of statistics required in the PhD program here at the University of Pittsburgh. The student will still need to take 9 credits of statistics at the University of Pittsburgh.

The overall form and content of each student's program is the responsibility of the Graduate Faculty of SHRS. To carry out this responsibility, each student has an Academic Advisor who, in consultation with the student, plans a program of study and research in accordance with SHRS guidelines.

Course and Competency Requirements

The following requirements apply to all PhD in Rehabilitation Science students:

HRS 3000 - Doctoral Seminar: 4 credits

Core Areas

There are two Core Areas which are required for all students in the PhD in the Rehabilitation Science Program - Methods of Inquiry for Rehabilitation Sciences and Core Concepts in Disability and Rehabilitation Sciences.

All students pursuing a Doctor of Philosophy in Rehabilitation Science degree will be required to demonstrate basic competency in designing and appraising research studies and to demonstrate basic competency in understanding the fundamentals of disability and rehabilitation sciences.

CORE: Methods of Inquiry for Rehabilitation Sciences

Upon completion of the courses, students will be able to design a research study to answer a specific research question, including the best design for the question asked, sampling, controls for bias or confounding, and basic statistical analysis. They will be able to critically appraise research and apply it to clinical practice.

CORE: Core Concepts in Disability and Rehabilitation Sciences

Upon completion of the modules, students will be able to describe and discuss core concepts in disability and rehabilitation sciences, and analyze and synthesize multiple perspectives on the current and future state-of-the science.

A grade of B or better for each term of the Methods of Inquiry for Rehabilitation Scientists Core and Core Concepts in Rehabilitation and Disability Core (2 terms, 2 credits)

- HRS 3002 - Methods of Inquiry I - 1 credit
- HRS 3003 - Core Concepts I - 2 credits
- HRS 3004 - Methods of Inquiry II - 1 credits
- HRS 3005 - Core Concepts II - 2 credits

HRS 3001 - Dissertation Research: 18 credits

Preliminary Examination for the Methods of Inquiry Core and the Core Concepts in Rehabilitation and Disability Core requires an unconditional PASS

Comprehensive Written and Oral Examinations in the content area of the dissertation requires an unconditional PASS

Content in the areas of research design and statistics: 9 credits

Participate in the teaching of at least one course

Successful completion of manuscript submission requirement

Manuscript Submission Requirements

Prior to scheduling the dissertation defense, each PhD student will demonstrate a minimum amount of experience in manuscript writing and submission by completing:

- 1 co-author manuscript accepted for publication
- 1 first author manuscript submitted and reviewed by a peer-reviewed journal
- Data-based manuscripts are strongly preferred.

Successful completion of grant application submission requirement

Grant Submission Requirement

Prior to scheduling the dissertation defense, each PhD student will demonstrate a minimum experience with grant writing and submission by completing one of the following:

- Submission and peer-review of a Doctoral Research or Research Fellowship Grant applications (Can be NIH or Private Foundations)
- Submission and peer-review of Pilot study grant applications (e.g., foundations, professional societies, the UPMC Rehab Institute Pilot Award)
- Completion of a grant writing course
- Submission of a provisional and non-provisional patent application
- Submission and peer-review of an SBIR like applications, or other options to secure funding for technology development (pitching an idea for commercial development, etc.)

Note: The peer-review may be internal or external peer review. A copy of the summary report from the review should be submitted with a copy of the grant application to Debby Keelan (dkeelan@pitt.edu) to be kept in the student's file.

Also, note: Submission to the \$1,000.00 SHRS scholarship award will NOT qualify for satisfying the grant submission requirement. A new SHRS Doctoral Scholarship Award will be available fall term 2017, that will satisfy this requirement.

Successful defense of the dissertation research

Note: PhD students are required to maintain a 3.000 Cumulative GPA and receive a grade of C or better in all courses required by their program curriculum.

Students who receive a grade below a C in a required course must repeat that course and attain a grade of C or better to graduate. (Note: University regulations state that a student may repeat any course in which a grade of B- or lower is received **if an authorization to repeat the course is given by the student's adviser/faculty.**) Students will not be permitted to register for a course until they attain a C or better in its prerequisites. Failure to

receive an acceptable grade after the second opportunity to complete a required course may result in the student being dismissed from the program and SHRS.

SHRS Faculty

All SHRS Full time, Part time, Adjunct & Emeritus Faculty

Return to School of Health and Rehabilitation Sciences

Communication Science and Disorders

Health Information Management

Occupational Therapy

Physical Therapy

Sports Medicine and Nutrition

Rehabilitation Science and Technology

- Emergency Medicine
- Physician Assistant Studies
- Prosthetics & Orthotics
- Clinical Rehabilitation and Mental Health Counseling
- Rehabilitation Technology

Rehabilitation Science Undergrad Program

School of Health and Rehabilitation Sciences Faculty

Communication Science and Disorders

Full time Faculty:

Jason W. Bohland, PhD, Assistant Professor, PhD, Boston University

jwb103@pitt.edu

Christopher Brown, PhD, Assistant Professor, PhD, Loyola University Chicago

cbrown1@pitt.edu

Bharath Chandrasekaran, PhD, Professor, Vice Chair of Research, PhD, Purdue University

b.chandra@pitt.edu

Ellen R. Cohn, PhD, CCC-SLP, Professor, PhD, University of Pittsburgh

ecohn@pitt.edu

Nicole E. Corbin, PhD, CCC-A, Assistant Professor, PhD, University of North Carolina at Chapel Hill

nec61@pitt.edu

James L. Coyle, PhD, CCC-SLP, BCS-S, Professor, PhD, University of Pittsburgh

jcoyle@pitt.edu

Michael Walsh Dickey, PhD, Associate Professor, PhD, University of Massachusetts Amherst

mdickey@pitt.edu

Dawna Duff, PhD, Reg. CASLPO, Assistant Professor, PhD, University of Iowa

dduff@pitt.edu

William S. Evans, PhD, CCC-SLP, Assistant Professor, PhD, Boston University

Wie6@pitt.edu

Leah B. Helou, PhD, CCC-SLP, Assistant Professor, PhD, University of Pittsburgh

Lbh7@pitt.edu

Katherine Joan Hill, PhD, CCC-SLP, Associate Professor, PhD, University of Pittsburgh

khill@pitt.edu

Erin Lundblom, PhD, CCC-SLP, Assistant Professor, PhD, Florida State University

lundblom@pitt.edu

Cheryl Messick, PhD, CCC-SLP, Professor, Vice Chair for Academic Affairs, PhD, Purdue University

cmessick@pitt.edu

Elaine Mormer, PhD, CCC-A, Vice Chair of Clinical Education, PhD, University of Pittsburgh

emormer@pitt.edu

Catherine Palmer, PhD, Associate Professor, Director of Audiology at UPMC, PhD, Northwestern University

cvp@pitt.edu

Sheila Pratt, PhD, CCC-A, CCC-SLP, Professor, PhD, University of Iowa

spratt@pitt.edu

Bernard Rousseau, PhD, MMHC, CCC-SLP, Professor and Chair, PhD, University of Wisconsin-Madison

Rousseau.csd@pitt.edu

Susan Shaiman, PhD, CCC-SLP, Associate Professor, PhD, University of Wisconsin-Madison

shaiman@pitt.edu

Linda M. Sustich, MS, CCC-SLP, MS, University of Illinois

lsustich@pitt.edu

Janice Vance, PhD, Assistant Professor, PhD, University of Pittsburgh

jvance@pitt.edu

Barbara Vento, PhD, CCC-A, Associate Professor, PhD, University of Pittsburgh

barbv@pitt.edu

Amanda Hampton Wray, PhD, CCC-SLP, Assistant Professor, PhD, Purdue University

amh347@pitt.edu

Part-time Faculty:

David Jedlicka, AuD, FAAA, Audiologist and Clinical Instructor, AuD, University of Pittsburgh

david.jedlicka@va.gov

Deborah Johnston, AuD, CCC-A, FAAA, Clinical Instructor, AuD, Central Michigan University

djt10@pitt.edu

Virginia Milne, AuD, CCC-A, Audiologist and Clinical Instructor, AuD, Kent State University

milneva@upmc.edu

Reva Rossman, AuD, CCC-A, Audiologist and Clinical Instructor, PhD, University of Pittsburgh

rossmanrn@upmc.edu

Jillyn Roxberg, MA, CCC-A, Audiologist and Clinical Instructor, MA, University of Tennessee-Knoxville

roxbergjj@upmc.edu

Katie Vellody, MA, CCC-A, Clinical Instructor, MA, Northern Illinois University

katie.vellody@pitt.edu

Lori Zitelli, AuD, CCC-A, Audiologist and Clinical Instructor, AuD, University of Pittsburgh

zitellild@upmc.edu

Adjunct Faculty:

Geoffrey Fredericks, PhD, Staff Speech Pathologist VAPHS and Adjunct Assistant Professor, PhD, University of South Alabama

gef4@pitt.edu

Roxann Diez Gross, PhD, Adjunct Assistant Professor, PhD, University of Pittsburgh

rdg1@pitt.edu

William D. Hula, PhD, Adjunct Assistant Professor, PhD, University of Pittsburgh

William.Hula@va.gov

Christine Matthews, CScD, CCC-SLP; BCS-S, Adjunct Assistant Professor, CScD, University of Pittsburgh

Christine.matthews@va.gov

Emeritus:

John Durrant, PhD, CCC-A, Professor Emeritus, PhD, Northwestern University

durrant@pitt.edu

Malcolm McNeil, PhD, CCC-SLP, Board Certified Academy of Neurogenic Communication Disorder and Sciences, Distinguished Service Professor and Chair, PhD, University of Denver

mcneil@pitt.edu

Connie A. Tompkins, PhD, CCC-SLP, BC-ANDCS, Professor, PhD, University of Washington

tompkins@pitt.edu

Health Information Management

Full time Faculty:

Mervat Abdelhak, PhD, RHIA, FAHIMA, Associate Professor of Health Information Management, PhD, University of Pittsburgh

abdelhak@pitt.edu

Patricia Anania-Firouzan, MSIS, RHIA, Assistant Professor of Health Information Management, MSIS, University of Pittsburgh
patti@pitt.edu

Dilhari DeAlmeida, PhD, RHIA, Associate Professor of Health Information Management, PhD, University of Pittsburgh
drd7@pitt.edu

Bambang Parmanto, PhD, Interim Chair & Professor of Health Information Management, PhD, University of Pittsburgh
parmanto@pitt.edu

Kimberly Peterson, PhD, RHIA, Visiting Assistant Professor of Health Information Management, PhD, University of Pittsburgh

Andi Saptono, PhD, Assistant Professor of Health Information Management, PhD, University of Pittsburgh
ans38@pitt.edu

Valerie Watzlaf, PhD, RHIA, FAHIMA, Vice Chair of Education & Associate Professor of Health Information Management, PhD, University of Pittsburgh
valgeo@pitt.edu

Leming Zhou, DSc, PhD, Associate Professor of Health Information Management, DSc, PhD, The George Washington University
lzhou1@pitt.edu

Adjunct Faculty:

Page Babbit, MHSA, RHIA, Adjunct Assistant Professor of Health Information Management, MHSA, University of St. Francis
pbabbit@pitt.edu

Diane Frndak, PhD, MBA, PA-C, Adjunct Assistant Professor of Health Information Management, PhD, University of Pittsburgh
diane.frndak@pitt.edu

Rebecca Maziarz, Esq., Adjunct Assistant Professor of Health Information Management, JD, Duquesne University School of Law
rjm130@pitt.edu

Sean O'Rourke, MS, Adjunct Assistant Professor of Health Information Management, MS, The Pennsylvania State University
sao41@pitt.edu

Suzanne Paone, DHA, MBA, Adjunct Assistant Professor of Health Information Management, DHA, University of Phoenix
spaone@pitt.edu

John Stefanyak, MS, Adjunct Assistant Professor of Health Information Management, MS, Syracuse University
jss116@pitt.edu

William Thomson, MHA, MBA, Adjunct Instructor of Health Information Management, MHA, MBA, University of Pittsburgh
wrt1@pitt.edu

August Turano, PhD, Adjunct Associate Professor of Health Information Management, PhD, University of Pittsburgh

amt18@pitt.edu

Sharon Winters, MS, CTR, Adjunct Instructor of Health Information Management, MS, University of Pittsburgh

sbw@pitt.edu

Jean Burgess, MBA, Associate Dean of Administration and Finance, SHRTS, MBA

jcburges@pitt.edu

Anthony Roscoe, MSL, RHIA, Instructor of Health and Physical Activity, MSL, University of Pittsburgh

aer82@pitt.edu

Secondary:

James Bikram Dhoj Joshi, PhD, Associate Professor of Health Information Management, PhD, Purdue University

jjoshi@pitt.edu

Occupational Therapy

Full time Faculty:

Full time Faculty:

Joanne Baird, PhD, OTR/L, CHSE, Associate Professor, PhD, University of Pittsburgh

jbaird1@pitt.edu

Roxanna Bendixen, PhD, OTR/L, FAOTA, Assistant Professor, PhD, University of Florida

bendixen@pitt.edu

Angela Caldwell, PhD, OTR/L, CLT Assistant Professor, PhD, University of Pittsburgh

arl78@pitt.edu

Denise Chisholm, PhD, OTR/L, FAOTA, Professor, Vice Chair for Academic and Administrative Affairs, & MOT/OTD Program Director, PhD, University of Pittsburgh

dchishol@pitt.edu

Natalie Leland, PhD, OTR/L, BCG, FAOTA, FGSA, Associate Professor, Vice Chair for Research, PhD, University of Massachusetts

nel24@pitt.edu

Ann Marsico, CScD, MOT, OTR/L, Instructor, Academic Fieldwork Coordinator, & CRS-Coordinator of Clinical Education, CScD, University of Pittsburgh

amarsico@pitt.edu

Juleen Rodakowski, OTD, MS, OTR/L, Assistant Professor, OTD, University of Illinois at Chicago

jur17@pitt.edu

Amit Sethi, PhD, OTR/L, Assistant Professor & MSOT Program Director, PhD, University of Florida

asethi@pitt.edu

Elizabeth Skidmore, PhD, OTR/L, FAOTA, FACRM, Professor & Chair, Associate Dean of Research, SHRS, PhD, University of Pittsburgh

skidmore@pitt.edu

Alyson Stover, MOT, JD, OTR/L, BCP Assistant Professor, JD, University of Pittsburgh

adstover@pitt.edu

Lauren Terhorst, PhD, Associate Professor, Associate Director of the SHRS Rehabilitation Data Center, PhD, University of Pittsburgh

lat15@pitt.edu

Pamela Toto, PhD, OTR/L, BCG, FAOTA, Associate Professor & CScD Program Director, PhD, University of Pittsburgh

pet3@pitt.edu

Jennifer White, CScD, MOT, OTR/L, Instructor, CScD, University of Pittsburgh

jswhite@pitt.edu

Alyson Stover, MOT, JD, OTR/L, BCP Assistant Professor, JD, University of Pittsburgh

adstover@pitt.edu

Lauren Terhorst, PhD, Associate Professor, PhD, University of Pittsburgh

lat15@pitt.edu

Pamela Toto, PhD, OTR/L, BCG, FAOTA, Associate Professor & CScD Program Director, PhD, University of Pittsburgh

pet3@pitt.edu

Jennifer White, CScD, MOT, OTR/L, Instructor, CScD, University of Pittsburgh

jswhite@pitt.edu

Emeritus Faculty:

Margo B. Holm, PhD, OTR/L, FAOTA, ABDA, Professor Emerita, PhD, University of Nebraska - Lincoln

mbholm@pitt.edu

Joan C. Rogers, PhD, OTR/L, FAOTA, Professor Emeritus, PhD, University of Illinois - Urbana Champaign

jcr@pitt.edu

Physical Therapy

Full time Faculty:

Christopher G. Bise, PT, MS, DPT, OCS, Assistant Professor, MS, Boston University

cbise@pitt.edu

Allyn Bove, PT, DPT, Assistant Professor, DPT, Columbia University

Ams453@pitt.edu

Jennifer S. Brach, PT, PhD, FAPTA, Professor and Associate Dean for Faculty Affairs and Development for SHRS, PhD, University of Pittsburgh

jbrach@pitt.edu

George Carvell, PT, PhD, Professor, PhD, University of Pittsburgh

gcarvell@pitt.edu

Wei-Neng Chuang, MS, PT, Instructor, MS, University of Pittsburgh

Wec12@pitt.edu

Anthony Delitto, PhD, PT, FAPTA, Dean, SHRS and Professor, PhD, Washington University

delitto@pitt.edu

Janet Freburger, PhD, PT, Virginia Commonwealth University

janet_freburger@pitt.edu

Lynn Fitzgerald, DPT, Med, Director of Clinical Education, Assistant Professor, DPT, MGH Institute of Health Sciences

lfitzger@pitt.edu

G. Kelley Fitzgerald, PT, PhD, FAPTA, Associate Dean of Graduate Studies, SHRS and Professor, PhD, MCP/Hahnemann University

kfitzger@pitt.edu

Alexandra Gil, PT, PhD, Assistant Professor, PhD, University of Pittsburgh

agil@pitt.edu

Tara Hankin, MS, PT, SCS, University of Pittsburgh

tarahankin@pitt.edu

Karthik Hariharan, PT, MS, Instructor, MS, University of Pittsburgh

kvh4l@pitt.edu

Andrea Hergenroeder, PT, PhD, CCS, Associate Professor, PhD, University of Pittsburgh

alocke@pitt.edu

Victoria Hornyak, PT, DPT, GCS, Assistant Professor, DPT, Temple University

vhornyak@pitt.edu

Linda Hough, MPH, Assistant Professor, MPH, University of Pittsburgh

houghl@pitt.edu

James Irrgang, PT, PhD, ATC, FAPTA, Professor and Chair Physical Therapy Department, PhD, University of Pittsburgh

jirrgang@pitt.edu

Rick Joreitz PT, DPT, SCS, ATC, Assistant Professor, Pitt Athletics Physical Therapist, DPT, University of Pittsburgh

rej13@pitt.edu

Deborah Josbeno, PT, PhD, NCS, CSCS, Associate Professor, PhD, University of Pittsburgh

daj11@pitt.edu

M. Kathleen Kelly, Vice Chair and Associate Professor, Dept. of Physical Therapy and Director, Doctor of Physical Therapy Program, PhD, University of Pittsburgh

kkelly21@pitt.edu

Andrew Lynch, PT, PhD, Assistant Professor, PhD, University of Pittsburgh

adl45@pitt.edu

Christine McDonough, PhD, PT, Dartmouth Institute for Health Policy & Clinical Practice

ccm295@pitt.edu

Debora Miller, MBA, PT, FACHE, Vice Dean SHRS and Associate Professor, Dept of Physical Therapy, MBA, University of Pittsburgh

Dlm27@pitt.edu

Charity Patterson, PhD, MPH, Professor, Director, Physical Therapy Data Center, University of South Carolina

cgp22@pitt.edu

Sara Piva, PhD, PT, Vice Chair for Research and Associate Professor of Physical Therapy, Co-director of the Physical Therapy Clinical and Translational Research Center, PhD, University of Pittsburgh

spiva@pitt.edu

Adam Popchak, PT, PhD, Assistant Professor, PhD, University of Pittsburgh

ajp64@pitt.edu

Michael J. Schneider, DC, PhD, Associate Professor, PhD, University of Pittsburgh

mjs5@pitt.edu

Patrick Sparto, PT, PhD, Co-Director and Associate Professor, DPT-PhD in Bio-Engineering Program, PhD, Ohio State University

psparto@pitt.edu

Joel Stevens, DC, PhD, Assistant Professor, PhD, University of Pittsburgh

jms363@pitt.edu

Michael G. Timko, PT, MS, Co-Director and Instructor, Physical Therapy Post-Professional MS Program, Musculoskeletal Concentration, MS, University of Pittsburgh

mtimko@pitt.edu

Tara Ridge-Hankin, PT, DPT, Vice Chair and Director, Post Professional Education, University of Pittsburgh

tarahankin@pitt.edu

Jessie VanSwearingen, PT, PhD, Associate Professor, PhD, University of Pittsburgh

jessievs@pitt.edu

David Wert, PT, PhD, Associate Professor, PhD, University of Pittsburgh

dmw29@pitt.edu

Susan Whitney, DPT, PhD, NCS, ATC, FAPTA, Professor, PhD, University of Pittsburgh

whitney@pitt.edu

Part-time Faculty:

Ronna Delitto MS, PT, Assistant Professor, MS, Washington University

rdelitto@pitt.edu

Theresa Wubben, PT, DPT, University of Pittsburgh

tmw71@pitt.edu

Clinical Faculty:

Michele R Agostinelli, PT, OCS, MPT, University of Mobile

Mra62 @pitt.edu

Kelly Bossola, MSPT, University of Pittsburgh

Klb124@pitt.edu

Brian Caricato, MS, DPT, OCS, FAAOMPT, University of Pittsburgh

caricato@pitt.edu

Joni DiFonso, DPT, Univeristy of Pittsburgh

JMD224@pitt.edu

Erin Dufort, DPT, OCS, University of Pittsburgh

Erd31@pitt.edu

Keelan Enseki, MS, PT, OCS, SCS, ATC, CSCS, University of Pittsburgh

kenseki@pitt.edu

Patrick Garvey, MS,DPT,OCS, University of Pittsburgh

pmg17@pitt.edu

Amy Gisler, PT, MPT, Duquesne University

amg200@pitt.edu

Jennifer McMahon, PT, DPT, University of Pittsburgh

jam337@pitt.edu

Christy D. Neltner PT, DPT, NCS, ATC, University of Pittsburgh

cad104@pitt.edu

Tracie Nguyen, PT, DPT, University of Pittsburgh

tan43@pitt.edu

Jennifer Ritter, PT, Tuskegee Institute

jer138@pitt.edu

Barbara Schiavone, PT, DPT, University of Pittsburgh

bfs17@pitt.edu

Nathan Schomburg, PT, MPT, NCS, Duquesne University

nls44@pitt.edu

Christopher Venus, PT, MPT, NCS, Duquesne University

cav36@pitt.edu

Kimberly Welk, PT, DPT, University of Pittsburgh

kag133@pitt.edu

Hallie Zeleznik, PT, DPT, NCS, Arcadia University

haz25@pitt.edu

Sports Medicine and Nutrition

Full-Time Faculty:

Amy Aggelou, PhD, LAT, ATC, Assistant Professor and Director, Athletic Training Education Program, PhD, University of Pittsburgh

aaggelou@pitt.edu

Katelyn Allison, PhD, Assistant Professor and Co-Director, Master of Science Program in Sports Medicine, PhD, University of Pittsburgh

kaf14@pitt.edu

William Ankrom, MS, LAT, ATC, Instructor, Clinical Education Coordinator, Athletic Training Education Program, MS, University of Pittsburgh

ankromwk@pitt.edu

Andrea Beals, PhD, RD, CSSD, LDN, Associate Professor, Associate Director, Neuromuscular Research Laboratory (NMRL), PhD, University of Pittsburgh

kcrawfor@pitt.edu

Lori Cherok, PhD, RDN, LDN, Assistant Professor and Director, Didactic Program in Dietetics, PhD, University of Pittsburgh

lcherok@pitt.edu

Kevin Conley, PhD, ATC, Associate Professor and Chair, Department of Sports Medicine and Nutrition, Associate Dean for Undergraduate Studies, PhD, University of Pittsburgh

kconley@pitt.edu

Christopher Connaboy, PhD, Assistant Professor, Director, Doctoral Program in Sports Medicine, PhD, University of Edinburgh

connaboy@pitt.edu

Trisha Cousins, MS, RDN, LDN, Instructor and Clinical Coordinator for the Dietitian Nutritionist Program, MS, Case Western Reserve University

tcousins@pitt.edu

Matthew Darnell, PhD, RD, SCCC, CSSD, Assistant Professor and Director, Master of Science in Wellness and Human Performance and Sports Science, PhD, University of Pittsburgh

med30@pitt.edu

Judith Dodd, MS, RDN, LDN, FAND, Assistant Professor, MS, University of Pittsburgh

jdodd@pitt.edu

Shawn Flanagan, PhD, MHA, Assistant Professor, PhD, Ohio State University

sdf29@pitt.edu

Deborah Hutcheson, DCN, LDN, RDN, Assistant Professor and Vice Chair, Department of Sports Medicine and Nutrition and Director, Dietitian Nutritionist Program, DCN, University of Medicine & Dentistry of New Jersey

dhutches@pitt.edu

Courtenay Lewis, PhD, Assistant Professor, PhD, University of Connecticut

dunnlew@pitt.edu

Mita Lovalekar, MBBS, PhD, MPH, Associate Professor, PhD, University of Pittsburgh

mital@pitt.edu

Brian Martin, PhD, Assistant Research Professor, PhD, McMaster University

bjm135@pitt.edu

Qi Mi, PhD, Assistant Professor, PhD, University of Pittsburgh

qim3@pitt.edu

Mary Murray, EdD, ATC, Assistant Professor and Co-Director, Master of Science Program in Sports Medicine, EdD, Seton Hall University

mmurray1@pitt.edu

Bradley Nindl, PhD, FACSM, Professor and Director, Neuromuscular Research Laboratory (NMRL), PhD, Pennsylvania State University

bnindl@pitt.edu

Michelle Varnell, PhD, Assistant Professor, PhD, University of Pittsburgh

msv11@pitt.edu

Part-time Faculty:

Jenee McGurgan, MS, RD, LDN, CNSC, Instructor, MS, University of Pittsburgh

jlv43@pitt.edu

Caroline Passerello, MS, RDN, LDN, MS, University of Pittsburgh

cwp20@pitt.edu

Adjunct Faculty:

Robert Blanc, MS, ATC, Clinical Instructor, MS, Ohio University

rblanc@athletics.pitt.edu

Brian Bonnar, MS, ATC, Clinical Instructor, MS, Ohio University

bbonnar@athletics.pitt.edu

Shane Conley, PhD, PT, Clinical Instructor

Spc49@pitt.edu

Jennifer Csonka, MA, ATC, Clinical Instructor, MA, San Jose State University

jcsnka@athletics.pitt.edu

Jay Deiters, PhD, Instructor, PhD, University of North Texas

jay.deiters@pitt.edu

Rhob Evans, PhD, Professor, PhD, Institute of Animal Physiology, Babraham, UK

evansr@edc.pitt.edu

Anne Marie Kuchera, MS, MA, RD, LPC, Instructor, MS, University of Pittsburgh

kuchera@pitt.edu

Jessica Ann Magnu, MEd, RDN, LDN, Instructor, MEd, Penn State University

magnu@pitt.edu

Juliet Mancino, MS, RDN, CDE, CCRC, FAND, Instructor, MS, University of Pittsburgh

jmm197@pitt.edu

Meg Mayer-Costa, MS, RD, LDN, Instructor, MS, Penn State University

mmm41@pitt.edu

Kathleen McCartney, MS, ATC, Clinical Instructor, MS, University of Akron

kmccartney@athletics.pitt.edu

Ann Marie Porada, MS, ATC, Clinical Instructor, MS, California University of PA

aporada@athletics.pitt.edu

Karl (Tony) Salesi, MA, ATC, PT, MS, ATC, Clinical Instructor, MA, Miami University

tsalesi@athletics.pitt.edu

Dale Thornton, MS, ATC, Clinical Instructor, MS, University of Pittsburgh

dthornton@athletics.pitt.edu

Kate Zirpoli, MS, ATC, Clinical Instructor, MS, Florida State University

kzirpoli@athletics.pitt.edu

Rehabilitation Science and Technology

Emergency Medicine

Full time Faculty:

Nicole M. Cecchini, BS, NRP, Instructor, Paramedic Education Program Director, BS, University of Pittsburgh

nmw29@pitt.edu

N. Alex Cutsumbis, BS, NRP, Instructor, BS, University of Pittsburgh

AlexCutsumbis@pitt.edu

John F. Pierce, NRP, Instructor, MBA, University of Phoenix

john.pierce@pitt.edu

Thomas E. Platt, EdD, NRP, Associate Professor and Vice Chair, Director, Emergency Medicine Program, EdD, University of Pittsburgh

plattt@pitt.edu

Samuel Robert Seitz, M.Ed., RN, NRP, Assistant Professor, M.Ed., Pennsylvania State University

srsst48@pitt.edu

Walt Stoy, PhD, EMT-P, Professor, PhD, University of Pittsburgh

stoy@pitt.edu

Adjunct Faculty:

Amy Aaldenburg, BS, NRP, Instructor, BS, University of Pittsburgh, amyelisabeth41@gmail.com

Abdulmajeed al Mobrad, MD, JBEM, Instructor, MBBS, King Saud University, amobrad@ksu.edu.sa

Ahed al Najjar, BSc, FAHA, MPH, DOHS, NREMT-PD, Instructor, BS, Jordanian College of Nursing, najjarahed@gmail.com

William K. Atkinson, PhD, MPH, MPA, FACHE, Instructor, PhD, University of Colorado at Denver, wkaden@gmail.com

Tim Bradley, Instructor

Clifton Callaway, MD, PhD, Professor, University of California, San Diego, callawaycw@upmc.edu

Arpita Chaudhuri, BS, Instructor, BS, University of Pittsburgh, arc115@pitt.edu

John Chew, MS, Instructor, University of Maryland

Kelly Close, MD, MPH, Instructor, MD, University of Pittsburgh & UCLA Medical School; MPH, Yale University School of Medicine, Kelly@closecentral.com

Kristin Cobbs, BS, Instructor, BS, University of Pittsburgh, kmc173@pitt.edu

Christopher Dell, BS, Instructor, BS, University of Pittsburgh, cmd172@pitt.edu

Sean deMarrais, BS, Instructor, BS, University of Pittsburgh, demarraism@upmc.edu

Phillip Dickinson, Instructor

John Englert, Instructor

Karen Glass, BSN, RN, PHRN, CFRN, Instructor, University of Pittsburgh, KEG74@pitt.edu

Don Goodman, MBA, BS, Instructor, MBA, University of Pittsburgh; BS, Miami University-Oxford, Ohio, goodmandf@upmc.edu

Andrew L. Guzzo, BS, NRP, CCEMT-P, FP-C, Instructor, BS, University of Pittsburgh, guzzoal@upmc.edu

Christie Hempfling, BS, Instructor, BS, University of Pittsburgh, crc86@pitt.edu

Jonathon Jenkins, BS, NRP, Instructor, BS, University of Pittsburgh, jwj9@pitt.edu

David Johnson, MS, BA, Instructor, MS, Ohio University; BA, La Roche College, DJohnson8621@gmail.com

Sarah Johnson, BS, Instructor, BS, University of Pittsburgh, sep78@pitt.edu

Aryana Jones, BS, NRP, Instructor, BS, University of Pittsburgh, AJJ42@pitt.edu

Michael Kaplan, Instructor, MLK92@pitt.edu

Eugene Komondor, MS, Instructor, MS, St. Vincent College, komondor@pitt.edu

David LaCovey, BS, EMT-P, Instructor, BS, University of Pittsburgh, David.Lacovey@chp.edu

Edward R. Marasco, MPM, CMTE, EMT-P, Instructor, MPM, Carnegie Mellon University; BS, University of Pittsburgh, EMarasco@quickmedclaims.com

Gregg S. Margolis, PhD, Adjunct Associate Professor, PhD, University of Pittsburgh, gmargolis@nas.edu

Kerry McCans, BS, Instructor, BS, University of Pittsburgh, mccansk@statmedevac.com

Robert McCaughan, Instructor

Thomas McElree, Instructor

William Miller, PA-C, PHPE, Instructor, MHS, Drexel University, wrn23wrk@hotmail.com

Kylie Murray, BS, Instructor, BS, University of Pittsburgh, kgm15@pitt.edu

Sylvia Owusu-Ansah, MD, Instructor, MD, Johns Hopkins School of Medicine, syo2@pitt.edu

Paul Paris, MD, Instructor, MD, University of Pittsburgh, pparis@pitt.edu

Daniel Patterson, PhD, Instructor, PhD, University of South Carolina, pdp3@pitt.edu

Larus Petersen, Instructor

Mark Pinchalk, MS, EMT-P, Instructor, pinchalkme@statmedevac.com

Todd Plunkett, Instructor, tplunkett@baldwinems.com

Stuart Prunty, BS, NRP, Instructor, pruntys@statmedevac.com

Myron J. Rickens, EMT-P, Instructor, rickensmj@upmc.edu

Lily Roth, Instructor, lpr7@pitt.edu

Ron Roth, MD, Instructor, MD, University of Pittsburgh, rothrn@upmc.edu

Sheila Roth, PhD, EMT-B, Instructor, PhD, University of Pittsburgh, sgr13@pitt.edu

Rebekah Sayre, BS, Instructor, University of Pittsburgh, sayrer@upmc.edu

Joshua Shulman, MD, Instructor, MD, University of Pittsburgh, shulmanja@upmc.edu

Ron Stewart, Instructor

Joe Suyama, Instructor, suyajx@upmc.edu

Dan Swayze, DrPH, MBA, MEMS, Instructor, dswayze@statmedevac.com

Janet Traynor, Instructor

Owen Traynor, MD, Instructor, MD, University of Vermont College of Medicine, traynorot@upmc.edu

James Upchurch, MD, MA, Instructor, MD, University of Texas; MA, George Washington University

Evan Vogel, MS, NRP, Instructor, MS, Capella University, vogele@statmedevac.com

Know Walk, Instructor, walkkt@upmc.edu

Charles Warner, Instructor, warnercw@upmc.edu

Charles Welsch, BS, Instructor, BS, University of Pittsburgh, caw131@pitt.edu

Steve Wirth, JD, MS, Instructor, JD, Duquesne University School of Law; MS, Gannon University, SRW39@pitt.edu

Douglas Wolfberg, JD, EMT, Instructor, Widener University School of Law, dwolfberg@pwwemslaw.com

Allan Wolfson, Instructor, wolfsonab@upmc.edu

Michael Yee, BS, Instructor, BS, University of Pittsburgh, yeemd@upmc.edu

Margaret Zaliponi, MS, RN, Instructor, MS, Waynesburg University, mzaliponi@statmedevac.com

Matthew Zavadsky, MS-HSA, EMT, Instructor, mzavadsky@medstar911.org

Physician Assistant Studies

Full time Faculty:

Mary Allias, MPAS, PA-C, Director of Didactic Education, MPAS, Saint Francis University

mallias1@pitt.edu

Rosa Fannie, MPA, PA-C, Clinical Coordinator, MPA, Duquesne University

Raf80@pitt.edu

Jamie Hammond, MPAS, PA-C, Faculty, MPAS, Chatham University

Jlh300@pitt.edu

Jason Hare, MPAS, PA-C, Faculty, MPAS, Chatham University

jhare@pitt.edu

Christine Rodgers, MPAS, PA-C, faculty, MPAS, Saint Francis University

Cer51@pitt.edu

Emily Murphy, MPAS, Associate Program Director and Clinical Coordinator, MPAS, Saint Francis University

emurphy@pitt.edu

David Beck, MPAS, PA-C, Program Director, MPAS, Saint Francis University

dbeck@pitt.edu

Part-time Faculty:

Martin Johns, MD, Medical Director, MD, Temple University

mjohns@pitt.edu

Adjunct Faculty:

Emily Barker, PA-C, Adjunct Faculty, MPAS, Gannon University

Emily.barker@chp.edu

Chelsea Batko, PA-C, Adjunct Faculty, MPAS, Gannon University

klinecl4@upmc.edu

Linda Bizzak, PA-C, Adjunct Faculty, MS, Alderson Broaddus College

lindabizzak@gmail.com

Matthew Cole, PA-C, Adjunct Faculty, J.D., Duquesne University

matthewcole18@gmail.com

Danielle Corson, PA-C, Adjunct Faculty, MMS, Salus University

wagnerdm@upmc.edu

Angela Dively, PA-C, Adjunct Faculty, MPAS, Saint Francis University

amd66@gmail.com

Julia Dubis, PA-C, Adjunct Faculty, MPAS, Duquesne University

dubisjm@upmc.edu

Adam Dulak, PA-C, Adjunct Faculty, MS, South University-Tampa

adulak10@gmail.com

Amanda Efinger, PA-C, Adjunct Faculty, MS, University of Pittsburgh

amandalaine24@gmail.com

Ashley Firm, Pharm. D., Adjunct Faculty, Pharm.D., University of Pittsburgh

afirm60@gmail.com

Lauren Fusaro, PA-C, Adjunct Faculty, MPAS, Duquesne University

jfusaro93@gmail.com

Susan Graff, PA-C, Adjunct Faculty, MS, University of Pittsburgh

swarshafsky@gmail.com

Chris Holland, PA-C, Adjunct Faculty, MPAS, Saint Francis University

goma1313@gmail.com

Eric Holtz, PA-C, Adjunct Faculty, MPAS, Saint Francis University

eahst19@gmail.com

Mary Honard, PA-C, Adjunct Faculty, MPA, Duquesne University

mph49@pitt.edu

Alexis Joseph, PA-C, Adjunct Faculty, MS, University of Pittsburgh

arj45@pitt.edu

Danielle Kepics, PA-C, Adjunct Faculty, MS, University of Pittsburgh

kepicsdm@gmail.com

Sarah King, PA-C, Adjunct Faculty, MPAS, Duquesne University

kings012@gmail.com

Melissa Kolowitz, PA-C, Adjunct Faculty, MS, University of Pittsburgh

mak381@pitt.edu

Debbie Kortyna, PA-C, Adjunct Faculty, MMS, Saint Francis University

deborahkortyna@gmail.com

Laura Kustaborder, PA-C, Adjunct Faculty, MS, University of Florida

lkustaborder@me.com

Heather McHenry, PA-C, Adjunct Faculty, MPAS, Saint Francis University

mchenryhn@upmc.edu

Anikraza Momin, PA-C, Adjunct Faculty, MS, University of Pittsburgh

anikrazamomin@googlemail.com

Kelly Mutsavage, PA-C, Adjunct Faculty, MPAS, Chatham University

kmutsavage@yahoo.com

Rachel November, PA-C, Adjunct Faculty, MS, University of Pittsburgh

rnj3@pitt.edu

Deborah Patterson, PA-C, Adjunct Faculty, MMS, Saint Francis University

dpx22@comcast.net

Chad Peterson, PA-C, Adjunct Faculty, MPAS, Chatham University

petersonch@ph.upmc.edu

Kathryn Postreich, PA-C, Adjunct Faculty, MPAS, Chatham University

postreichkm@upmc.edu

Benjamin Reynolds, PA-C, Adjunct Faculty, MS, Seton Hall University

reynoldsbr@upmc.edu

Megan Rose, PA-C, Adjunct Faculty, MS, University of Pittsburgh

rose.megan721@gmail.com

Lauren Taylor, PA-C, Adjunct Faculty, MS, Philadelphia College of Osteopathic Medicine

laurentaylor1202@gmail.com

Erin Thomson, PA-C, Adjunct Faculty, MPAS, Chatham University

paschelee2@upmc.edu

Diana Walton, PA-C, Adjunct Faculty, MS, University of Pittsburgh

waltondiana@gmail.com

James Worry, PA-C, Adjunct Faculty, DHSc., Nova Southeastern University

worryj@gmail.com

Prosthetics & Orthotics

Full Time Faculty:

Goeran Fiedler, PhD, Assistant Professor, PhD, University of Wisconsin - Milwaukee, WI

gfiedler@pitt.edu

Sara Peterson, PhD, CPO, CFM, MBA, FAAOP, Instructor, Program Director Master of Science in Prosthetics and Orthotics, MBA, University of Pittsburgh

speterso@pitt.edu

Robert Maguire, BS, CP, CFo/L, Instructor, Point Park University

rom70@pitt.edu

Christopher Hovorka, PhD, CPO, CFM, MBA, FAAOP, Instructor, PhD, Georgia Institute of Technology

chovorka@pitt.edu

Adjunct Faculty:

Drew Buffat, MS, Adjunct Instructor, University of Pittsburgh

dsb30@pitt.edu

Gavin Hassel, BS, Adjunct Instructor, University of Pittsburgh

gavin@delatorreop.com

Karl Hursey, PhD, Adjunct Instructor, University of Pittsburgh

kgh10@pitt.edu

Melodee Hursey, MS, Adjunct Instructor, University of Pittsburgh

mah235@pitt.edu

Jeffrey Kuhn, Adjunct Instructor, University of Pittsburgh

jak320@pitt.edu

Peter Leimkuehler, BS, Adjunct Instructor, University of Pittsburgh

peter@unionoandp.com

Dennis Mantini, Adjunct Instructor, University of Pittsburgh

dam264@pitt.edu

William Merletti, BS, CO, LO, Adjunct Instructor, University of Pittsburgh

wpml1@pitt.edu

Kathryn Kopriva-Shipley, MS, Adjunct Instructor, University of Pittsburgh

kks34@pitt.edu

Tiffany Straub, BS, CPO, Adjunct Clinical, University of Pittsburgh

tds44@pitt.edu

Joyce Perrone, BS, Adjunct Clinical, University of Pittsburgh

joyce@fyi.net

Clinical Rehabilitation and Mental Health Counseling

Full Time Faculty:

Kelly Beck, PhD, CRC, Assistant Professor, PhD, University of Pittsburgh

kab277@pitt.edu

Laura Dietz, PhD, Associate Professor, PhD, University of Pittsburgh

laura.dietz@pitt.edu

Jamie Kulzer, PhD, CRC, LPC, Assistant Professor, PhD, University of Pittsburgh

j.kulzer@pitt.edu

Roger Little, MS, Instructor, MS, Wright State University

rlittle@pitt.edu

Michael McCue, PhD, Professor, Department of Rehabilitation Science & Technology and Clinical & Translational Science Institute, Director of the Clinical Rehabilitation and Mental Health Counseling Program, PhD, University of Pittsburgh

mmccue@pitt.edu

Channing Moreland, EdD, NCC, Clinical Assistant Professor, EdD, Point Park University

clmoreland@pitt.edu

Tamara Pelleschi, BS, Instructor, BS, College Misericordia, Dallas, TX

tlp@pitt.edu

Michelle Schein, PhD, CRC, LPC, Assistant Professor, PhD, University of Pittsburgh

michelle.schein@pitt.edu

Secondary:

Carol Greco, PhD, Associate Professor, PhD, University of Virginia

greco cm@upmc.edu

Tad Gorske, PhD, Adjunct Professor, PhD, West Virginia University

tag13@pitt.edu

Kimberly Mathos, DO, MPH, Clinical Adjunct Instructor, DO, Kirksville College of Osteopathic Medicine

mathoskk2@upmc.edu

Adjunct Faculty:

Anthony Calvario, MEd, LPC, NCC, Adjunct Instructor, MEd, Shippensburg University

acalvario@pitt.edu

Patricia Costantini, MEd, LPC, RN, CRC, Assistant Adjunct Professor, MEd, University of Pittsburgh

patricia.costantini@pitt.edu

Heidi Fawber, MEd, LPC, CRC, Clinical Adjunct Instructor, MEd, University of Pittsburgh

heidifawber@hlfrehab.com

Paula Kauffman Oberly, MEd, LPC, NCC, Adjunct Faculty, MEd, Ohio University

KauffmanOberly@pitt.edu

Thomas Lathern Johns, MA, Adjunct Clinical Instructor MA, University of Arkansas - Little Rock

thjohns@pa.gov

David Zak, MEd, LPC, CRC, Clinical Adjunct Instructor, MEd, University of Pittsburgh

zakrehab@comcast.net

Rehabilitation Technology

Full Time Faculty:

Sondra A. Balouris, PhD, MS, MPT, Director and Assistant Professor, Undergraduate Program in Rehabilitation Science, PhD, University of Pittsburgh

sab992@pitt.edu

David Brienza, PhD, Associate Dean for Technology and Innovation, Professor, Rehabilitation Science & Technology, PhD, University of Virginia

dbrienza@pitt.edu

John J. Coltellaro, MS, Clinical Instructor, Center for Assistive Technology, MS, California State University, Sacramento

coltella@pitt.edu

Rosemarie Cooper, MPT, Assistant Professor, Center for Assistive Technology, MS, University of Pittsburgh

cooperrm@pitt.edu

Rory A. Cooper, PhD, FISA-Paralyzed Veterans of America Chair and Distinguished Professor, Rehabilitation Science & Technology, PhD, University of California, Santa Barbara

rcoper@pitt.edu

Theresa Crytzer, PT, DPT, ATP, Assistant Professor, Human Engineering Research Laboratory, DPT, Slippery Rock University, Slippery Rock, PA

tmc38@pitt.edu

Dan Ding, PhD, Director and Associate Professor, Rehabilitation Science & Technology & Human Research Labs, PhD, Chinese University of Hong Kong

dad5@pitt.edu

Daniel J. Fisher, MHA, Instructor, Assistant Chair for Administration and Operations, Rehabilitation Science & Technology, MHA, Baylor University

dfisher@pitt.edu

Mary Rohland Goldberg, PhD, Associate Professor, Rehabilitation Science & Technology & Human Engineering Research Labs, PhD, University of Pittsburgh

mrh35@pitt.edu

Patricia E. Karg, MS, Associate Professor, Rehabilitation Science & Technology, MS, University of Virginia

tkarg@pitt.edu

Alicia Koontz, PhD, Full Professor, Rehabilitation Science & Technology & Human Engineering Research Labs, PhD, University of Pittsburgh

koontz@pitt.edu

Amy Lane, OTR/L, CDRS, Instructor, Department of Rehabilitation Science & Technology and Center for Assistive Technology, MS, University of Pittsburgh

akl7@pitt.edu

Jonathan Pearlman, PhD, Department Chair, Associate Professor, Rehabilitation Science & Technology, PhD, University of Pittsburgh

jlp46@pitt.edu

Mark Schmeler, PhD, OTR/L, ATP, Associate Professor and Vice Chair for Education & Training, Director of Continuing Education Program (RSTCE), PhD, University of Pittsburgh

schmeler@pitt.edu

Secondary:

Michael Boninger, MD, Professor, Rehabilitation Science & Technology, MD, The Ohio State University

boninger@pitt.edu

Brad Dicianno, MD, Assistant Professor, Rehabilitation Science & Technology, MD, University of Pittsburgh

dicianno@pitt.edu

Adjunct Faculty:

Bruce Baker, MS, Adjunct Associate Professor, Rehabilitation Science & Technology, MS, Semantic Compaction Systems

bbaker@pitt.edu

Gina Bertocci, PhD, Adjunct Associate Professor, Rehabilitation Science & Technology, PhD, Biomechanics at University of Louisville

gbertocci@louisville.edu

Kendra Betz, MS, Senior Lecturer, Rehabilitation Science & Technology, MS, Department of Veterans Affairs

Kendra.Betz@va.gov

Harvinder Singh Chhabra, PhD, Adjunct Instructor, Rehabilitation Science & Technology, PhD, University of Pittsburgh

drhschhabra@isiconline.org

S. Allen Condeluci, PhD, Adjunct Professor, Rehabilitation Science & Technology, PhD, University of Pittsburgh
sac44@pitt.edu

Robert V. Conti, BS, Adjunct Instructor, Rehabilitation Science & Technology, BS, University of Pittsburgh
minspeak@sgi.net

Kennerly Hite Digges, PhD, Adjunct Research Professor, Rehabilitation Science & Technology, PhD, University of Pittsburgh
Dennis Janisse, C.Ped, Adjunct Senior Instructor, Rehabilitation Science & Technology, C Ped, Ball State University
janisse@execpc.com

Andy Jinks, M.A., Adjunct Instructor, Rehabilitation Science & Technology, MA, University of Pittsburgh
jinkssa@upmc.edu

Takeo Kanade, PhD, Adjunct Research Professor, Rehabilitation Science & Technology, PhD, University of Pittsburgh
tk@cs.cmu.edu

Paul Kornblith, MD, Adjunct Professor, Rehabilitation Science & Technology, MD, Jefferson Medical College
Melissa Kreutzberger, MS, Adjunct Instructor, Rehabilitation Science & Technology, MS, University of Pittsburgh
kreutzberger@atlanticbb.net

Justin Laferrier, PhD, Adjunct Clinical Instructor, Rehabilitation Science & Technology, PhD, University of Pittsburgh
justinlaferrier@yahoo.com

Liza Ovington, PhD, Adjunct Assistant Professor, Rehabilitation Science & Technology, PhD, University of Pittsburgh
Liza0@msn.com

Steven Patarcity, MS, Adjunct Instructor, Rehabilitation Science & Technology, MS, University of Pittsburgh
Steve_patacity@hotmail.com

Charles Rhoads, PhD, Adjunct Research Professor, Rehabilitation Science & Technology, PhD, University of Pittsburgh
Rhoadesfamily2003@yahoo.com

Alan Ruckert, MS, Adjunct Clinical Instructor, Rehabilitation Science & Technology, MS, University of Pittsburgh
awr21@pitt.edu

Thomas Shearer, MS, Adjunct Instructor, Rehabilitation Science & Technology, MS, University of Pittsburgh
tw31@pitt.edu

Sean Shimada, PhD, Adjunct Research Associate, Rehabilitation Science & Technology, PhD, University of Pittsburgh
drs@davis.com

Joseph Straatmann, OTD, Adjunct Clinical Instructor, Rehabilitation Science & Technology, MS, University of Pittsburgh
joseph.straatmann@pitt.edu

Linda Van Roosmalen, PhD, Visiting Assistant Professor, Rehabilitation Science & Technology, PhD, University of Pittsburgh

Ivanroos@pitt.edu

Jue Wang, PhD, Adjunct Professor, Rehabilitation Science & Technology, PhD, University of Pittsburgh

juewang@pitt.edu

Emeritus Faculty:

Clifford Brubaker, PhD, Distinguished Service Professor, Faculty Emeritus, Rehabilitation Science & Technology, PhD, University of Pittsburgh

cliffb@pitt.edu

Douglas A. Hobson, PhD, Faculty Emeritus, Rehabilitation Science & Technology, PhD, University of Pittsburgh

dhobson@pitt.edu

Katherine D. Seelman, PhD, Faculty Emeritus, Rehabilitation Science & Technology, PhD, University of Pittsburgh

kds31@pitt.edu

Raymond G. Burdett, PhD, Faculty Emeritus, PhD, Rehabilitation Science & Technology, PhD, University of Pittsburgh

rgb@pitt.edu

Rehabilitation Sciences Undergrad Program

Adjunct Faculty:

Kelly Fill, MOT, OTR/L, Adjunct Instructor, MOT, Duquesne University

KJF47@pitt.edu

David Harding, MPA, Adjunct Instructor, MPA, University of Pittsburgh

dharding@pitt.edu

Pamela Nutt, MOT, OTR/L, Adjunct Instructor, MOT, University of Pittsburgh

PMN20@pitt.edu

David Thompson, DPT, GCS, CSCS, CCI, CDE, Adjunct Instructor, DPT, University of Incarnate Word

dat114@pitt.edu

Theresa Wubben, DPT, PT, Adjunct Instructor, DPT, St. Louis University

Tmw71@pitt.edu

School of Information Sciences

The School of Information Sciences (iSchool) is one of the nation's pioneering schools in the education of information professionals, with a rich history that reaches back more than 100 years. Throughout that century, the School has built and maintained a tradition of excellence and innovation in the Information Sciences. As one example, our Master of Library and Information Science degree is **ranked tenth in the nation** by *U.S. News & World Report*. This School, with a national and international reputation for quality, will prepare students for careers in the information, telecommunications, archival and library professions.

The School of Information Sciences offers programs of study leading to masters' and doctoral degrees, as well as certificates of advanced study (post-bachelor's and post-master's). The iSchool is composed of the Information Science and Technology Program, the Library and Information Science Program, and the Telecommunications and Networking Program. Degrees and certificates offered by each are outlined under the individual program headings. The iSchool's faculty, staff, students and programs-uniquely interdisciplinary, multicultural, and international by design-are dedicated to building a global society and an informed citizenship based upon access to reliable and useful information.

Grandparenting and the new School of Computing and Information

School of Information Science (SIS) students who matriculated into the University of Pittsburgh PRIOR to Fall 2017 received a communication allowing a choice to either remain in SIS or transfer to the new School of Computing and Information for completion of their degree.

- If a student chose to remain in the School of Information Sciences, they should refer to these catalog pages for the regulations, policies, and requirements for their degree.
- If a student applied to transfer to the School of Computing and Information, they should refer to the School of Computing and Information catalog pages for the regulations, policies, and requirements for their degree.

Please note: If a student took no action in response to the grandparenting e-mail, they were transferred to the School of Computing and Information by default.

Any student matriculating into the University of Pittsburgh AFTER Fall 2017, must apply to the School of Computing and Information in order to pursue an undergraduate degree in either Computer Science or Information Science and should refer to this School of Computing and Information catalog pages for information.

Mission of the School of Information Sciences

The Mission of the School of Information Sciences is to support and advance the broader education, research, and service mission of the University by educating students, furthering knowledge, and contributing our expertise to advance humankind's progress through information.

This mission is achieved through specific actions:

- Offering superior graduate programs in Library and Information Science, Information Science, and Telecommunications
- Engaging in research and scholarly activities that advance learning through the extension of the frontiers of knowledge and creative endeavors
- Cooperating with industry and government to transfer knowledge
- Extending our expertise to local communities and public agencies to contribute to social, intellectual, and economic development in Pennsylvania, the nation, and the world. In addition, the School works with industry, government, and local communities to provide unique opportunities for students and to advance the fields within the Information Sciences.

Goals of the iSchool

The goals of the School of Information Sciences are to:

- Promote excellence in education at the master's and doctoral levels in the information sciences.

- Advance knowledge in the Information Sciences as an internationally-recognized center for high-quality, innovative, and leading edge research.
- Provide strong professional, technical, and policy leadership by the faculty at the local, state, national and international levels.
- Promote recognition of the School of Information Sciences for its production of seminal research, curricular leadership, superior professional and PhD students, and service to professional and regional communities.
- Foster intellectual vitality in the iSchool community.

Major and Degree Options

The School of Information Sciences offers the following graduate degrees:

- Master of Science in Information Science (MSIS)
- Master of Science in Telecommunications (MST)
- Master of Library and Information Science (MLIS)
 - On-campus program
 - MLIS Pitt Online (web-based)
- Doctor of Philosophy in Information Science (PhD)
- Doctor of Philosophy in Information Science with a Focus in Telecommunications (PhD)
- Information Science with a Focus in Telecommunications
- Doctor of Philosophy in Library and Information Science (PhD)
- Certificate of Advanced Study (post-bachelor's and post master's in Information Sciences and Telecommunications (CAS)
- Certificates of Advanced Study (post-master's) in Telecommunications

The iSchool also has a joint agreement with the Graduate School of Public and International Affairs (GSPIA), allowing students to complete the MSIS degree and one of three degrees in GSPIA simultaneously. The course of study for the MSIS degree under the joint agreement consists of a minimum of 30 credits in graduate Information Science and Technology courses, plus an additional 30-39 credits at GSPIA depending on the selected area of study. To be admitted fully into the joint program, students must be accepted by both GSPIA and the Master of Information Science Program. More information is available at www.ischool.pitt.edu/ist/degrees/joint-degree-programs.php

Contact Information

Office of Student Services
135 North Bellefield Avenue
412-624-5230

SCIadmit@pitt.edu (prospective students)

SCIreg@pitt.edu (current students)

www.sci.pitt.edu

Admissions Information

Note: Prospective students interested in enrollment in one of our degree programs for Fall 2017 or later, must refer to the School of Computing and Information. See the grandparenting section for details.

The School of Information Sciences seeks students with diverse interests and abilities for its graduate degree and certification programs. All applicants will be judged on their own merits. Applicants for master's study must have earned a bachelor's degree from an accredited college or university with a scholastic average of B (3.0 on a 4.0 scale) or better; the doctoral programs have more stringent requirements. For those who have been in the workforce, admission will be based upon academic achievement, area of study, career orientation, and work experience. Each program has specific prerequisites for admission-see links at the bottom of the page for details specific to each degree.

Please note that there may be different language requirements for specific programs. The general requirements are as follows: a minimum score of 550 (paper-based), or 80 (Internet-based) on the TOEFL is required for admission to graduate study in this program. The requirement to take the TOEFL may be waived if the applicant has received a degree from an accredited institution in the United States.

Prior to registration, students with TOEFL scores less than 600 (paper) or 100 (Internet-based) will be given the on-campus administered English Language Proficiency Test. If remedial courses in English as a second language are recommended as an outcome of the test, the student must complete the remedial course during the first two terms of study.

Students may choose to take the International English Language Testing System exam (IELTS) in place of the TOEFL. Students must receive a score of Band 6.5. Students who do not achieve a score of Band 7.0 score or better will be given the on-campus administered English Language Proficiency Test. If remedial courses in English as a second language are recommended as an outcome of the test, the student must complete the remedial course during the first two terms of study. Other admission requirements vary depending upon the chosen program.

Application Fee

Submission of an application fee as determined by the School of Information Sciences is required of all applicants. This fee is non-refundable.

Financial Assistance

The School of Information Sciences provides a limited amount of financial assistance to highly qualified, full-time graduate students. Please note that financial assistance provided by the iSchool differs from financial aid provided by the University, government, or other private organization.

Financial assistance is awarded each term. Student assistantships are available only to full-time students (full-time is defined as a minimum of 9 credits and a maximum of 15 credits per term). Decisions are contingent upon availability of funds and satisfactory academic performance during completed terms.

Financial assistance priority is given to U.S. citizens in evaluating financial assistance applications. All international students are expected to come fully funded for the entirety of their degree, advanced study certificate or additional program of study. International students may be granted financial aid in such exceptional circumstances as the awarding of a Graduate Student Research Assistantship for a funded project.

Academic Standards

The following section details school-specific academic rules and regulations. *These are in addition to the University-wide rules detailed under General Academic Regulations.*

Academic Integrity

A student has an obligation to exhibit honesty, and to respect the ethical standards of the information professions in carrying out his or her academic assignments. All students are responsible for adhering to policies on academic integrity, which are available on the school's Intranet.

Transfer of Credits

A maximum of 6 graduate credits earned with a grade of B or better may be transferred toward either the Master's or PhD degree from institutions fully accredited for graduate study, provided that these credits have not been applied to any other degree or certificate, that they are applicable to the students' program of study, and that they are not older than the statute of limitations for the degree. Approval of transfer credits is determined by the faculty via a petition submitted by the student during their first term of study. Detailed instructions and forms are available on the school's Intranet.

Satisfactory/No-Credit (S/NC) Grading System (formerly the S/N option)

In addition to the standard University letter grade system, the Satisfactory/No-Credit (S/NC) option (formerly the S/N option) is offered at the master's level for a limited number of courses. Under this option, a student who does satisfactory work receives the grade of S. If the student's work is unsatisfactory, an NC is assigned. Courses for which an S is received are counted toward graduation but are not utilized in computing the GPA. A limit of 6 credits of Satisfactory (S) grades may be applied at the master's level. Doctoral programs may have more stringent requirements.

Advising

Academic advising provides the foundation upon which students plan their studies. It is the policy of the School for each student to have an official advisor whose responsibilities include providing guidance in developing the student's career goals and academic programs, approving course selections, and advising as needed on issues affecting the student's academic and professional careers. The goal of academic advising is to develop a consistent academic program coordinated to meet general program requirements and specific needs of individual students. Ideally, the student and faculty advisor function as a team working toward the objective of career preparation by means of the strongest possible academic experiences for the student. Students are matched with an advisor upon admission; they may, however, change advisors at any time. Students should meet each term with their advisors to ensure timely progress through their program.

Special Academic Opportunities/Programs

In addition to the degree offered, the School of Information Sciences offers other academic opportunities and programming to its students:

Colloquiums

Throughout the year, nationally and internationally recognized speakers from the information professions present research colloquiums, which are open to all faculty and students at the iSchool. Colloquiums further enrich the iSchool's educational programs.

Student Organizations

The School encourages students to become members of-and to participate actively in-the student chapters of several professional associations: Student Chapter of the American Library Association (SCALA), American Society for Information Science and Technology (ASIS&T), Special Libraries Association (SLA), and the Society of American Archivists (SAA). The iSchool cooperates with local chapters and special divisions of these organizations and other professional associations, such as the Institute of Electrical and Electronics Engineers (IEEE), the Association for Computing Machinery (ACM), and the Data Processing Management Association (DPMA), in promoting meaningful programs of interaction with practicing professionals.

Alumni Association

The alumni of the School meet each year at professional associations, assist with recruitment efforts, and offer career/skill development opportunities. For more information, please visit www.ischool.pitt.edu/alumni.

Beta Phi Mu

Graduates who achieve a grade point average of at least 3.75 on a 4.0 scale in their work for the MLIS degree and are nominated by a member of the faculty are eligible for election to membership.

Program and Course Offerings

Department of Information Science and Technology

Information Science and Technology

The School of Information Sciences (iSchool) offers a Master of Science in Information Science (MSIS) and a PhD in Information Science. In addition, the iSchool offers Certificates of Advanced Study in Information Science to post-bachelor's and post-master's level students who wish to continue their education. Students may also pursue a joint degree between the iSchool and the Graduate School of Public and International Affairs.

Research Focus

Members of the faculty are active researchers with funding from governmental and/or corporate sources. Both master's and doctoral students have an opportunity to work with faculty on research projects, and doctoral students conduct independent research for their dissertations. Some major areas of research interest are systems analysis and design, information retrieval, database and networking, human-centered computing, social computing, intelligent systems, geoinformatics security assured information systems, big data analytics, and cognitive science.

Contact Information

Information Science Program
School of Information Sciences
135 North Bellefield Avenue
412-624-3988 or 800-672-9435
Fax: 412-624-5231
E-mail: ising@sis.pitt.edu
www.ischool.pitt.edu/ist

The MSIS Degree

Connecting people, information, and technology is the mission of the School of Information Sciences. The Master of Science in Information Science (MSIS) degree builds on that mission by preparing students for careers as information professionals, including systems analysts and designers, database developers and managers, information security experts, and more. This 36-credit program can be completed in three semesters (depending upon course schedules) of full-time study or as many as four years of part-time study. For more details about this program, please visit www.ischool.pitt.edu/ist/degrees/msis-program.php.

Our Curriculum

The curriculum has been designed to provide our students with a rigorous program that is also flexible, so that the specific needs of individual students can be met. The MSIS Program offers several options to carefully target your studies. For those not ready to specialize, the School allows you to design a course of study under the direction of your advisor that meets your individual needs, while conforming to the general distribution guidelines found in the MSIS Plan of Study. Many students use this option to sample multiple areas of the curriculum, such as cognitive systems, human-centered computing, systems design and implementation, networks and security, and database management. The program has developed a series of specializations, in consultation with industry, that ensure that students have the critical expertise in specific areas in high demand by employers. Specializations are described here.

Admissions

<http://www.ischool.pitt.edu/ist/degrees/msis-admissions.php>

Applicants for graduate study must have earned a bachelor's degree from an accredited college or university with a scholastic average of B (3.0 on a 4.0 scale) or better. The program seeks students with diverse interests and abilities; an undergraduate computer science major is not a prerequisite. Although many successful students have entered the program with a background in mathematics, engineering, or computer science, many other outstanding students entered with undergraduate degrees in business, music, history, philosophy, or chemistry.

Prerequisites

Prerequisites for admission to the Master of Science in Information Science (MSIS) program include one 3-credit college course in each of the following:

- A structured programming language
- Statistics
- Mathematics-discrete mathematics or calculus

Students who lack some of the prerequisite courses may be admitted provisionally pending completion of the prerequisites during the first 12 credits of study. Any coursework that the student is asked to meet as a condition of their admission must be completed with a grade of B or better.

Graduate Record Examination (GRE)

All Master of Science in Information Science (MSIS) applicants are required to submit a recent score (within three years of the date of application) on the Graduate Record Examination as part of their admission credentials. Scores on all three sections (verbal, quantitative, and analytical) of the General Section should be submitted. While submission of the GRE scores are preferred, a recent and strong performance on the GMAT will be accepted in lieu of taking the GRE exam. The University code for the GRE is 2927. The program code is 0404.

International Applicants

There are different documentation requirements for international students. They are described here.

English Language Proficiency

Graduate students must possess sufficient knowledge of English in order to study, to understand lectures, and to participate successfully in class discussion without being hindered by language. The Test of English as a Foreign Language (TOEFL) must be taken if the applicant's native language is not English. The institution code for the University of Pittsburgh is 2927 and the department code is 90.

A minimum score of 550 (paper-based), or 80 (Internet-based) on the TOEFL is required for admission to graduate study in this program. The requirement to take the TOEFL may be waived if the applicant has received a degree from an accredited institution in the United States.

Prior to registration, students with TOEFL scores less than 600 (paper) or 100 (Internet-based) will be given the on-campus administered English Language Proficiency Test. If remedial courses in English as a second language are recommended as an outcome of the test, the student must complete the remedial course during the first two terms of study.

Students may choose to take the International English Language Testing System exam (IELTS) in place of the TOEFL. Students must receive a score of Band 6.5. Students who do not achieve a score of Band 7.0 score or better will be given the on-campus administered English Language Proficiency Test. If remedial courses in English as a second language are recommended as an outcome of the test, the student must complete the remedial course during the first two terms of study. Other admission requirements vary depending upon the chosen program.

Application Fee

Submission of an application fee as determined by the School of Information Sciences is required of all applicants. . This fee is non-refundable.

Deadlines

Admissions occur on a rolling basis throughout the year. See the iSchool's Web site for Application Deadlines.

School-Based Financial Assistance

The Graduate Information Science and Technology Program awards School-based financial support on the basis of qualification to full-time graduate students with full admission status (all prerequisites completed). Please visit www.ischool.pitt.edu/ist/degrees/financial-aid.php for the most current information.

Academic Advising

Each student is assigned an academic advisor at the time of admission to graduate study. These assignments are made primarily on the basis of the student's background and interests as shown in the application. The student may at any time elect to change advisors-any such change requires the consent of the new advisor and must be reported to the program. Forms for changing advisors are available at the school's administrative offices, Fifth Floor, IS Building.

At the time of initial registration, the student is encouraged to fill out a Plan of Study and discuss it with their advisor. The Plan of Study forms are available here. A Plan of Study is a series of courses designed to meet the minimum exit competencies judged by the faculty to be necessary for employment as an information professional. All Plans of Study must have the approval of the advisor and will be used to ensure that the student has met all requirements for graduation.

Statute of Limitations

The master's degree must be completed within four years of the first term in which courses were taken after admission. The normal full-time course load is 9 to 12 credits per term; thus, a fulltime student will complete the program in three or four terms. The normal part-time course load is 6 credits per term, which permits the part-time student to complete the program in six terms. The faculty, in response to a student petition, may approve exceptions to the four-year limit if extenuating circumstances exist.

Registration and Residence Requirements

To maintain active student status, students must register for at least 3 credits during one of the three terms of the calendar year. It is recommended, however, that part-time students register for at least 6 credits during two of the three terms of the academic year to maintain reasonable progress through the program. In addition, international students are responsible for meeting the registration requirements dictated by their visa.

The PhD in Information Science Degree

The Doctor of Philosophy degree provides research-oriented graduate study and professional specialization in the science of information. The candidate must give evidence of superior scholarship, mastery of a specialized field of knowledge, and demonstration of ability to do significant and relevant research. Students interested in the PhD degree should consult this Web site.

The candidate for the PhD program should also have a broad knowledge of the field as a profession as well as a specialization in an area of major interest. Every candidate should possess a strong background in the foundations of information science and research methodologies.

The advisor and student should design a Plan of Study at the time of registration.

The iSchool also offers a Doctor of Philosophy degree in Information Science with a focus in Telecommunications. Details are available at www.bulletins.pitt.edu/graduate/tele.htm.

Residence Requirement

Full-time residency, in addition to requiring full-time study, affords the student the opportunity for daily professional interaction with faculty and other PhD students. This interaction is a major component in the student's preparation for research. Despite the benefits that full-time residency affords, it is recognized that students may have off-campus responsibilities as well.

The PhD degree, therefore, can be completed by a combination of full-time and part-time study. Two terms of full-time study are required. Full-time is defined as nine or more graduate credits per term. All students, whether on campus or away, must maintain active status by registering according to the requirements stated below. No matter their status, they must meet with their advisor at least once per year. Students will submit an annual progress report to the PhD Program Chair, the Program Secretary and the advisor. This will take place on the second Friday of January.

Registration Requirement

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

In keeping with University policy, all graduate students must be enrolled for a minimum of 1 credit in the term in which they graduate.

Doctoral students who have completed all credit requirements for the PhD degree, including minimum dissertation credit requirements, and are working full time on their dissertation, are encouraged to register for "Full-time Dissertation Study," with a fixed fee registration per term, currently \$500 plus fees. (Enrollment in this course fulfills the University requirements for registration in the term of graduation.)

Please note that international students may be required to register for credits beyond the minimums stated above, as they are also responsible for meeting the registration requirements dictated by their immigration visa.

PhD Statute of Limitations

All requirements for the PhD degree in IS must be completed in not more than six calendar years from the time of first registration. Students may in extenuating circumstances submit a formal request for extension of their statute of limitation or for a leave of absence from the program. The request must be submitted to the advisor and then presented to the Faculty Committee on Doctoral Studies for a decision.

Admission Requirements

Applicants for admission to the PhD program are required to have earned a master's degree from an accredited university and should have a grade point average (GPA) of 3.3 or better (on a 4.0 scale) for any graduate studies they have pursued.

Students must submit at least three references from persons in the professional and academic communities. The PhD Admissions Committee may, on occasion, require additional references.

Applications will not be considered without the submission of the iSchool's application fee.

As evidence of their ability to undertake doctoral work students must submit an essay (not to exceed 1,000 words) indicating, as specifically as possible, the student's academic and professional goals in relation to the Information Science and Technology doctoral program, and identify potential areas and/or topics in which the student expects to pursue dissertation research. This essay is a critical component of the admissions process, and will be used in assigning the student's initial program advisor.

PhD applicants must either have or demonstrate the following prerequisite knowledge. These courses(or their equivalents) should be taken before seeking admission, but may be taken during the first four terms of study. All courses must be at the graduate level and may have been taken while pursuing another graduate degree:

- Statistics or Discrete Math (e.g., IS 2060 Statistics or IS 2020 Mathematical Foundations)
- Cognitive Psychology (e.g., IS 2300 Human Info Processing or IS 2350 Human Factors)
- Systems Analysis and Design (e.g., IS 2510 Information Systems)
- Data Structures (e.g., IS 2500 Data Structures)
- Database Management (e.g., IS 2710 Database Management)

All applicants must submit scores from a predictor test (if not taken previously) such as the Graduate Record Examination (GRE) or equivalent examination. Scores on all three sections (verbal, qualitative, and analytical) of the GRE must be submitted.

International Applicants

There are different documentation requirements for international students. They are described here.

English Language Proficiency

Graduate students must possess sufficient knowledge of English in order to study, to understand lectures, and to participate successfully in class discussion without being hindered by language. The Test of English as a Foreign Language (TOEFL) must be taken if the applicant's native language is not English. The institution code for the University of Pittsburgh is 2927 and the department code is 90.

A minimum score of 550 (paper-based), or 80 (Internet-based) on the TOEFL is required for admission to graduate study in this program. The requirement to take the TOEFL may be waived if the applicant has received a degree from an accredited institution in the United States.

Prior to registration, students with TOEFL scores less than 600 (paper) or 100 (Internet-based) will be given the on-campus administered English Language Proficiency Test. If remedial courses in English as a second language are recommended as an outcome of the test, the student must complete the remedial course during the first two terms of study.

Students may choose to take the International English Language Testing System exam (IELTS) in place of the TOEFL. Students must receive a score of Band 6.5. Students who do not achieve a score of Band 7.0 score or better will be given the on-campus administered English Language Proficiency Test. If remedial courses in English as a second language are recommended as an outcome of the test, the student must complete the remedial course during the first two terms of study. Other admission requirements vary depending upon the chosen program.

Application Fee

Submission of an application fee as determined by the School of Information Sciences is required of all applicants. This fee is non-refundable.

Library and Information Science Program

The School of Information Sciences (iSchool) offers a Library of Information Science (LIS) program, which consists of the Master of Library and Information Science degree (MLIS) and the Doctor of Philosophy in Library and Information Science degree, as well as certification programs for school library media specialists. Students enrolled in LIS programs, under the mentorship of the program faculty, prepare for careers in the information professions as digital content managers, librarians, archivists, records managers, college and university faculty members, supervisors in diverse information centers, and as information specialists.

The MLIS degree, which requires completion of 36 credits of course work is offered both on campus and through the MLIS: Pitt Online Program, which is a fully online program accredited by the American Library Association that can be completed in six terms of study.

The core curriculum (12 credits) is enriched by advanced courses in management, technology, resources and services for specific patron groups, and organization of information. Upon award of the MLIS degree, graduates are prepared to make contributions to the profession at the local, national, and international levels. On-campus students may target their career goals by enrolling in one of our top-ranked specializations.

The Doctor of Philosophy in Library and Information Science degree prepares students for advanced work in research, teaching, and administration. The program will give students the opportunity to gain skills in teaching or research appropriate for careers at major research universities, teaching institutions, and library systems.

Beyond curricular offerings, educational experiences available to students in the program include colloquiums, practical experience in professional settings, participation in national conferences, and attendance at professional association meetings.

Research Focus

Members of the LIS faculty are active researchers, with records of funding from governmental agencies and private sources. While both master's and doctoral students have opportunities to work with faculty on research projects, doctoral students are most involved in the research process.

Some areas of research interest include (but are not limited to) archives, health resource, children's information, digital libraries, interactive information retrieval, library management, organization of information, cyberscholarship, social information tools, science and technology studies, digital humanities, and school library media center management.

Contact Information

Library and Information Science Program
School of Information Sciences
135 North Bellefield Avenue
412-624-3988
Fax: 412-628-5231
E-mail: lising@is.pitt.edu
www.ischool.pitt.edu/lis

Master of Library and Information Science (MLIS) Degree

The role of information professionals has changed dramatically as the volume of available information has increased and technology for information search and retrieval has advanced. The ability to manage the growing array of information tools has led to new opportunities for those who want to work in the information field, which is a discipline that bridges the management of both traditional and emerging information sources. The MLIS program is responsive to the information marketplace and encourages the development of creativity, professionalism, and a proactive attitude to the needs of various clienteles in traditional and digital information service environments.

The program is accredited by the Committee on Accreditation of the American Library Association. The MLIS Program is ranked tenth in the nation by *U.S. News & World Report* and many of its specializations are also highly ranked.

Admissions

The Library and Information Science Program seeks students with diverse educational and career backgrounds. Applicants for graduate study must have earned a bachelor's degree from an accredited college or university with a scholastic average of B (3.0 on a 4.0 scale) or better. Submission of scores from a standardized predictor test is required for admission to the MLIS program. Applicants with post-bachelor's advanced degrees are exempt from this requirement. Students who have not worked in libraries may elect to do a 3 credit Field Experience.

A maximum of 6 credits earned with a grade of B or better may be transferred toward either the master's or PhD degree from institutions fully accredited for graduate study, provided that these credits have not been applied to any other degree or certificate, that they are applicable to the students' program of study, and that they are not older than the statute of limitations for the degree.

International Applicants

There are different documentation requirements for international students. These are explained here.

English Language Proficiency

Graduate students must possess sufficient knowledge of English in order to study, to understand lectures, and to participate successfully in class discussion without being hindered by language. The Test of English as a Foreign Language (TOEFL) must be taken if the applicant's native language is not English. The institution code for the University of Pittsburgh is 2927 and the department code is 90.

A minimum score of 550 (paper-based), or 80 (Internet-based) on the TOEFL is required for admission to graduate study in this program. The requirement to take the TOEFL may be waived if the applicant has received a degree from an accredited institution in the United States.

Prior to registration, students with TOEFL scores less than 600 (paper) or 100 (Internet-based) will be given the on-campus administered English Language Proficiency Test. If remedial courses in English as a second language are recommended as an outcome of the test, the student must complete the remedial course during the first two terms of study.

Students may choose to take the International English Language Testing System exam (IELTS) in place of the TOEFL. Students must receive a score of Band 6.5. Students who do not achieve a score of Band 7.0 score or better will be given the on-campus administered English Language Proficiency Test. If remedial courses in English as a second language are recommended as an outcome of the test, the student must complete the remedial course during the first two terms of study. Other admission requirements vary depending upon the chosen program.

Application Fee

All applicants are required to submit an application fee as determined by the School of Information Science. This fee is non-refundable.

School-based Financial Assistance

Financial assistance is available at www.ischool.pitt.edu/admissions/financial-aid.php.

Doctor of Philosophy in Library and Information Science (PhD) Degree

The Doctor of Philosophy in Library and Information Science degree prepares students for advanced work in research, teaching, and administration. The primary purpose of this 54-credit degree is to develop an understanding of library and information science beyond the master's degree, with particular emphasis on the conduct of original research, the production of significant and generalizable research findings, and the contribution of such findings to public knowledge.

The advisor selected by the student for the period prior to the dissertation stage of the program is the program advisor; before the dissertation proposal is prepared, the student should select a dissertation advisor. The program advisor and the dissertation advisor may be the same person, but the student has the option to select a different advisor for the dissertation. The advisor must be a member of the graduate faculty in the Library and Information Science Program who is able to spend the time and effort necessary for the advising role, be available for examinations, and with whom a productive and comfortable working relationship can be established.

For complete information on the PhD program, consult Statement of Requirements for the Degree of Doctor of Philosophy at <http://www.ischool.pitt.edu/lis/degrees/phd.php>.

PhD Admission Requirements

The following are requirements for admission to the program:

- A master's degree from a program accredited by the American Library Association, a recognized international program, or the equivalent in a closely related field of study.
- Attainment in graduate work of a minimum grade point average of 3.50 (on a scale where A=4.00). An international student's grade point average will be calculated on the basis of equivalency from universities that use a different scale.
- Submission of scores from a predictor test, such as the GRE, GMAT, MCAST, LSAT or MAT, taken within the last three years. Institutional/program codes may be found [here](#)
- At least three references from persons in the professional and academic communities.
- An interview may be required

As evidence of the ability to undertake doctoral work, the student's application must be accompanied by:

- An essay (not exceeding 1,000 words) indicating, as specifically as possible, the student's academic and professional goals in relation to the Library and Information Science doctoral program and identifying potential areas and/or topics in which the student expects to pursue dissertation research.
- A complete curriculum vitae that provides an overview of education, work, publication, and other professional activities.
- At least one example of scholarly research or professional writing in any format (print or electronic). The student should describe fully any published or unpublished research, thesis, contributions to the professional or scholarly literature, and other professional or academic experience relevant to an assessment of capacity to pursue doctoral study successfully.
- If the candidate has had appropriate professional work experience, a brief description should be provided.

Credentials of prospective students are reviewed by the Admissions and Review Committee and voted upon by the LIS Committee on Doctoral Studies throughout the year. However, students who are applying for financial aid should be aware that they must be admitted and meet financial aid deadlines to ensure consideration for funding. PhD students may begin their studies only in the fall term in order to ensure a coherent program of study.

International Applicants

There are different documentation requirements for international students. These are explained [here](#).

English Language Proficiency

Graduate students must possess sufficient knowledge of English in order to study, to understand lectures, and to participate successfully in class discussion without being hindered by language. The Test of English as a Foreign Language (TOEFL) must be taken if the applicant's native language is not English. The institution code for the University of Pittsburgh is 2927 and the department code is 90.

A minimum score of 550 (paper-based), or 80 (Internet-based) on the TOEFL is required for admission to graduate study in this program. The requirement to take the TOEFL may be waived if the applicant has received a degree from an accredited institution in the United States.

Prior to registration, students with TOEFL scores less than 600 (paper) or 100 (Internet-based) will be given the on-campus administered English Language Proficiency Test. If remedial courses in English as a second language are recommended as an outcome of the test, the student must complete the remedial course during the first two terms of study.

Students may choose to take the International English Language Testing System exam (IELTS) in place of the TOEFL. Students must receive a score of Band 6.5. Students who do not achieve a score of Band 7.0 score or better will be given the on-campus administered English Language Proficiency Test. If remedial courses in English as a second language are recommended as an outcome of the test, the student must complete the remedial course during the first two terms of study. Other admission requirements vary depending upon the chosen program.

Proficiency program: Students may choose to take the International English Language Testing System exam (ELTS) in place of the TOEFL. Students should receive a minimum result of Band 7.0 on the IELTS.

Statute of Limitations

All requirements for the PhD degree must be completed in not more than six calendar years from the time of first registration. Students may, in extenuating circumstances, submit a formal request for extension of their statute of limitations or for a leave of absence from the program.

PhD Research Areas

<http://www.ischool.pitt.edu/lis/degrees/phd.php>

Telecommunications and Networking

The School of Information Sciences offers a Master's degree, Certificate of Advanced Study in Telecommunications and a PhD degree in Information Sciences with a focus in Telecommunications. This program prepares students for careers in a variety of arenas including industry, business, government, health care, education, and the nonprofit sector in positions such as network engineers or analysts, network administrators or managers, consultants, systems engineers, and research and development engineers (with appropriate undergraduate education).

Research Focus

Members of the faculty are active researchers with funding from governmental and/or corporate sources. Both master's and doctoral students have an opportunity to work with faculty on research projects, and doctoral students conduct independent research for their dissertations. Faculty members and students conduct research on a wide variety of topics including (but not limited to) wireless networks and security, network design and survivability, computer networks, network policy, and economics of the telecommunications industry.

Contact Information

Telecommunications Program
School of Information Sciences
135 North Bellefield Avenue
412-624-3988 or 800-672-9435
Fax: 412-624-5231

Master of Science in Telecommunications Degree Program

The Telecommunications and Networking program offers hands-on learning opportunities in telecommunications systems, computer networks, policy and management, wireless systems, and network security so that you will find a rewarding career in industry, government, education or the nonprofit sector. The MST program is a 37-credit program that can be completed in one year of full-time study or as many as four years of part-time study.

For complete program details, visit www.ischool.pitt.edu/tele/degrees/mst-program.php

Admissions

<http://www.ischool.pitt.edu/tele/degrees/mst-admissions.php>

To qualify for admission, an applicant must be a graduate of an accredited college or university. Preference will be given to candidates with a scholastic average B (3.0 on a 4.0 scale) or better.

All MST applicants are required to submit a recent score (within three years of the date of application) on the Graduate Record Examination as part of their admission credentials. Scores on all three sections (verbal, quantitative, and analytical) of the General Section should be submitted.

While submission of the GRE scores are preferred, a recent and strong performance on the GMAT will be accepted in lieu of taking the GRE exam. The institutional number for the University of Pittsburgh is 2927 and the department code is 0404.

The student must have completed the following course work (at the undergraduate or graduate level), with a grade of B or better, prior to admission to the MST program:

- Computer programming skill in at least one scientific programming language
- Probability (a 3-credit course)
- Calculus (a 3-credit course).

The following courses (or their equivalent), while not counting towards the 37-credit degree, may be required depending upon previous educational background:

- Introduction to Telecommunications (TELCOM 2000)
- Physical Layer of Communications I (TELCOM 2200)
- Software Tools and Techniques (TELCOM 2300)

English Language Proficiency

Graduate students must possess sufficient knowledge of English to study without being hindered by language problems, to understand lectures, and to participate successfully in class discussion. The Test of English as a Foreign Language (TOEFL) must be taken if the applicant's native language is not English. The institution code for the University of Pittsburgh is 2927 and the department code is 90.

A minimum score of 550 (paper-based) or 80 (Internet-based) on the TOEFL is required for admission to graduate study in this program. The requirement to take the TOEFL may be waived if the applicant has received a degree from an accredited institution in the United States.

Prior to registration, students with TOEFL scores less than 600 (paper-based) or 100 (Internetbased) will be given the on-campus administered English Language Proficiency Test (The Michigan Test) . If remedial courses in English as a second language are recommended as an outcome of the Michigan Test of English Proficiency, the student must complete the remedial course during the first two terms of study.

Students may choose to take the International English Language Testing System exam (IELTS) in place of the TOEFL. Students must receive a score of Band 6.5. Students who do not achieve a score of Band 7.0 or better will be given the on-campus administered English Language Proficiency Test. If remedial courses in English as a second language are recommended as an outcome of the Michigan Test of English Proficiency, the student must complete the remedial course during the first two terms of study.

Academic Advising

Each student is assigned an academic advisor at the time of admission to graduate study. These assignments are made primarily on the basis of the student's background and interests as shown in the application. The student may at any time elect to change advisors-any such change requires the consent of the new advisor and must be reported to the Program Chair.

In consultation with the advisor, the student must complete a Plan of Study at the time of registration. The Plan of Study forms are available here. A Plan of Studies is a series of courses designed to meet the minimum exit competencies judged by the faculty to be necessary for employment as an information professional. All Plans of Study must have the approval of the advisor and will be used to ensure that the student has met all requirements for graduation.

Statute of Limitations

The Master's Degree program must be completed within four years of the first term in which courses were taken after admission. The normal full-time course load is 9 to 12 credits per term; thus, a full-time student will complete the program in three or four terms. The normal part-time course load is 6 credits per term, which permits the part-time students to complete the program in six terms. The faculty, in response to a student petition, may approve exceptions to the four-year limit if extenuating circumstances exist.

Registration and Residence Requirements

To maintain active student status, students must register for at least 1 credit during one of the three terms of the calendar year. It is recommended, however, that part-time students register for at least 6 credits during two of the three terms of the academic year to maintain reasonable progress through the program.

The PhD in Information Science with a Focus in Telecommunications

The Doctor of Philosophy degree program provides research-oriented graduate study and professional specialization in telecommunications. The candidate must give evidence of superior scholarship, mastery of a specialized field of knowledge, and demonstration of ability to do significant and relevant research. Students interested in the PhD degree should consult the Web site, www.ischool.pitt.edu/tele/degrees/phd.php.

Admission Requirements

Students seeking admission to the PhD program with a focus in Telecommunications must:

- Hold a master's degree from an accredited university, a recognized international program, or the equivalent.
- Have maintained in graduate work of a minimum grade point average of 3.3 (on a scale with A having a value of 4 points per credit). An international student's grade point average will be calculated on the basis of equivalency from universities that use a different scale.
- Submit scores from a predictor test (if not taken previously) such as the Graduate Record Examination (GRE) or equivalent examination. Scores on all three sections (verbal, quantitative, and analytical) of the GRE must be submitted.
- Provide evidence of the ability to undertake doctoral work, in an essay (not exceeding 1,000 words) indicating, as specifically as possible, the student's academic and professional goals in relation to the Telecommunications doctoral program and identifying potential areas and/or topics in which the student expects to pursue dissertation research.
- Provide at least three references from persons in the profession and academic communities.
- Have successfully completed:
 - Two different scientific computer programming language classes
 - Coursework in probability and statistics
 - Differential and integral calculus classes

Statute of Limitations

All requirements for the PhD degree must be completed in not more than six calendar years from the time of first registration. Students may, in extenuating circumstances, submit a formal request for extension of their statute of limitations or for a leave of absence from the program.

Journal Requirement

All PhD students are mandatorily required to submit an article of publishable quality to a journal before the degree is awarded.

PhD Research Areas

<http://www.ischool.pitt.edu/tele/degrees/phd-advising.php>

Certificate

Big Data Analytics

Certificate of Advanced Study in Information Science

The iSchool provides several options for advanced study in information science beyond a bachelor's or master's degree. The Certificate of Advanced Study (CAS) offers a highly-concentrated curriculum on the theory and application of the most current information field trends.

Students can follow a 15-credit or 24-credit plan of study.

15-credit post-bachelor's certificates

- Big Data Analytics
- Security Assured Information Systems (SAIS)*
- * eligible for Committee on National Security (CNSS) Certifications

15-credit post-master's certificates

- Big Data Analytics
- Security Assured Information Systems (SAIS)*

* eligible for Committee on National Security (CNSS) Certifications

Course work must be completed within a period of four calendar years from the student's initial registration in the certificate program. Students interested in the CAS should consult this Web site

Information Science and Technology - Security Assured Information Systems, ADVCT

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15-credit post-master's certificates

- Big Data Analytics
- Security Assured Information Systems (SAIS)*

* eligible for Committee on National Security (CNSS) Certifications

24-credit post-master's certificate

CAS Requirements

The SAIS is a 15-credit certificate program designed to the needs of professionals with a Bachelor of Science or a Master of Science degree in Information Science or a related field in order to expand their professional skills and qualifications in the security assured information systems field.

Download a copy of our information sheet and application checklist.

Core courses

Post-bachelor's students must complete the following three courses with a grade of B- or better:

Post-master's students must complete the following three courses with a grade of B or better:

- INFSCI 2150 - INFORMATION SECURITY AND PRIVACY
- INFSCI 2170 - CRYPTOGRAPHY
- TELCOM 2821 - NETWORK SECURITY

Elective courses

Post-bachelor's students must complete one Networking or Systems and Technology course and one SAIS course available at the iSchool with a grade of B- or better:

Post-master's students must complete one Networking or Systems and Technology course and one SAIS course available at the iSchool with a grade of B or better:

Examples of these courses include but are not limited to:

- INFSCI 2540 - SOFTWARE ENGINEERING
- INFSCI 2620 - DEVELOPING SECURE SYSTEMS
- INFSCI 2621 - SECURITY MANAGEMENT AND COMPUTER FORENSICS
- INFSCI 2731 - SECURITY IN E-COMMERCE
- INFSCI 2955 - SPECIAL TOPICS: SYSTEMS
- TELCOM 2120 - NETWORK PERFORMANCE
- TELCOM 2813 - SECURITY MANAGEMENT AND COMPUTER FORENSICS
- TELCOM 2825 - INFORMATION SYSTEMS AND NETWORK INFRASTRUCTURE PROTECTION

CNSS Certifications

Students completing the SAIS CAS will be eligible for the following Committee on National Security Systems (CNSS) Certifications:

- CNSS 4011 (Information Security Professionals - INFOSEC),
- CNSS 4012 (Designated Approving Authority - DAA), and
- CNSS 4013 (System Administrators in Information Security Systems - INFOSEC).

Students who chose *TELCOM 2813 - SECURITY MANAGEMENT AND COMPUTER FORENSICS* and *TELCOM 2825 - INFORMATION SYSTEMS AND NETWORK INFRASTRUCTURE PROTECTION* additionally receive the following CNSS certificates:

- CNSS 4014 (Information Security Officers - Advanced Level) or
- CNSS 4015 (System Certifiers).

Telecommunications

Requirements

Students who have graduated from a master's program may pursue a certificate in Telecommunications.

In consultation with an advisor, students project a Plan of Studies to meet their specific interests or needs, and these plans may change as the program proceeds. Students may select graduate-level courses in other departments within the University as well as at Pittsburgh Council on Higher Education-cooperating institutions. Admission to all courses is contingent upon meeting course prerequisites and is subject to the advisor's approval.

Candidates for the Telecommunications certificate must complete the following requirements:

- A total of 24 credits in graduate-level courses acceptable to the advisor and passed with a grade point average of at least B (3.00 on a 4.00 scale)
- Fifteen of the 24 credits must be taken from among the approved courses for the MST degree program.

Course work must be completed within a period of four calendar years from the student's initial registration in the certificate program.

Doctoral

Information Science - Telecommunications Focus, PhD

PhD Degree Requirements

The Telecommunications PhD program requires a minimum of 72 credits beyond the Bachelor's degree. The 72 credits must include the required courses (or their equivalent) for the MST degree at the University of Pittsburgh. Also included in the 72 credits are:

- 12 credits of required courses
- 12 credits of doctoral seminars
- 6 credits of minor courses
- At least 18 credits of dissertation research and writing

48 of the 72 credits must be advanced coursework beyond the MST degree (or its equivalent).

Graduation depends upon meeting the minimum credit requirements and all other requirements. Graduate degrees are conferred only on those students who have completed all courses required for the degree with at least a 3.3 GPA. Grades of C or lower are unacceptable for graduation credit.

All students who are candidates for doctoral degrees are governed by the regulations of the University Council on Graduate Study, which establishes minimum standards for graduate work throughout the University as well as by those regulations established by the iSchool faculty.

Residency Requirements:

Full-time study on campus is considered most beneficial to students, but it is recognized that students may have off-campus responsibilities as well. The PhD degree, therefore, can be completed by a combination of full-time and part-time study. Three terms of full-time study are required, two of which must be consecutive and must be taken after successful completion of the preliminary examination. Full-time study is defined as nine or more graduate credits per term.

Preliminary Examination Requirement

The preliminary examination, according to Regulations Governing Graduate Study at the University of Pittsburgh, is held:

...to assess the breadth of the student's knowledge of the discipline, the student's achievement during the first year of graduate study, and the potential to apply research methods independently.... The evaluation is used to identify those students who may be expected to complete a doctoral program successfully and also to reveal areas of weakness in the student's preparation.

The Telecommunications and Networking faculty has clarified further that the overall objectives of the preliminary examination are:

- To test the PhD students for breadth of knowledge
- To evaluate their skills, and their ability to apply them
- To evaluate their ability to do research, and

The prelim will consist of undertaking a research project, submitting a research paper, and an oral presentation and defense. For more details, see http://www.ischool.pitt.edu/tele/documents/PhD_description.pdf.

With the successful completion of the preliminary examination, the student is fully admitted to doctoral study in telecommunications. The Program Chair will notify the student, in writing, of admission to doctoral study. After admission, the student must complete the remaining coursework including doctoral level seminars; probability and statistics, research design, and information science course requirements; and the residency requirement.

Comprehensive Exam

The student must satisfactorily pass a comprehensive examination designed to assess mastery of the general field of telecommunications, acquisition of both depth and breadth in the area of specialization within the field, and ability to use the research methods of the discipline. The purpose of the comprehensive examination is to assess the student's ability to understand a subarea of telecommunications in depth. In order to do research, a student must be able to read, understand, present, and criticize research papers in the field. It is also important that the student be able to explain such papers in depth to someone who is unfamiliar with that area. Thus, this examination centers on the development of a tutorial as well as a lecture in which the student must explain the subject to the satisfaction of the faculty. From a learning perspective, this provides the student with an experience of structuring and explaining a technical topic in detail. It is expected that a student has completed the minimum 30 credits of coursework before taking the comprehensive exam.

Candidacy and Dissertation Requirements

Doctoral students are required to take a minimum of 18 dissertation credits as part of their study. After successfully completing the comprehensive examination, the student will select a dissertation advisor and a committee. Then, the student in consultation with the dissertation advisor, must prepare a dissertation proposal which is then presented to the committee in a public session. The dissertation committee must unanimously approve the dissertation topic and research plan before the student may be admitted to candidacy for the doctoral degree. When the proposal has been successfully defended, the chair of the student's dissertation committee shall notify the Chair of the PhD Committee, the Telecommunications Program Chair, and the Dean of the School of Information Sciences that the student has achieved formal candidacy.

Information Science and Technology, PhD

PhD Degree Requirements

<http://www.ischool.pitt.edu/ist/degrees/phd-details.php>

There are three stages of admission to the doctoral program: (1) admission to graduate study when the student first matriculates, (2) admission to doctoral study following successful completion of the preliminary examination, and (3) admission to candidacy following successful completion of the comprehensive examination and the approval of the dissertation proposal. A minimum of 48 credits, including 30 course and seminar credits beyond the master's degree, and at least 18 dissertation credits are required. Students without a master's degree will be required to take a minimum 24 additional credits of coursework or seminars, for a total of 72 credits beyond the bachelor's degree. Students who did not take the prerequisite courses as part of earlier studies should expect to complete admission requirements or equivalent courses.

Graduate degrees are conferred only on those students who have completed all courses required for the degree with at least a 3.3 GPA. Courses numbered below 2000 do not meet the minimum requirements for doctoral study, although they may be taken to supplement a doctoral program.

Preliminary Examination Requirement

The Preliminary Examination is composed of an oral presentation related to a research oriented publication. In preparation for the preliminary examination, which is usually taken in the third semester of study, PhD students will complete the following course work.

- Four graduate-level courses, one in each of the following areas: Research methods, foundations, design, and information
- Six credits of independent study focused on a research project, which will result in an original, publishable quality research paper (the basis for the preliminary exam)
- Three doctoral seminars (9 credits) are required, including an Introduction to Doctoral Program (INFSCI 3005). Advanced doctoral seminars will be focused on single research themes.

While the preliminary examination can be taken before the completion of the core courses and doctoral seminar, the preliminary examination requirement will not be considered satisfied until all core courses and doctoral seminars are completed.

Research Project and Paper

During the first year of doctoral study, under the direction of your advisor (or another full or adjunct member of the department graduate faculty), students will design and complete a research project. The project should reflect only those activities undertaken during the first year of study. A previous master's thesis or other work completed prior to the start of doctoral study may not be submitted for this requirement. While much research

involves working in a larger team, your role in the project and in writing the paper should be significant. You must be the primary author, and ideally you will be the sole author. You should seek a project or a part of a project in which you take the lead in conducting the research and writing up the results under the direction of your advisor. However, unlike a dissertation or thesis, the research paper submitted for the preliminary evaluation may include co-authors. In this case, the role of each co-author should be clearly stated in writing by the student and submitted along with the research paper. Furthermore, the paper may be integrated with other work and later submitted for publication with a longer list of authors.

Comprehensive Examination Requirement

The comprehensive examination requires successful completion of the preliminary exam. The student will choose three areas of concentration and three faculty members for the comprehensive examination committee, one of whom is the advisor. In preparation for the comprehensive exam, it is expected that the student will complete 3 credits of advanced statistics. Once the committee and the topic areas are selected, the student will prepare an activity and reading list with the advice and approval of the committee members. The student will then conduct whatever preparation is necessary. When the student is ready, he/she will inform the advisor who will ask each member of the committee to submit one or more questions to the advisor. The advisor will be responsible for constructing the exam with an appropriate balance over the three topic areas. The student will be given the questions and allowed one week to prepare written answers to the questions. After review of the written answers, an oral examination will be scheduled. The oral questions will cover the answers on the written examination, and more broadly, knowledge of the material in the three areas of concentration. The result of the comprehensive examination will be a pass or fail. If a student fails, they may retake the exam one more time.

Candidacy and Dissertation Requirements

Doctoral students are required to take a minimum of 18 dissertation credits as a part of their study. Dissertation credits should be taken during terms when a student is actively working on the dissertation. In any term in which a student is enrolled for dissertation credits, the student should meet with their advisor on a regular basis to monitor that appropriate progress is being made towards the completion of the dissertation proposal or the dissertation. The specific activities in a given term should depend on the current stage of the dissertation process. In addition to writing the proposal and dissertation itself, other appropriate activities may include reviewing the literature, programming, prototyping, running preliminary studies, writing grant proposals, preparing journal articles related to the dissertation or presenting preliminary results at conferences.

Once the comprehensive examination is successfully completed, the student is officially a doctoral candidate. After becoming a doctoral candidate, the student can propose and defend a dissertation topic.

Library of Information Science, PhD

PhD Degree Requirements

This PhD degree requires a minimum of 54 credits beyond the master's degree with a total credit minimum of 72. A minimum of 36 credits must be taken in advanced course work. The student must receive a letter grade in each course taken in this 36-credit requirement (except for the teaching practicum course). An additional 18 credits are required, which must be applied to dissertation research and writing. However, regardless of the number of credits taken, no more than 18 credits for dissertation research and writing may be applied toward graduation.

The minimum of 36 credits of course work, all of which must be on the graduate level, must be distributed as follows:

- 3 credits: LIS 3000 INTRODUCTN TO DOCTRAL STUDIES
- 9 credits: 3000-level doctoral seminars in SIS
- 3 credits: LIS 3950 TEACHING PRACTICUM or FACDEV 2200 PRACTCM ON UNIVERSITY TEACHING
- 6 credits: Courses in research methodology and statistics
- 6 credits: Courses in cognate field
- 9 credits: Courses may be:
 - 3000-level independent studies or doctoral seminars at the iSchool

- Additional 3000-level doctoral seminars at the iSchool
- Additional cognate courses (up to 6 credits)
- Additional research methodology courses

Additional Requirements

PhD degrees are conferred only on those students who have completed all courses required for the degree with at least a 3.50 GPA.

Doctoral students are required to devote some portion of their studies to work on other disciplines in order to broaden their perspectives and deepen their understanding of library and information science. To fulfill the cognate requirement, students are required to take a minimum of 6 credits and a maximum of 12 credits in some area of graduate study outside the field of library and information science. These credits may be from more than one department or school.

The research methodology course requirement must be fulfilled prior to taking the preliminary examination. Research methodology courses may include courses in statistical analysis, general research methodology, and specific research methods or research methods used in specific fields of study such as historiography, ethnography, or case and field study.

A three-credit teaching practicum is required for all doctoral students in order to provide the student with teaching experience that may become part of the student's professional vita. The teaching practicum is usually taken after completion of two terms of study. The student is responsible for identifying an appropriate course related to his or her areas of interest and obtaining the agreement of the instructor of record.

Residence and Registration Requirements

According to University of Pittsburgh policy, students seeking the PhD degree are required to engage in a minimum of one term of full-time doctoral study, which excludes any other employment except as approved by their departments. Doctoral students must register for at least 3 credits in each term until they have achieved candidacy. To maintain active status, all doctoral candidates must be registered for a minimum of 3 credits in each 12-month period (3 credits in one term or 1 credit in each of three terms) from the time of admission to candidacy until receipt of degree.

School-Based Financial Support

Financial aid information is available at www.ischool.pitt.edu/lis/degrees/financial-aid.php.

Preliminary Examination

Upon completion of 24 credit hours of course work, each student submits for review a portfolio comprising the best representation of work completed thus far. The student presents this portfolio orally to the Doctoral Studies Committee (DSC) as a whole, which votes on its acceptability. The Preliminary Examination is based on the breadth and depth of knowledge as addressed through course work, as well as whether the course work taken will support the research plan the student submits and defends to the DSC.

Comprehensive Examination

The Comprehensive Examination is conducted by a three person committee the- faculty advisor and two faculty members chosen by the student and the faculty advisor. The examination consists of a written take-home exam over two weeks and an oral examination conducted by the student's committee. The take-home exam has two parts: a broad perspective on current issues in the field of library science, information science, or archives, depending on the student's general area, and the area of the student's research specialization.

Language Requirement

Students are required to be proficient in any languages necessary for completion of doctoral work. Depending upon the student's course of study, proficiencies in modern languages, linguistics, and/or computer languages may be required.

Candidacy and Dissertation

For admission to formal candidacy for the PhD degree, a student must have:

- Passed the preliminary evaluation
- Completed a minimum of 36 credits beyond the master's degree with a GPA of 3.50 or higher
- Passed the comprehensive examination
- Successfully defended the dissertation proposal and received permission from the Dissertation Committee to begin research

Students demonstrate their ability to complete a sound project of original research by presenting and defending the dissertation proposal to their Dissertation Committee. The Dissertation Committee must unanimously approve the dissertation topic and research plan before the student may be admitted to candidacy for the doctoral degree.

Public Presentation Requirement

During the course of the PhD program, each student is required to make a public presentation on a research project in which the student is engaged.

Master's

Information Science and Technology, MSIS

MSIS Degree Requirements

A minimum of 36 credits is required to complete the MSIS degree. Basic course requirements are as follows:

- 6 credits of course work in the Formal or Applied Foundations area
- 18 credits of course work in the Systems and Technology areas (INFSCI 2500 required)
- 6 credits of course work in the Cognitive Science or Cognitive Systems areas
- 6 credits of electives--students may pursue a thesis or a practicum as one of the elective options. Students should know that a thesis is not a requirement of the MSIS degree

Master Degree Program with GSPIA

The School of Information Sciences (SIS) has entered into a joint agreement with Graduate School of Public and International Affairs (GSPIA). The program allows for students to complete the Master of Science in Information Science (MSIS) degree and one of three degrees in GSPIA simultaneously. To be admitted fully into the joint program, students must be accepted by both GSPIA and SIS.

Admission Process

Students wishing to enter this program need to submit the regular application form, along with two recommendation letters, an official transcript, and a copy of GRE or GMAT. International students have additional submission requirements.

All students are expected to have completed the prerequisite courses in

- mathematics,
- statistics (or comparable coursework),
- structured programming language (C or C++ recommended)

Course of Study

The course of study for the Master of Science in Information Science (MSIS) degree under the joint agreement consists of a minimum of 30 credits in the Graduate Information and Technology Program, plus an additional 30-39 credits at GSPIA depending the selected area of study. Students may register under either the GSPIA or SIS school code during any given semester, but must have registered under each school code for at least 24 credits by the completion of the degree. Please be aware that there is a small tuition differential between the two schools.

The 30 credits taken in SIS are to be distributed as follows:

- 3 credits in the Mathematical and Formal Foundations area.
- 6 credits in the Cognitive Science area or Cognitive Systems area. INFSCI 2300 and INFSCI 2350 are recommended.
- 18 credits in the Systems and Technology area or Cognitive Systems area, including INFSCI 2500.
- 3 credits as Electives from any remaining course in the Information Science program .

Note:

Any changes to the distribution above must be requested, in advance, through petition to the faculty.

City of Opportunities

Pittsburgh is big enough that opportunities-for internships, jobs, and access to a rich cultural scene as well as the outdoors-abound.

Library of Information Science, MLIS

MLIS Degree Requirements

Students seeking the MLIS (both on-campus and MLIS: Pitt Online) must complete the following requirements:

- Complete a minimum of 36 credits of graduate-level course work
- Complete core courses of the pathway in which the student is enrolled with a grade of "B" or better in each
- Maintain a B (3.00) average for the required 36 credits of graduate-level course work

Requirements for the MLIS degree must be completed within a period of four calendar years from the student's initial registration.

MLIS Pathways

The pathways below have been developed in response to needs expressed by the profession. In addition to the core knowledge of librarianship, you'll gain specific skill sets pertinent to your career goals.

Archives and Information Science Pathway

Archives and Information Science >

(will appear on transcript)

Records are created and maintained for purposes of evidence and accountability as well as for personal, social and corporate memory. Archives serve a crucial cultural function, providing society with a sense of identity and memory. Records Management programs help organizations to be compliant with regulatory agencies, responsible to constituent groups, and effective and efficient in the use of informational resources. Graduates of the Archives and Information Science Pathway will have the skills and knowledge to work as archivist, special collections librarians, records managers, corporate archivist, digital asset coordinators, and more.

Data Stewardship Pathway

Data Stewardship >

The Data Stewardship Pathway will provide an introduction to data curation, digital preservation and data science, and will frame these topics within the broader context of data informatics, digital scholarship, research integrity, disciplinary diversity and cultural change. In addition to setting the scene from a policy perspective, the Pathway will provide the practical skills needed to carry out effective research data management and preservation, and will situate these practices in the wider landscape of open science and open scholarship. This Pathway will equip graduate students with the necessary knowledge, skills and competencies to work in a range of data stewardship roles located in libraries, archives, data centers, government, industry and business.

Library and Information Services Pathway

Library and Information Services >

While information professionals traditionally have worked in cultural heritage institutions such as the library, today their skills are needed in all sectors of the economy. Now, more than ever, the world needs highly qualified specialists in libraries and information services. The Library and Information Sciences Pathway will prepare students for leadership roles in the identification, organization, preservation and effective use of information and cultural artifacts. Graduates of this pathway will be prepared for careers as web content managers, digital asset coordinators, librarians, information architects, and more.

Telecommunications, MST

The Telecommunications and Networking program offers hands-on learning opportunities in telecommunications systems, computer networks, policy and management, wireless systems, and network security so that you will find a rewarding career in industry, government, education or the nonprofit sector.

The MST program is a 37-credit program that can be completed in one year of full-time study or as many as four years of part-time study.

Prerequisites for admission to the MST program include:

- baccalaureate degree
- computer programming experience in at least one scientific programming language
- completion of a 3-credit course in probability
- and a 3-credit course in calculus.

The following courses are pre-requisites for a number of graduate-level Telecommunications courses. If you have not taken these, or their equivalent, you will need to do so.

- Introduction to Telecommunications (TELCOM 2000)
- Physical Layer of Communications 1 (TELCOM 2200)
- Software Tools & Techniques (TELCOM 2300)

MST Degree Requirements

Completion of the Master of Science in Telecommunications degree requires a minimum of 37 credits. Three credits may be in practicum (a structured supervised employment situation) or a thesis. For research-oriented students, the faculty strongly recommends a 3-credit thesis in lieu of course work.

The 37-credit minimum of course work should include the following:

- 19 credits of required courses, including the one-credit telecommunications seminar course.
- 3 credits selected from the management/policy group.

- 15 credits of elective course work.

Students may choose to take more than the 37 credits required for the MST degree. However, the iSchool is not able to extend any financial aid beyond the required number of courses; any visa issues pursuant to extended study would have to be resolved by the student.

Specializations

Students who wish to focus on one of our specializations are encouraged to take as many courses as possible in that area of specialization as part of the 15 credits of electives.

Students can specialize in more than one area by taking offered courses in those particular areas, again as part of their 15 credits of electives.

Telecommunications Systems

Telecommunications systems are built on an infrastructure, similar to that classically used for telephony. In this specialization, you will investigate the physical technologies (copper and fiber) used for information transmission, the enabling transmission processes (such as multiplexing, synchronization, and noise filtering), and the systems that provide telephony (classic circuit switched and VOIP). If you pursue this track, you would likely be hired by a carrier, equipment manufacturer, consultant, or business for a career as a system engineer, network designer or manager, switching system designer, or telecom manager.

Computer Networks

Computer networking enables efficient communication and information sharing to take place among widely dispersed participants. The recent emergence of the global Internet-and the availability of ever cheaper, more powerful computation and communication devices-is paving the way for a new generation of ubiquitous and pervasive networks.

In this specialization, you will explore a variety of problems encountered in designing computer networks and learn common techniques to solve these problems. Courses are designed to equip graduates with the knowledge and skills required to contribute to the field of data communication and networking. The focus is on network models and architectures, protocol design and implementation, resource management, quality of service support, and security. You will acquire a solid conceptual and practical understanding of how computer network technologies operate and the ability to analyze the benefits and limitations of current and future networking technologies. You will also gain valuable insights into the design, management, and security of computer networks, and have an opportunity to take additional electives from the Department of Computer Science, depending on your interests.

Policy and Management

Telecommunications systems exist in social and organizational contexts. In this specialization, you will explore the relationships among telecommunications technologies, service providers, end users, and governmental entities. In telecommunications, industry structure and government regulation is closely tied to the details of technology, so it is important that students forging a career in this area have a thorough understanding of not only the technology, but also the historical and existing economic and political structures. In this specialization you may take additional courses from the Katz Graduate School of Business or the Graduate School of Public and International Affairs, depending on your interests. Upon graduation, you will be prepared for a career as a policy analyst or network manager.

Wireless

Wireless systems have become a vital infrastructure in today's society, and significant professional opportunities exist in this growing field. In this area, you will investigate the physical technology and enabling processes; the systems that provide cellular telephony, wireless LANs, and sensor networks; and mobile applications. You may select additional electives from the Department of Electrical and Computer Engineering. Graduates of this track have been hired by wireless carriers, manufacturers, and other organizations as system engineers and wireless network designers.

Security

Just as we safeguard data within computers, we must also assure that the information flowing over networks is protected. In this specialization you will investigate firewalls, encryption, fault tolerant network design, and other procedures for information assurance. Additional electives may be taken from both the Department of Computer Science and the Department of Mathematics. If you follow this track, you will be prepared for a career as a network security specialist with carriers, manufacturers, consulting firms, the government, financial institutions, and other enterprises.

Internet of Things

Information regarding this new specialization is forthcoming.

General

If you choose not to specialize in one particular area, the general course of study allows you to sample courses from all the specializations in preparation for dealing with the constant changes in telecommunications technology. Since change is the only constant in the telecommunications industry, your versatility as a generalist will enable you to handle challenges as they arise in the industry. Employers such as carriers, manufacturers, consultants, and other organizations (especially smaller ones) are seeking those graduates with a broad set of skills for careers as system engineers, network designers or managers, and telecommunications managers.

A generalist can take courses from any of the areas of specialization in consultation with the faculty advisor.

School of Law

- Contact Information
- Admissions
- Scholarships and Financial Aid
- Flex-time Program
- Academic Standards
- Professional and Career Development
- School of Law Faculty
- Programs and Course Offerings

The essential mission of the University of Pittsburgh School of Law is to help lawyers and legal institutions to meet the demands of a rapidly changing legal and professional environment. Pitt Law excels in teaching the next generation of diverse legal professionals; producing research of impact and contributing to society through public service.

In serving its students, the school is committed to an active and inclusive spirit of community and to the effective, efficient, and congenial provision of service. In teaching, research, and public service, the School of Law aspires to conduct all of its programs at a nationally prominent level of quality that adds luster to the legal and business communities of Pittsburgh; that makes the school relevant to the key needs of this region's private, public, and nonprofit sectors; and that distinguishes it as one of the finest public urban law schools in the United States.

For more than 110 years, the School of Law has prepared students to become excellent attorneys and leaders in both the legal profession and in society. Today, Pitt Law builds on this proud history by training lawyers to take on the opportunities and challenges of 21st century legal practice in the United States and around the world.

At Pitt Law we turn out practice-ready lawyers by providing students with both traditional law school classroom experiences designed to develop and hone analytical and communication skills and with experiential learning opportunities in one of our six clinics, which range in subject area from Environmental Law to Family Law to Health Law. Students who wish to focus their studies can enjoy the numerous benefits of enrolling in one of our five certificate programs, with their opportunities for international externships, instruction in litigation skills by teams of top practicing litigators, or membership on an intellectual property moot court team. Seven joint degree programs, including two partnerships with Carnegie Mellon University, permit students to craft discipline-bridging courses of study in areas including public health, business administration, and international affairs. And Pitt Law students can serve as editors at the award-winning website JURIST, the world's only Web-based, student-powered legal news source, which is viewed weekly by 100,000 viewers and is based right here at the School of Law.

Among its first-professional degrees, the School of Law offers the Juris Doctor (JD) degree; a number of joint degree programs with other schools of the University and Carnegie Mellon University, leading to both a JD and a master's degree; and LLM degrees for foreign law graduates as well as several certificate programs. The School of Law also offers graduate programs leading to a Master of Studies in Law (MSL) and a Doctor of Jurisprudence (SJD) degree. *For further information on the graduate programs, see the School of Law-Graduate Programs section of this bulletin.*

Contact Information

Financial Aid and Admissions are located in the same office at the University of Pittsburgh School of Law.

Office of Admissions and Financial Aid
Barco Law Building
3900 Forbes Avenue
Pittsburgh, PA 15260

Website: www.law.pitt.edu

General Information: (412) 648-1413
Admissions Information: (412) 648-1805
Financial Aid Information: (412) 648-1415
Fax: (412) 648-1318

Email Admissions: admitlaw@pitt.edu
Email Financial Aid: lawfa@pitt.edu

Office Hours: 8:00 a.m. - 5:00 p.m. Monday through Friday

Walk in appointments are available during office hours; however, scheduling an appointment is encouraged. To schedule an appointment, please email or call our office.

Admissions

Pitt Law is highly competitive, and we base admissions decisions on many factors. Our admissions committee will carefully evaluate your graduate work, professional experience, and undergraduate GPA and make a decision on a rolling basis, or you may request a priority decision within 14 business days. Each program, degree and certificate has various requirements. Please see each program's requirements.

Qualifications for Admission to the Bar: In addition to a bar examination, there are character, fitness, and other qualifications for admission to the bar in every U.S. jurisdiction. Applicants are encouraged to determine the requirements for any jurisdiction in which they intend to seek admission by contacting the jurisdiction. Addresses for all relevant agencies are available through the National Conference of Bar Examiners.

Transfer Students

The University of Pittsburgh School of Law will accept transfer students after those students have successfully completed the first year of academic study at another law school. Applicants must complete the law school application and submit the following:

- Application fee
- Official LSDAS report
- Letter of good standing from the current law school dean
- Certified law school transcript
- Letter of recommendation from a current law school professor
- Final official undergraduate transcript

The deadline for submitting an application is June 1st of every year. Decisions made on transfer students depends on the number of seats available at Pitt Law, the QPA from the current law school and the competitiveness of the current law school.

If admission is granted, the transfer student's completed law school work will be evaluated for transfer credit in light of the curricular offerings at Pitt Law. Only up to 32 transfer credits will be accepted. However, only up to 29 credits will be accepted in the case of (1) a transfer student admitted from a U.S. law school that is not approved by the American Bar Association, (2) a transfer student who is a graduate of a foreign law school and who is admitted after completion of the Pitt Law LL.M. program, or (3) a transfer student who has not completed the Pitt Law LL.M. program and who is a graduate of a foreign law school for law school work done outside of the United States. All transferred credits must comply with the restrictions in ABA Standard 505.

In keeping with the requirements of The Order of the Coif, students are eligible for Coif membership only if they complete at least 75% of their law studies in graded courses. For transfer students, any credits transferred without grades will not count toward this requirement.

Visiting Students

A student may apply to visit at Pitt Law if he/she has completed two years of law study at another law school and has the permission of the dean of their current school. Applicants must complete the law school application and submit the following:

- Application fee
- Copy of your LSDAS report
- Letter from the dean stating the third year at Pitt Law will count toward a degree from the previous school
- Certified law school transcript.

The deadline for submitting an application is June 1st of every year. Decisions made on visiting students depends on the number of seats available at Pitt Law, the QPA from the current law school and the competitiveness of the current law school.

Scholarships and Financial Aid

All admitted students are reviewed for merit scholarship awards at time of admissions to Pitt Law. The merit scholarships are renewable for the second and third years of law school provided the recipient maintains a cumulative grade point average of 2.8 in their legal studies. Scholarship renewal review is conducted at the end of the academic year. Students whose scholarship is not renewed may request to have their scholarship reinstated at any time based upon earning the cumulative 2.8 grade point average in their legal studies.

Approximately 70 percent of the student body receives scholarship funds from the School of Law in the form of merit or need-based scholarship awards. The Law School offers various merit scholarships at the time of admissions. Some scholarship require an additional application and others are based on the materials submitted in your admissions application. If admitted, you will be emailed any scholarship application that requires additional materials.

Please visit the Pitt Law website for more details on available scholarships or contact the School of Law Financial Aid Office.

Loans

For most students the major portion of law school costs are met through the Federal Unsubsidized Stafford Loan, Federal Graduate PLUS Loan, and alternative educational loan programs.

Generally, to be considered for an educational loan as a law student, you must:

- Complete the Free Application for Federal Student Aid (FAFSA)
- Be a U.S. Citizen, permanent resident, or other eligible non-citizen
- Enrolled at least half-time in a degree program
- Registered with the Selective Service, if required
- Not owe a refund on a federal grant or be in default on a prior federal loan
- Maintain Satisfactory Academic Progress.

Loan Counseling

Before federal loan funds can be released, all incoming students must complete a Loan Entrance Counseling session, regardless of whether they have borrowed in the past. This counseling session is a federal requirement for all students to insure that they understand their rights and responsibilities as a borrower. Loan counseling can be completed online at www.studentloans.gov.

All students who have borrowed through the Federal Loan Program are required to attend a Loan Exit Counseling session before they graduate or drop below half time. The counseling sessions will be schedule in April for all third year students. All third year students will receive notification of the time of the counseling sessions. The counseling sessions informs students of their rights and responsibilities as a borrower as well as giving students information on their repayment options.

Flex-time Program

The flex-time program is offered to students whose outside obligations necessitate a more flexible program of study than is traditionally available. All classes are still held during the daytime; however, hours may be planned according to personal needs and interests. The pace is intended to be less strenuous than the regular program. Course loads are optimally designed to result in graduation in four years rather than three with no fewer than 10 credits per semester. The option to accelerate is also available to flex-time students after the first year of study. Flex-time students are still required to pay full tuition. Applicants to the flex-program must include a letter with their application explaining their individual circumstances. The application process is otherwise the same.

Please note that flex-time is not a part-time program.

Academic Standards

The School of Law Policy on Written Work for Credit, its Standards of Academic Integrity, the Grading Guidelines, and other academic policies of the school are included in the Academic Rules section of the School of Law's web site.

Professional and Career Development

The Professional Development Office is dedicated to providing students and graduates with the information and tools necessary for successful career development and advancement. Our office assists students and graduates in their pursuit of careers in a wide variety of settings, including private law firms, public interest organizations, government agencies, corporate and business environments, judicial clerkships, academia, and non-traditional careers.

Through an extensive array of services including individual counseling, educational programming, interviewing opportunities, printed and online resources, job posting databases, and a substantial alumni network, the PDO helps educate students and graduates for a lifetime of successful career management.

The PDO also serves as an intermediary between prospective employers and law students. By posting job vacancies, scheduling on-campus interviews, sponsoring programs, and participating in and promoting off-campus job fairs, we provide a range of employment prospects. Through ongoing outreach, the PDO Staff endeavors to create ever-increasing employer interest in Pitt Law students and graduates.

Each student will meet with a Career Counselor during their first year and is encouraged to meet with the counselor as often as needed. As a student begins to develop his or her legal career path they are able to work with an PDO counselor whose background mirrors the student's desired path. Our office is open Monday- Friday 8:30 a.m. - 5:00 p.m. Additionally, PDO has daily walk-in hours and hosts "Facetime" in the student lounge.

Location

Barco Law Building
Second Floor
3900 Forbes Avenue
Pittsburgh, PA 15260
(412) 648-1411 / Phone
(412) 624-4843 / Fax
PDO@pitt.edu

Programs and Course Offerings

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Certificate

Law - Human Resources Law Certificate

The program will be a ten-month, accelerated program. It will offer five courses designed to be taken in order. Each is eight weeks in length. At the completion of the program, students will be eligible to sit for some of the industry-based human resources certification exams offered by the Society for Human Resource Management (SHRM) and the HR Certification Institute.

The HRLC courses will be taught by industry experts and Pitt Law Faculty. In addition, the program will seek to create an advisory committee composed of Pitt law and business faculty, program faculty, and human resources professionals.

We do not expect an increase in need for student aid and minimal or no need for additional library resources. As this is a distance-learning program, we do not expect there to be any significant impact on office, laboratory, or classroom space. Instructors will need to coordinate with the Barco Law Library staff concerning planned student projects to ensure that digital resources will be available remotely to students where ever that may be. The Library staff can arrange for 30 students to access the library's existing Lexis and Westlaw databases, and by March 2019 all of the databases the Law Library subscribes to will be available to all students, whether on-campus or off-campus. All students in the program will have a "library liaison" at the Barco Law Library available to them for assistance.

Required Courses

School of Law's Programs

You expect the Juris Doctor (JD) program at Pitt Law to offer a solid foundation in the basics of legal education. You might not expect the opportunity to specialize in areas like environmental and energy law; health law; and intellectual property, technology, and innovation law.

You might not expect to be able to pursue both a JD and a second master's degree at another Pitt school-in an area such as bioethics, business, public health, and social work-or at nearby Carnegie Mellon University in less time than it would normally take to complete two consecutive degrees.

You might not expect a 30-credit Master of Studies in Law advanced degree designed for graduates and mid-career professionals seeking to enhance their careers with a versatile alternative to the traditional three-year Juris Doctor degree. Or a Master of Laws degree to provide foreign law graduates with critical training in the common law legal tradition and the U.S. legal system during an academic year. Or even a completely-online Health Care Compliance Online Graduate Certificate Program developed by experts in compliance, law, and online education.

And you might not expect how quickly and the extent to which you'll get to apply those classroom lessons. Assisting the public through work with a clinic (health law, elder law, the environment, immigration, and more); serving as a full-time extern on Capitol Hill or throughout Washington, D.C., as part of the Semester in D.C. Program; interning with a federal agency, nonprofit, or corporation; and participating in a national or international moot court competition are just some of the opportunities you'll have to practice your skills and hone your expertise even before you graduate.

Certificate

Law - Certificate in Disability Legal Studies

The law exerts a powerful and direct impact on the lives of persons with disabilities. It is estimated that close to 20 percent of the US population, nearly 54 million people, have a disability, with a dramatic increase in the proportion since 1970. People with disabilities comprise one of the largest, least employed, and most disenfranchised minority groups in society.

This 15-credit certificate program is a unique effort to provide legal education to those working in the administration of and provision of services in disabilities programs. Administrators, educators, health practitioners, advocates, social workers, architects, city planners, attorneys, and business leaders, among others, could potentially benefit from the program's instructional content.

Requirements

Students enrolled in the certificate program are required to take four core courses.

- LAW 2814 - INTRODUCTION LAW AND LEGAL REASONING
- LAW 5395 - HEALTH LAW AND POLICY
- LAW 5339 - LAW OF DISABILITY DISCRIMINATION
- LAW 5028 - TORTS

Or another first-semester required course if the Certificate Director deems it preferable for a particular student's interest

The remaining 3 credits (minimum) may be satisfied by any of the following (or similar) courses which are offered as instructor availability permits:

- LAW 5464 - BIOETHICS AND LAW
- LAW 5283 - MENTAL HEALTH LAW

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law - Environmental and Energy Law Programs

The School of Law is currently in the process of transitioning its longstanding Environmental Law, Science & Policy Certificate Program into a new Energy & Environmental Law Area of Concentration:

Students who were admitted with the Class of 2016 or earlier classes can choose either to pursue the Certificate or the Area of Concentration. Whichever choice a student makes, the student must register for, and complete the requirements of, the chosen program in order to have completion of that program reflected on their transcripts.

Students who are admitted with the Class of 2017 or later classes may only enroll in the Area of Concentration.

The law around the development, sale, use and preservation of natural resources is the practice framework for energy and environmental lawyers. Pitt Law offers a flexible concentration that allows students to pursue transactional, regulatory, litigation, or policy-based courses in the area of energy & environmental law. Students pursuing this concentration may explore the law of shale plays, utility law, international commercial transactions, pollution control laws, conservation statutes, renewable energy incentives, and climate law and policy.

Energy and environmental law is often practiced in or through interactions with administrative agencies and tribunals. The Concentration exposes students to administrative decisionmaking, statutory interpretation, rulemaking and adjudication, and judicial review of agency decisions.

Area of Concentration

All students must follow the JD degree requirements in order to graduate. To qualify for this concentration, students may pursue this concentration by taking foundational courses in environmental or energy law, 5-6 credits of electives, and 4-6 skills-based credits.

Please note that this program may require that you complete an internship, externship, or other field work at a facility or facilities external to the University and that such facility or facilities may require a criminal background check, an Act 33/34 clearance (if applicable), and perhaps a drug screen to determine whether you are qualified to participate.

- LAW 5340 - ENVIRONMENTAL LAW
- LAW 5038 - ENERGY LAW AND REGULATION
- **Elective Courses (5-6 credits required)**
- LAW 5201 - ADMINISTRATIVE LAW
- LAW 5082 - CLIMATE CHANGE AND THE LAW
- LAW 5295 - EXPERT WITNESS
- LAW 5919 - PGH JOURNAL TECH LAW & POLICY
- LAW 5143 - WATER & SHALE GAS DEVELOPMENT
 - Energy & Environment
 - International Energy Transactions
 - * may be alternately used as a Skills Component
- **Skills Component (4-6 credits required)**
- LAW 5883 - ENVIRONMENTAL LAW CLINIC
 - Environmental Moot Court Competition
 - Energy Law Moot Court Competition
 - Externship in the area of Environmental Law or Energy Law
- LAW 5955 - D.C. EXTERNSHIP

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law - Health Care Compliance Online Graduate Certificate Program

The Health Care Compliance Graduate Certificate Program is a fully online, accelerated 10-month graduate certificate program designed for working professionals. This advanced, accelerated program will support you as you take on more strategic compliance roles. In this program, you will:

- Learn the relevant law, practical applications of compliance, best practices and explore current issues;

- Interact with expert faculty-professors from the School of Law and Graduate School of Public Health, current and former federal regulators, and compliance industry experts;
- Network and collaborate with your peers in other industries and locations through innovative online applications; and
- Work on weekly assignments when and where you choose.

This program is designed for:

- Compliance professionals who wish to enhance their understanding and professional development;
- Attorneys who wish to acquire an appreciation of the compliance industry, client needs, and issues;
- Health care professionals who must understand compliance;
- Industry administrators and leaders; and/or
- Those interested in an exciting career change.

HCC Online course work is asynchronous, meaning there are no scheduled meeting times or locations. You will complete each course in the program within eight weeks, working through weekly modules, based on your own schedule and from any location.

The objectives of the Health Care Compliance Online program are to:

- Provide an understanding of the laws that shape the health care industry in general, and compliance in particular;
- Help students acquire a deeper understanding of the regulatory context of compliance;
- Help students develop the skills and knowledge necessary to identify compliance issues, guide change, and navigate complexity while supporting an ethical culture;
- Identify best practices in compliance management;
- Enhance critical thinking and problem solving skills in a compliance context;
- Help students acquire knowledge and skills to manage conflict;
- Improve students' communication and presentation skills; and
- Facilitate peer-to-peer learning and networking opportunities.

Requirements

Applicants must have earned a baccalaureate degree at an accredited institution. Admissions decisions will be made based on professional experience, academic credentials, and a personal statement. In some instances an interview (online or via phone) may be required.

To apply for the program, complete the Health Care Compliance Online Application available at Pitt Online's website.

Note: Please visit the Pitt Online State Authorization page to be sure your state is authorized to enroll students online. Currently, pursuant to state laws and regulations, online programs at the School of Law are authorized to enroll students from all states with the exception of: Arkansas, Kentucky, Minnesota, Missouri, Oregon, Washington State. Maryland Residents: the University of Pittsburgh is registered with the Maryland Higher Education Commission.

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law - Health Law Certificate

Students enrolled in a degree program at the University of Pittsburgh School of Law can develop an expertise in the rapidly changing, steadily growing field of health law through the Law School's Health Law Certificate Program.

Pitt's program, one of the oldest in the country, is intended to give students interested in health law a basic grounding in the field, complemented by clinical experience and more in-depth study of advanced topics and closely related areas of law. Students are encouraged to obtain the same broad background in law expected of all graduates for the University of Pittsburgh School of Law.

The health care industry comprises more than one-sixth of the entire economy-larger even than the automobile industry. It is also a large consumer of legal services. Law firms ranging from the largest to the smallest provide legal services to hospitals, health insurance companies, nursing homes, physicians' practices, home health agencies, and pharmaceutical and device manufacturers, to name some of the more prominent. In addition, many

federal and state agencies and many of the larger providers of health care goods and services employ a large number of lawyers in house. Although there are a few areas that are substantively unique-such as Medicare and Medicaid reimbursement, certificate of need requirements, and fraud and abuse prohibitions-much of health law involves the application of other areas of law, such as corporate law, employment law, and real estate law, to the health care industry's special circumstances.

The Health Law Program provides students with a strong foundation in health law that will enable them to practice in a variety of contexts, including law firms, health care management firms and insurers, government, and health care institutions. A combination of classroom and skills components acquaints students with everything from complex business and legal transactions, to bioethics and patient care issues, to the variety of legal issues that arise in the operation of a health care institution. Students gain hands-on experience in these areas through their work in the Law School's clinics and practicums, and in externships and summer jobs available in the health care setting.

In addition to courses taught by regular law school faculty, leading practitioners in various fields of health law such as fraud and abuse, business transactions, compliance, disabilities law, nonprofit organizations, and privacy teach courses designed to relate theory to practice. In addition, Current Issues in Health Law, a required course for all Health Law Certificate Program students, is taught by renown practitioners of health law and by health care professionals and executives.

Requirements

The Health Law Certificate Program is an educational program of concentration in health law for students in their second and third years of the JD curriculum. Admission is available to all students entering their second year in the JD program.

Students must complete the following requirements to receive a Certificate in Health Law:

- Complete a minimum of 18 credits in courses in health law, including Health Law and Policy, and Current Issues in Health Law;
- Write their faculty-supervised paper on a topic in health law;
- Complete a clinic, externship, or practicum;
- Take a minimum of two health law electives.

Required Level Courses (register for 2 courses)

- LAW 5731 - CURRENT ISSUES IN HEALTH LAW
- LAW 5395 - HEALTH LAW AND POLICY

Core Elective Courses (register for 2 courses)

- LAW 5464 - BIOETHICS AND LAW *
- LAW 5811 - HLTH CARE BUS TRANSACTIONS *
- LAW 5284 - HEALTH CARE COMPLIANCE *
- LAW 5408 - HEALTH CARE FRAUD AND ABUSE
- LAW 5089 - PUBLIC HEALTH LAW *

Skills Course (register for at least 2 credits)

- LAW 5955 - D.C. EXTERNSHIP
- LAW 5391 - ELDER LAW CLINIC
- LAW 5393 - HEALTH LAW CLINIC
- LAW 5497 - HEALTH LAW PRACTICUM: ADR
- LAW 5538 - MEDICARE & MEDICAID PRACTICUM
- LAW 5875 - SOCIAL SECURITY DISABILITY PRACTICUM
- LAW 5973 - VETERAN'S PRACTICUM

National Health Law Transactional Competition

Additional Electives (register for at least 2 related courses)

- LAW 5251 - BIOTECHNOLOGY LAW
- LAW 5212 - BUS PLANNING, ENTREP & TECHN
- LAW 5135 - COMMERCIALIZING NEW TECS
- LAW 5300 - FOOD AND DRUG LAW
- LAW 5430 - INFO PRIVACY LAW AND PRACTICE
- HPM 2133 - LAW IN PUBLIC HEALTH PRACTICE
Law in Public Health Practicum (GSPH)
- LAW 5339 - LAW OF DISABLTY DISCRIMINATION

- LAW 5283 - MENTAL HEALTH LAW
- LAW 5355 - NON-PROFIT ORGANIZATIONS
- LAW 5313 - REPRDCTV LAW & POLICY

* This course may be used to satisfy the Additional Electives requirement or the Core Elective requirement, but not both.

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law - Intellectual Property, Technology & Innovation Law

The School of Law is transitioning its longstanding Intellectual Property & Technology Law Certificate Program into a new Intellectual Property & Innovation Law Area of Concentration:

Students who were admitted with the Class of 2017 or earlier classes can choose to pursue either the Certificate or the Area of Concentration. Whichever choice a student makes, the student must register for, and complete the requirements of, the chosen program in order to have completion of that program reflected on their transcripts.

Students who are admitted with the Class of 2018 or later classes may only enroll in the Area of Concentration.

The Intellectual Property and Innovation Law Area of Concentration is designed to allow students to obtain a focused introduction to these bodies of law and practice while simultaneously getting a broad grounding in modern law practice generally. No scientific or technical background is required to pursue the Area of Concentration or to practice law in any of the related fields, though students who wish to practice law as a patent prosecutor do need to have an engineering degree or other, similar technical qualification.

Certificate Requirements

All students must follow the JD degree requirements in order to graduate. To qualify for this concentration, students must have a minimum of 14 credits and meet the below course requirements. In addition, students can opt to use one of the following as a Skills Component:

- Giles Sutherland Rich Moot Court Competition
- Cardozo/BMI Moot Court Competition
- Externships with government agencies or other organizations that focus on intellectual property and/or technology law, practice, and/or policy
- Semester in DC externship with a focus on intellectual property and/or technology law, practice, and/or policy.

Foundational Courses (2 courses totaling 5-6 credits required)

- LAW 5260 - INTELLECTUAL PROPERTY
 - LAW 5328 - COPYRIGHT *
 - LAW 5694 - TRADEMARK LAW *
- * may be taken as elective if not taken as a foundational

Elective Courses (5-6 credits required)

- LAW 5895 - ARTIFICIAL INTEL & LGL RES SEM
- LAW 5251 - BIOTECHNOLOGY LAW
- LAW 5212 - BUS PLANNING, ENTREP & TECHN
- LAW 5620 - CYBERSECURITY & PRIVACY REGLN
- LAW 5404 - CYBERSPACE AND THE LAW
- LAW 5862 - FDS INTELCL PROPERTY LAW SEM
- LAW 5547 - INT'L INTELLECTUAL PROPRTY LAW
- LAW 5631 - LAW AND ENTREPRENEURSHIP
- LAW 5717 - TELECOMMUNICATIONS LAW
- LAW 5984 - TRADE SECRETS LAW

Skills Component (4-6 credits required)

- LAW 5135 - COMMERCIALIZING NEW TECS
- LAW 5481 - INTELLCTL PROPERTY LICENSING
- LAW 5839 - LAW ENTRTAINMNT SCL ENTRP PRAC
- LAW 5242 - PATENT LAW PRACTICE
- LAW 5276 - PATENT LITIGATION
- LAW 5695 - TRADEMARK LAW PRACTICE

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law - International and Comparative Law Certificate

The International & Comparative Law Certificate program is intended to provide a foundation for careers and further study in the application of legal regimes to transnational and international relationships. Students should keep in mind that in order to be a good international or comparative lawyer, one must first be a good domestic lawyer. Thus, students in the certificate program are expected and encouraged to obtain the same broad background in law expected of all graduates of the University of Pittsburgh School of Law.

Requirements

To receive the International & Comparative Law Certificate upon graduation, students must complete:

- the required courses (below);
- satisfy the Upper Level Writing Requirement (ULW) with a paper focused on international or comparative law content;
- complete twelve credits of elective courses (below);
- and attenda two designated CILE programs in each of the candidate's 2L and 3L years at the School of Law.

The courses that qualify as international and comparative law electives for purposes of the Certificate requirements are determined annually. In general, a course will satisfy the elective requirement if at least 25 percent of its content is in the areas of international or comparative law. Listed below are courses offered in recent years that have satisfied this elective requirement - you should consult the schedule of courses for any given term to determine what courses are being offered and the credits awarded. For new course offerings, you should contact CILE to determine if a given course will satisfy the elective requirement. Courses in the School of Law that do not have a predominantly international or comparative law subject matter may be approved for elective purposes on a case-by-case basis at the discretion of the CILE Academic Director if, in practice, the student's work in the class included that element in a particularly substantial manner; for example, the student satisfies the written requirement of a "W" course with a paper using a comparative law approach. (Note this would not be permitted if the given paper was also being used to satisfy the ULW requirement.)

Coursework outside the School of Law may also be eligible to satisfy up to 3 elective credits if the CILE Academic Director determines that at least 25 percent of its content is in international topics, that it otherwise is an appropriate course for these purposes, and the use of these credits has been approved by the Associate Dean of the School of Law as qualifying under School policy for the six credits of non-School of Law coursework permitted to be credited towards the JD degree. Proposed elective courses outside the School of Law must be approved in advance by the CILE Academic Director as well as in accordance with general School of Law policies.

Required Courses

- LAW 5226 - INTERNATIONAL LAW
- LAW 5225 - INTERNATNL BUSINESS TRANSACTNS

Example Electives

- LAW 5618 - ARABIC FOR LAWYERS 1
- LAW 5619 - ARABIC FOR LAWYERS 2
- LAW 5124 - THE CIVIL LAW TRADITION IN U.S. COURTS
- LAW 5304 - COMMERCIAL TRANSACTIONS
- LAW 5213 - CONFLICT OF LAWS
- LAW 5299 - CONTEM CHIN LGL INSTN US LAWYR

- LAW 5857 - DIVERSITY COPR GVRNC SEMINAR
- LAW 5252 - INT'L & EURPN LABOR MARKTS LAW
- LAW 5469 - FRENCH FOR LAWYERS 1
- LAW 5471 - FRENCH FOR LAWYERS 2
- LAW 5416 - GERMAN FOR LAWYERS
- LAW 5473 - GERMAN FOR LAWYERS 2
- LAW 5986 - INTERNATIONAL ARBITRATION SEM
- LAW 5043 - INT'L COMMERCIAL ARBITRATION
- LAW 5275 - INT'L & FOREIGN LEGAL RESEARCH
- LAW 5653 - INTERNATIONAL HUMAN RIGHTS
- LAW 5547 - INT'L INTELLECTUAL PROPRTY LAW
- LAW 5858 - INTERNATIONAL SALES SEMINAR
- LAW 5841 - INTERNATIONAL TAX
- LAW 5351 - INTRO TO EUROPEAN UNION LAW
- LAW 5365 - INTRO RUSS & UZBEK LEGAL SYS
- LAW 5866 - ISLAMIC LAW & JURISPRDNC SEM
- LAW 5475 - SPANISH FOR LAWYERS 1
- LAW 5476 - SPANISH FOR LAWYERS 2
- LAW 5694 - TRADEMARK LAW
- LAW 5453 - TRANSNATIONAL LITIGATION
- LAW 5253 - TRANAT LITIGATN CRT AROND WRLD

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law - J.G. Civil Litigation Certificate Program

Are you drawn to the real life drama of the courtroom? Do you have dreams of becoming a trial attorney? If so, then the University of Pittsburgh School of Law (PittLaw) may just be the place for you. Through its unique John P. Gismondi Civil Litigation Certificate Program, PittLaw can provide you with a unique curriculum devoted exclusively to training the trial lawyers of tomorrow.

During the first year of law school, all students take the same courses. Those students who wish to register for the Gismondi program, do so at the beginning of their second year of law school. During their second and third years, all students enrolled in the certificate program will take certain required foundational core courses, a clinic or practicum, as well as a number of specialized classes. The heart of the Gismondi program is a collection of specialized courses taught exclusively by a pre eminent group of practicing trial attorneys whose insight and experience offer an invaluable perspective in the classroom. Together with our core courses, these select courses provide a level and depth of litigation training unlike that available at most any other law school.

In each of these specialized skills courses, class size is kept small so as to enrich the learning experience. Students not only are taught legal rules and principles in a typical lecture format, but more importantly, they are assigned to "role play" in a variety of real world litigation scenarios, each designed to develop specific skills which are essential to successful trial work.

Students complete their training by taking a required litigation skills clinic or practicum selected from this group of options: Civil Practice Clinic (Health Law or Elder Law), Tax Clinic, Immigration Clinic, Environmental Law Clinic, PA Practice Practicum, Lawyering III Clinic, Unemployment Compensation Practicum, Criminal Prosecution Practicum, Veterans Practicum or Family Law Clinic. In all of these clinics, students have the potential of representing real clients in actual court proceedings.

The students in the John P. Gismondi Civil Litigation Certificate Program will complete their law school education having developed a set of skills which better prepares them to do courtroom work than traditional law school graduates, and that advantage, in turn, makes the Gismondi certificate students more attractive to law firms seeking to hire young and enthusiastic litigation associates.

Certificate Requirements

All students must follow the JD degree requirements in order to graduate. To qualify for this certificate, students must complete the Core Courses and Required Specialized Skills Courses listed below. In addition, students must take a litigation skills clinic or practicum, or a combination thereof, approved by the Director of Civil Litigation Program for a minimum of four credits.

Students must participate in the Murray S. Love Trial Moot Court Program during their second or third year or the Interscholastic Mock Trial Team (enroll in the attendant seminar Mock Trial Strategy and Practice).

Students must participate in the Program's Court Observation. Students will spend a day organized by the Academy of Trial Lawyers of Allegheny County observing court proceedings. Students will fulfill this requirement in their third year. Students must sign up with the Program Director in order to participate on one of these dates.

Students are required to complete an Upper Level Writing Requirement of 2 credits. Students may satisfy this requirement by taking any seminar or undertaking an independent study project if the paper they write is on an unresolved litigation related issue and the issue is approved by the Director of the Civil Litigation Certificate Program and the faculty member supervising the seminar or independent study project. The paper must comply also with applicable requirements of the professor and the Student Handbook relating to the Upper Level Writing Requirement.

- LAW 5103 - EVIDENCE
- LAW 5407 - TRIAL ADVOCACY
- Or
- LAW 5616 - MOCK TRIAL STRATEGY AND PRA
- LAW 5129 - FEDL COURTS & FEDL LITIGATION
- Or
- Students must take four of these five courses:
- LAW 5320 - LITIGATION STRATEGY & PLANNING
- LAW 5295 - EXPERT WITNESS
- LAW 5236 - PRE-TRIAL PRA-PLEADINGS DISCV
- LAW 5223 - ADVANCED TRIAL EVIDENCE
- LAW 5197 - ADVANCED TORTS

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law - Public Policy Concentration

You can earn the Public Policy Concentration by completing the Policy Track of the Semester in DC Program in the spring semester of your 2L or 3L year.

While law students learn many skills that are useful for policy-related work, they do not typically learn how to apply those skills in a policy context, for example by analyzing a government agency report, mapping the stakeholders on a particular issue, preparing questions for a Senate hearing, writing a short policy brief, or developing an advocacy campaign.

The Semester in DC Program Policy Track is designed to fill this gap by teaching you how to apply your legal advocacy, research, and writing skills in the policy context, so that you can successfully engage in policy-related work after graduation. The Policy Track is offered each spring semester jointly with the Graduate School of Public and International Affairs (GSPIA) at Pitt's Washington Center in downtown Washington, DC.

Highlights of the Semester in DC Program Policy Track include:

- A policy-related externship with a government or nonprofit organization in Washington, DC
- Classes that are focused on learning from policy experts who regularly visit as guest speakers and on attaining pragmatic policy advocacy, analysis, and writing skills
- Joint classes with GSPIA students, so that both policy and law perspectives are represented in each class
- An individual alumni mentor for each student, as well as connections with Law and GSPIA's alumni network of hundreds of attorneys and policy practitioners in the Washington, DC area

Semester in DC Program alumni have gone on to do all kinds of policy work after graduation, including positions:

- With the U.S. Departments of State and Health and Human Services
- With U.S. Senate and House offices
- In healthcare policy for Johnson & Johnson, the Maryland Department of Health, and the Legal Resource Center for Public Health Policy
- In environmental policy for the Sierra Club, the Environmental Investigation Agency, and Voices for Progress
- In child/family policy for the Children's Law Center and First Focus
- In labor policy for the AFL-CIO

Requirements

You can earn the Public Policy Concentration by completing the Policy Track of the Semester in DC Program after taking the required 1L Legislation and Regulation course.

The Public Policy Concentration requires students to earn 15 credits in the policy-related classes listed below. Students will have already completed the 3-credit foundational course in Legislation and Regulation in their 1L year. Students can complete the 12 remaining credits by participating in the Semester in DC Program Policy Track, which offers the listed courses. Only the courses listed below may be used to fulfill the requirements of this concentration; other courses may not be substituted.

Foundational Course

- LAW 5032 - LEGISLATION AND REGULATION

Electives (up to 7 credits)

- LAW 5877 - LAW MAKING SEMINAR
- LAW 5666 - LOBBYING AND ADVOCACY
- LAW 5668 - POLICY COLLOQUIUM

or

- LAW 5954 - D.C. SEMINAR

(Students may apply 1 credit from the DC Seminar to the Public Policy Concentration if their seminar papers are approved in advance as policy-focused.)

Skills Component (6 credits required)

- LAW 5667 - POLICY EXTERNSHIP *
- LAW 5955 - D.C. EXTERNSHIP *

* must be approved in advance as policy focused.

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law - Tax Law Program

The Area of Concentration in Tax Law is intended to provide students with a solid foundation in tax law that can be used either to enter a career in tax law, as a basis for pursuing further study in tax law, or as an adjunct to a career in another area of law. Tax law is unique in that it intersects with every area of the law—from energy and environmental law to corporate law to health law to personal injury law, just to name a few examples. Knowledge of tax law is thus important whether one wishes to specialize in tax law or whether one wishes to gain a deeper knowledge of tax law to improve skills in another area of law (e.g., in advising corporations, partnerships, and other businesses).

Students may pursue this concentration by taking a foundational course in tax law, six credits of elective courses, and three credits of skills-based courses.

Area of Concentration

All students must follow the JD degree requirements in order to graduate. To qualify for this concentration, the Tax Law Area of Concentration requires a minimum of 13 credits. The requirements for the program are divided into three categories—foundational, elective, and skills. Students must take a foundational course in tax law, 6 credits from among the listed elective courses, and 3 credits from among the listed skills courses.

Foundational Course (Required)

- LAW 5105 - FEDERAL INCOME TAXATION

Elective Courses (6 credits required)

- LAW 5817 - CORPORATE TAXATION
- LAW 5371 - PARTNERSHIP TAXATION
- LAW 5259 - ESTATE AND GIFT TAX
- LAW 5841 - INTERNATIONAL TAX *
- LAW 5325 - FEDERAL TAX PRACTICE & PROCEDURE
- LAW 5355 - NON-PROFIT ORGANIZATIONS
- LAW 5273 - STATE AND LOCAL TAX
- LAW 5511 - TAX LAW & POLICY SEMINAR
- LAW 5931 - PITTSBURGH TAX REVIEW

Skills Component (3 credits required)

- LAW 5425 - LOW-INCOME TAX CLINIC
Tax Law Moot Court Competition
- LAW 5414 - ESTATE PLANNING
Externship in the area of tax law
- LAW 5955 - D.C. EXTERNSHIP
* may be alternately used as a Skills Component

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Doctoral

Law - Juridical Science, SJD

Program Information

The Doctor of Juridical Science (SJD) is the Law School's most advanced degree, which is designed for legal academics who wish to pursue advanced independent study, research and writing. The Law School's SJD program offers candidates the opportunity to become active members of a vibrant legal community.

Degree Requirements

The SJD is a research degree. There is no formal requirement for candidates to pursue course work, whether for credit or otherwise, other than required participation in a non-credit, ungraded colloquium for SJD students during their first year in the program. However, a candidate may be required by his advisor to take or audit courses and participate in seminars and discussions which will further the student's understanding of his or her field of knowledge and its relation to other fields. Each candidate will be allowed 2-4 years to complete the program, the first year of which must be spent in residency at the University of Pittsburgh School of Law. The year of residency is in addition to the LLM year for Pitt Law LLM graduates. A candidate is required to conduct rigorous research and produce an original dissertation that will contribute significantly to legal scholarship and further understanding of the law. Specifically, a candidate is required to submit a dissertation overview, defend that overview, submit a doctoral dissertation, and successfully defend the dissertation. The SJD degree must be completed under the supervision of a faculty member who has consented to serve as the faculty advisor.

Joint Degree

Law and Arts Management (Carnegie Mellon), JD/MAM

The University of Pittsburgh School of Law and Heinz College offer a joint degree program designed to train students for careers in which arts management and law overlap. This program, spanning four years, prepares you for careers in which arts management and law overlap. You must satisfy both schools' degree requirements, but some credit is given by each school for completing the other school's program.

The joint degree program is designed to be completed in eight semesters over four academic years instead of the five years required if pursued separately. Students interested in the joint degree program can pursue both programs simultaneously. During the first year, students study at either the Heinz School or the School of Law, taking the standard first-year curriculum of the respective school. The second year involves full-time study at the other school. For the third and fourth years, students take courses at both schools. In order to graduate with both degrees, students have to fulfill both schools' degree requirements.

Contact Information

University of Pittsburgh School of Law
Office of Admissions
3900 Forbes Avenue
Pittsburgh, PA 15260
(412) 648-1413
admitlaw@pitt.edu

Faculty Advisor
Michael J. Madison
Professor of Law
University of Pittsburgh School of Law
3900 Forbes Avenue
Pittsburgh, PA 15260
(412) 648-7855
madison@pitt.edu

School of Public Policy & Management at Heinz College, Carnegie Mellon
5000 Forbes Avenue
Pittsburgh, PA 15213
(412) 268-2164
(800) 977-3498
hznadmit@andrew.cmu.edu

Law Arts Management Requirements

The Heinz School of Public Policy and Management and the Law School have different degree requirements. Carnegie Mellon courses are counted in units and University of Pittsburgh courses are counted in credits. A 12-unit course is the equivalent of a 4-credit course. To fulfill the program requirements for the Law School, students have to complete 88 credits while the Heinz School requires 198 units for the MAM degree. Students in the joint degree program are able to transfer 30 units to the Heinz School degree after completing their JD degree and 14 credits to the JD degree after completing their MAM degree.

Students are required to register for a minimum of one class per semester at Heinz College during years 3 and 4 in order to qualify for the transfer of credits between institutions. A full listing of the requirements for graduation from the University of Pittsburgh School of Law can be found on the Graduation Requirements page.

Before selecting courses for each program, students are required to meet with their Academic Advisors at both programs to map out a course of study. In addition to the course work for both programs, Heinz School students are required to complete a summer internship after their first year at the Heinz School. Students can receive assistance from the Career Services Office in securing an internship.

Since degrees in the joint programs are awarded concurrently, it is important to note that a student who resigns from one program will be subject to all the requirements for graduation from the remaining degree program.

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law and Bioethics, JD/MA

JD/MA, University of Pittsburgh School of Arts and Sciences and the Center for Bioethics and Health Law

The School of Law and the School of Arts and Sciences (A&S) offer a joint degree program in law and bioethics. Graduates of the program receive the Juris Doctor (JD) degree, the basic professional degree in law, and the Master of Arts (MA) degree from FAS, in bioethics. The joint degree program is directed by Alan Meisel, JD, in cooperation with Lisa S. Parker, PhD, who directs the interdisciplinary Master of Arts in Bioethics.

The joint degree program has been established in recognition of the extensive and increasing overlap between law and bioethics. The objective of this educational program is to prepare graduates with an interdisciplinary background in law and bioethics so they can address those issues and situations that require knowledge of and expertise in both. Graduates will be academically prepared for professional roles as bioethicists in health care institutions, in public policy working for government or philanthropic organizations, or in the practice of law, for example, giving counsel to health care institutions.

Contact Information

University of Pittsburgh School of Law
Professor Alan Meisel
3900 Forbes Avenue
Pittsburgh, PA 15260
(412) 648-7120
meisel@law.pitt.edu

Requirements

The sequence of the curriculum is designed to allow students maximum flexibility. Students may either take the entire first-year School of Law curriculum intact, or they may take one bioethics course - Theoretical Foundations of Applied Ethics - in place of Criminal Law (which would then be taken in their second year of law school). Students should discuss this plan of study with Prof. Alan Meisel, Director of this joint program.

Writing Requirements

The writing requirements for both degrees are simultaneously satisfied by completion of the master's thesis requirement in a subject in the field of law and bioethics.

Practica

The Clinical Practica ensure that students will be comfortable in and knowledgeable about the clinical setting by learning how to identify the normative issues in clinical cases and to be able to give practical advice regarding difficult bioethical dilemmas. Students are scheduled for six credits of clinically-based work, which may be reduced to three for students with previous health care training. In Clinical Practica I and II students acquire familiarity with the clinical setting by

- rounding in specified services with residents, attending physicians, and other health care professionals, including one night on call per service
- participating in twice weekly seminars on medical sociology and clinical ethics and to fulfill those seminar requirements of reading, writing, discussion, and case presentations
- observing ethics consultations and clinical ethics teaching sessions
- completing a self-paced programmed text covering basic medical terminology

In Clinical Practicum II, students participate in an intensive four-week rotation in the clinical area of their choice, allowing in-depth development in an area of clinical medicine. Students should relate this intensive clinical experience to their thesis topic.

In addition to meeting the specifically required coursework for the JD degree and the MA degree, students will select electives from among an array of courses available in the two separate degree programs and in other parts of the University. For an up-to-date list of law school courses considered to be especially appropriate for students in this joint degree program, students should consult the courses listed as electives for the Health Law Certificate Program.

Students in the joint law and bioethics program will ordinarily fulfill the requirements of the Health Law Certificate Program in the law school and may obtain this certificate concurrent with the joint degree.

Advising

Students are required to consult with the Director of the Joint Degree Program during or prior to the spring registration period each year in order to assure that they meet all requirements of the Joint Degree program.

For Students Interested in Practicing in New York

Please be advised that students who wish to be admitted to practice in New York should not enroll in this joint degree program unless they limit the number of credits from outside the Law School that count toward their JD degree to no more than 12. See New York Rules of Court § 520(c)(5).

Credits

Students enrolled in the joint degree program accomplish in three to four years what would take four or more years if the two degrees were obtained separately. The total required number of credits 100, as compared with 118 credits if the two degrees were taken separately. The 100 credits include 34 credits of specifically prescribed* law courses, the Bioethics and Health Law Clinical Practicum (3 credits), and 18 specifically prescribed credits in bioethics. Within the remaining 45 credits, students must satisfy requirements for their law degree, take a course from the list of Restricted Elective courses for the bioethics degree, and take at least 3 credits in a course relevant to bioethics (either in the law school or not).

Taken as a joint degree program, the two degrees are ordinarily earned in 7 semesters and one summer.

During at least 5 semesters, joint degree students must be coded by the University Registrar as "primary law." During these semesters, they pay tuition at the Law School rate. They must enroll in at least 10 credits of law school courses.

Specifically Prescribed Law Courses

- LAW 5020 - CONTRACTS
- LAW 5046 - CRIMINAL LAW
- LAW 5720 - LEGAL ANALYSIS AND WRITING (Fall Term)
- LAW 5076 - LEGAL ANALYSIS AND WRITING (Spring Term)
- LAW 5028 - TORTS
- LAW 5033 - CIVIL PROCEDURE
- LAW 5101 - CONSTITUTIONAL LAW
- LAW 5032 - LEGISLATION AND REGULATION
- LAW 5024 - PROPERTY
- LAW 5061 - PITT LAW ACADEMY (Fall Term)
- LAW 5062 - PITT LAW ACADEMY (Spring Term)
- BIOETH 2604 - CLINICAL PRACTICUM 1
- BIOETH 2904 - MA THESIS IN BIOETHICS
- BIOETH 2606 - CLINICAL PRACTICUM 2
- BIOETH 2664 - BIOETHICS
- BIOETH 2658 - PHILOSOPHY OF MEDICINE
- BIOETH 2661 - THEORETICAL FOUNDATIONS

Additional credits to complete the graduation requirement may include courses service as a bioethics restricted elective or a bioethics elective.

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law and Business Administration (Carnegie Mellon), JD/MBA

The daily interaction of Law and Business in our society presents attorneys, entrepreneurs, and other professionals with a diverse set of challenges arising from public and private institutions, policies, and practices. A joint degree program can provide valuable interdisciplinary skills to tackle these challenges. To prepare the next generation of leaders, the University of Pittsburgh School of Law offers an outstanding joint degree program in Law and Business with a unique option.

Students may combine a Juris Doctor (JD) degree with a Master in Business Administration (MBA) from Carnegie Mellon University Tepper School of Business, which is in the top 20 of all U.S. business schools according to the U.S. News rankings. The JD/MBA program enables students to receive integrated training in Law and Business while reducing the amount of time ordinarily necessary to earn the two degrees from five years to four years.

Requirements

Students in the JD/MBA program complete the joint degree in either eight (8), nine (9), or ten (10) semesters. During the first four (4) semesters of the program, students must enroll full-time for one (1) entire year at the School of Law and for one (1) entire year at the appropriate School of Business. Students have an option of enrolling either at the School of Law or the School of Business for the first-year of the program. During the third- and fourth-years of the program students enroll in courses at both schools, subject only to availability and each school's respective upper-level requirements. To graduate from the Law School, students in the JD/MBA program must have five semesters of full-time enrollment (minimum of 10 credits per semester) at the Law School (rather than the six that is normally required).

School of Law

Details about the first-year program at the School of Law can be found on the First-Year Curriculum page. A full listing of the requirements for graduation from the University of Pittsburgh School of Law can be found on the Graduation Requirements page.

Tepper School of Business

To graduate with a JD/Tepper MBA degree students must acquire a total 88 credits from the School of Law and 64 credits (or 192 units) from Tepper. However, completing the MBA degree entitles the student to 15 credits of advanced standing at the School of Law, resulting in an actual total of 73 credits; and completing the JD degree entitles the student to 10 credits (or 30 units) at Tepper, resulting in an actual total of 54 credits (or 162 units). This means that, after a year at the School of Law and a year at Tepper, a student must acquire at least 40 additional credits from the School of Law and 22 credits (or 66 units) in electives from Tepper to graduate with a JD/MBA.

More information can be found on their website.

For Students Interested in Practicing in New York

Please be advised that students who wish to be admitted to practice in New York should not enroll in a joint degree program that entitles the student to more than 12 credits of advance standing at the Law School (i.e., the JD/MBA with the Tepper School of Business). See New York Rules of Court § 520.3(c)(5).

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law and Business Administration, JD/MBA

The daily interaction of Law and Business in our society presents attorneys, entrepreneurs, and other professionals with a diverse set of challenges arising from public and private institutions, policies, and practices. A joint degree program can provide valuable interdisciplinary skills to tackle these challenges. To prepare the next generation of leaders, the University of Pittsburgh School of Law offers an outstanding joint degree program in Law and Business with a unique option.

Students may combine a Juris Doctor (JD) degree with a Master in Business Administration (MBA) from the University of Pittsburgh Katz Graduate School of Business, which is in the top 30 of U.S. public business schools according to the U.S. News rankings. The JD/MBA program enables students to receive integrated training in Law and Business while reducing the amount of time ordinarily necessary to earn the two degrees from five years to four years.

Requirements

Students in the JD/MBA program complete the joint degree in either eight (8), nine (9), or ten (10) semesters. During the first four (4) semesters of the program, students must enroll full-time for one (1) entire year at the School of Law and for one (1) entire year at the appropriate School of Business. Students have an option of enrolling either at the School of Law or the School of Business for the first-year of the program. During the third- and fourth-years of the program students enroll in courses at both schools, subject only to availability and each school's respective upper-level requirements. To graduate from the Law School, students in the JD/MBA program must have five semesters of full-time enrollment (minimum of 10 credits per semester) at the Law School (rather than the six that is normally required).

School of Law

Details about the first-year program at the School of Law can be found on the [First-Year Curriculum page](#). A full listing of the requirements for graduation from the University of Pittsburgh School of Law can be found on the [Graduation Requirements page](#).

Katz School of Business

To graduate with a JD/Katz MBA degree students must acquire a total of 76 credits from the School of Law and 39 credits from Katz. This means that, after a year at the School of Law and a year at Katz, a student must normally acquire at least 43 additional credits from the School of Law and 3 credits from Katz to graduate with a JD/MBA.

More information can be found on their website.

For Students Interested in Practicing in New York

Please be advised that students who wish to be admitted to practice in New York should not enroll in a joint degree program that entitles the student to more than 12 credits of advance standing at the Law School (i.e., the JD/MBA with the Tepper School of Business). See New York Rules of Court § 520.3(c)(5).

Note

For detailed term-specific course descriptions, please go to the [Schedule of Classes Course Lists](#) on the Law School web site.

Law and Information Security Policy (Carnegie Mellon), JD/MSISPM

Building on their longstanding and successful partnership, the University of Pittsburgh School of Law and Heinz College offer a joint degree program designed to train students for careers in which management, information security, and law overlap. This joint degree offering is particularly beneficial to many students' careers because legal considerations affect many management and policy decisions, and the practice of law is enhanced by a clear understanding of the policy and security concerns facing the public, private, and nonprofit sectors. Participants in the program will emerge with a broad knowledge of the fundamental intersections of law, government, privacy and information security, and management. The fields of

cybersecurity, information privacy, intellectual property law, cybercrime, and other IT-related sectors are growing rapidly. There are many job opportunities in this emerging space. Many of those jobs have legal dimensions and will be filled by people with legal training. Graduates of the joint degree program will be better prepared to compete for those jobs and to succeed in them because of their broader, interdisciplinary training. Furthermore, the interdisciplinary nature of this program allows for practical skill sets to solve economic and social problems that require technological, managerial, and legal expertise.

The joint-degree program is designed to be completed in eight semesters over four academic years instead of the five years required if pursued separately. Students interested in the joint degree program can pursue both programs simultaneously. During the first year, students study at either the Heinz School or the School of Law, taking the standard first-year curriculum of the respective school. The second year involves full-time study at the other school. For the third and fourth years, students take courses at both schools. In order to graduate with both degrees, students have to fulfill both schools' degree requirements.

Contact Information

University of Pittsburgh School of Law
Office of Admissions
3900 Forbes Avenue
Pittsburgh, PA 15260
(412) 648-1413
admitlaw@pitt.edu

Faculty Advisor
David Thaw
Assistant Professor of Law
University of Pittsburgh School of Law
3900 Forbes Avenue
Pittsburgh, PA 15260
(412) 648-7855
dbthaw@pitt.edu

School of Public Policy & Management at Heinz College, Carnegie Mellon
5000 Forbes Avenue
Pittsburgh, PA 15213
(412) 268-2164
(800) 977-3498
hznadmit@andrew.cmu.edu

Curriculum & Requirements

The Heinz School of Public Policy and Management and the Law School have different degree requirements. Carnegie Mellon courses are counted in units and University of Pittsburgh courses are counted in credits. A 12-unit course is the equivalent of a 4-credit course. To fulfill the program requirements for the Law School, students have to complete 88 credits while the Heinz School requires 198 units for the MSISPM degree. Students in the joint degree program are able to transfer 30 units to the Heinz School degree after completing their JD degree and 14 credits to the JD degree after completing their MSISPM degree.

Students are required to register for a minimum of one class per semester at Heinz College during years 3 and 4 in order to qualify for the transfer of credits between institutions. A full listing of the requirements for graduation from the University of Pittsburgh School of Law can be found on the [Graduation Requirements page](#).

Before selecting courses for each program, students are required to meet with their Academic Advisors at both programs to map out a course of study. In addition to the course work for both programs, Heinz School students are required to complete a summer internship after their first year at the Heinz School. Students can receive assistance from the Career Services Office in securing an internship.

Since degrees in the joint programs are awarded concurrently, it is important to note that a student who resigns from one program will be subject to all the requirements for graduation from the remaining degree program.

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law and International Affairs, JD/MPIA

This program provides rigorous, integrated training for students preparing for a professional career that combines law and public and international affairs. Increasingly, lawyers in the public and nonprofit private sectors work in managerial and policy-making capacities for which legal training alone does not prepare them. At the same time, legal considerations impinge more than ever on the work of public managers and planners, although most of them have had no exposure to legal training. Students in the joint-degree program gain a broadened knowledge base and a cross disciplinary approach to solving problems involving the intersection of law, policy, and management. They also develop more marketable professional skills than are usually acquired through single-degree programs. Professionals trained in both law and public and international affairs thus enjoy expanded career opportunities. The University of Pittsburgh's program is unique because of the range of master's degree options available.

Students in the MPIA degree program pursue majors in Global Political Economy or Security and Intelligence Studies. Students interested in international development have a choice of two major fields, which include Development Planning and Environmental Sustainability or Non-Governmental Organizations (NGOs) and Civil Society.

Contact

University of Pittsburgh School of Law
Office of Admissions and Financial Aid
3900 Forbes Avenue
Pittsburgh, PA 15260
(412) 648-1413
admitlaw@pitt.edu

Faculty Advisor (JD/MPIA and JD/MID)
Ronald A. Brand
Chancellor Mark A. Nordenberg University Professor
Director, Center for International Legal Education
University of Pittsburgh School of Law
3900 Forbes Avenue
Pittsburgh, PA 15260
(412) 648-1307
rbrand@pitt.edu

University of Pittsburgh Graduate School of Public and International Affairs
3601 Wesley W. Posvar Hall
Pittsburgh, PA 15260
gspia@pitt.edu

Curriculum & Requirements

The structuring of this four-year degree program is flexible. A student may begin study in either school. The only requirement in this connection is that the first year in the School of Law be taken in its entirety, with no outside courses. GSPIA also expects joint-degree program students to complete the required master's degree core courses early in their program in GSPIA.

Degrees in the joint-degree program are awarded concurrently. Therefore, it is important to note that a student who resigns from one program and elects to remain in the other will be subject to all the requirements of that particular degree program. The previously described arrangement for awarding advanced-standing credits will no longer be in effect.

Each student must satisfy both schools' requirements as modified by participation in the joint-degree program. The credit requirements are as follows:

Program	Joint Degree Credits
Juris Doctor (JD)	79 Credits
Master of Public and International Affairs	36 Credits
Total Credits for Joint Degree	115 Credits

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law and International Development, JD/MID

This program provides rigorous, integrated training for students preparing for a professional career that combines law and public and international affairs. Increasingly, lawyers in the public and nonprofit private sectors work in managerial and policy-making capacities for which legal training alone does not prepare them. At the same time, legal considerations impinge more than ever on the work of public managers and planners, although most of them have had no exposure to legal training. Students in the joint-degree program gain a broadened knowledge base and a cross disciplinary approach to solving problems involving the intersection of law, policy, and management. They also develop more marketable professional skills than are usually acquired through single-degree programs. Professionals trained in both law and public and international affairs thus enjoy expanded career opportunities. The University of Pittsburgh's program is unique because of the range of master's degree options available.

Contact

University of Pittsburgh School of Law
Office of Admissions and Financial Aid
3900 Forbes Avenue
Pittsburgh, PA 15260
(412) 648-1413
admitlaw@pitt.edu

Faculty Advisor (JD/MPIA and JD/MID)
Ronald A. Brand
Chancellor Mark A. Nordenberg University Professor
Director, Center for International Legal Education
University of Pittsburgh School of Law
3900 Forbes Avenue
Pittsburgh, PA 15260
(412) 648-1307
rbrand@pitt.edu

University of Pittsburgh Graduate School of Public and International Affairs
3601 Wesley W. Posvar Hall
Pittsburgh, PA 15260
gspia@pitt.edu

Curriculum & Requirements

The structuring of this four-year degree program is flexible. A student may begin study in either school. The only requirement in this connection is that the first year in the School of Law be taken in its entirety, with no outside courses. GSPIA also expects joint-degree program students to complete the required master's degree core courses early in their program in GSPIA.

Degrees in the joint-degree program are awarded concurrently. Therefore, it is important to note that a student who resigns from one program and elects to remain in the other will be subject to all the requirements of that particular degree program. The previously described arrangement for awarding advanced-standing credits will no longer be in effect.

Each student must satisfy both schools' requirements as modified by participation in the joint-degree program. The credit requirements are as follows:

Program	Joint Degree Credits
Juris Doctor (JD)	79 Credits
Master of International Development	36 Credits
Total Credits for Joint Degree	115 Credits

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law and Public Administration, JD/MPA

This program provides rigorous, integrated training for students preparing for a professional career that combines law and public and international affairs. Increasingly, lawyers in the public and nonprofit private sectors work in managerial and policy-making capacities for which legal training alone does not prepare them. At the same time, legal considerations impinge more than ever on the work of public managers and planners, although most of them have had no exposure to legal training. Students in the joint-degree program gain a broadened knowledge base and a cross disciplinary approach to solving problems involving the intersection of law, policy, and management. They also develop more marketable professional skills than are usually acquired through single-degree programs. Professionals trained in both law and public and international affairs thus enjoy expanded career opportunities. The University of Pittsburgh's program is unique because of the range of master's degree options available.

The MPA degree offers three fields of study, which includes majors in Urban and Regional Affairs, Public and Nonprofit Management, and Policy Research and Analysis.

Contact

University of Pittsburgh School of Law
Office of Admissions and Financial Aid
3900 Forbes Avenue
Pittsburgh, PA 15260
(412) 648-1413
admitlaw@pitt.edu

Faculty Advisor (JD/MPA)
Elena A. Baylis
Associate Professor of Law
University of Pittsburgh School of Law
3900 Forbes Avenue
Pittsburgh, PA 15260
(412) 867-8690
ebaylis@pitt.edu

University of Pittsburgh Graduate School of Public and International Affairs
3601 Wesley W. Posvar Hall
Pittsburgh, PA 15260
gspia@pitt.edu

Curriculum & Requirements

The structuring of this four-year degree program is flexible. A student may begin study in either school. The only requirement in this connection is that the first year in the School of Law be taken in its entirety, with no outside courses. GSPIA also expects joint-degree program students to complete the required master's degree core courses early in their program in GSPIA.

Degrees in the joint-degree program are awarded concurrently. Therefore, it is important to note that a student who resigns from one program and elects to remain in the other will be subject to all the requirements of that particular degree program. The previously described arrangement for awarding advanced-standing credits will no longer be in effect.

Each student must satisfy both schools' requirements as modified by participation in the joint-degree program. The credit requirements are as follows:

Program	Joint Degree Credits
Juris Doctor (JD)	79 Credits
Master of Public Administration	36 Credits
Total Credits for Joint Degree	115 Credits

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law and Public Health, JD/MPH

The Graduate School of Public Health, Health Policy & Management and the School of Law at the University of Pittsburgh offer a cooperative educational program, through which students may earn both the Juris Doctor (JD) degree, the first professional degree in law, and the Master of Public Health (MPH) degree, the primary professional degree in public health. Students have the option of selecting between two areas of concentration pursuing their MPH degree: health policy and management or public health sciences. The joint-degree program has been established in recognition of extensive and increasing connections between law and the broad range of health services, both public and private, in the United States.

The objective of this specialized educational program is to provide graduates with an inter-disciplinary education to prepare them to address issues and situations that affect personal and public health. Graduates of this joint-degree program are academically prepared for the practice of law with private clients, serving as house counsel with health organizations and systems, and as attorneys representing state, county and local health departments. The threat of bioterrorism and the need to balance both individual rights and public protection in establishing public health preparedness has made public health law an even more vital professional focus for attorneys.

Faculty Advisors

Elizabeth Van Nostrand, JD
Visiting Assistant Professor
University of Pittsburgh Graduate School of Public Health
Department of Health Policy & Management
130 DeSoto Street, A734
Pittsburgh, PA 15261
schmidte@pitt.edu

Mary Crossley, JD
Professor of Law
University of Pittsburgh
School of Law
3900 Forbes Avenue
Pittsburgh, PA 15260

(412) 648-5300
crossley@pitt.edu

For Additional Information

For information regarding entrance examinations, tuition and financial aid, writing requirements and field experience, please visit the GSPH website.

Requirements

Students enrolled in the joint-degree program receive integrated training in law and public health. Students must complete 37 credits in the MPH curriculum, and 8 JD credits will be applied toward the MPH degree in order to meet the required 45 credits for the MPH degree. Students must complete 76 credits in the JD curriculum, and 12 MPH credits will be applied toward the JD degree in order to meet the required 88 credits for the JD degree. The first year of law school must be completed in a single academic year before embarking on studies in public health. Neither degree may be granted prior to the fulfillment of all requirements for the joint-degree program.

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law and Public Policy and Management (Carnegie Mellon), JD/MSPPM

The University of Pittsburgh School of Law and Heinz College offer a joint-degree program designed to train students for careers in which management, public policy and law overlap. A successful partnership that has been in existence for over a decade, this program offers students a comprehensive education that marries the analytic and quantitative strength of the Heinz School with the rigorous legal training afforded by the School of Law. This joint degree offering is particularly beneficial to many students' careers since legal considerations affect many public management and policy decisions, and the practice of law is enhanced by a clear understanding of public policy and management concerns. Participants of the program emerge with a broad knowledge of the fundamental intersections of law, government, policy analysis and management. Furthermore, the interdisciplinary nature of this program allows for practical skill sets to solve economic and social problems that require technological, managerial, and legal expertise.

The joint-degree program is designed to be completed in eight semesters over four academic years instead of the five years required if pursued separately. Students interested in the joint degree program can pursue both programs simultaneously. During the first year, students study at either the Heinz School or the School of Law, taking the standard first-year curriculum of the respective school. The second year involves full-time study at the other school. For the third and fourth years, students take courses at both schools. In order to graduate with both degrees, students have to fulfill both schools' degree requirements.

CONTACT INFORMATION

University of Pittsburgh School of Law

Office of Admissions
3900 Forbes Avenue
Pittsburgh, PA 15260
(412) 648-1413
admitlaw@pitt.edu

Faculty Advisor

Michael J. Madison
Professor of Law
University of Pittsburgh School of Law
3900 Forbes Avenue
Pittsburgh, PA 15260
(412) 648-7855
madison@pitt.edu

School of Public Policy & Management at Heinz College, Carnegie Mellon
5000 Forbes Avenue
Pittsburgh, PA 15213
(412) 268-2164
(800) 977-3498
hznadmit@andrew.cmu.edu

Curriculum & Requirements

The Heinz School of Public Policy and Management and the Law School have different degree requirements. Carnegie Mellon courses are counted in units and University of Pittsburgh courses are counted in credits. A 12-unit course is the equivalent of a 4-credit course. To fulfill the program requirements for the Law School, students have to complete 88 credits while the Heinz School requires 198 units for the MSPPM degree. Students in the joint degree program are able to transfer 30 units to the Heinz School degree after completing their JD degree and 14 credits to the JD degree after completing their MSPPM degree.

Students are required to register for a minimum of one class per semester at Heinz College during years 3 and 4 in order to qualify for the transfer of credits between institutions. A full listing of the requirements for graduation from the University of Pittsburgh School of Law can be found on the Graduation Requirements page.

Before selecting courses for each program, students are required to meet with their Academic Advisors at both programs to map out a course of study. In addition to the course work for both programs, Heinz School students are required to complete a summer internship after their first year at the Heinz School. Students can receive assistance from the Career Services Office in securing an internship.

Since degrees in the joint programs are awarded concurrently, it is important to note that a student who resigns from one program will be subject to all the requirements for graduation from the remaining degree program.

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law and Social Work, JD/MSW

The School of Social Work (SSW) and the School of Law offer a cooperative educational program through which students may earn both the Master of Social Work (MSW), the primary professional degree in social work, and the Juris Doctor (JD) degree, the first professional degree in law. The MSW-JD program will enable students with interests in a wide range of areas where law and social work converge - such as child welfare, aging, health, mental health, juvenile and criminal justice, family issues, and housing - to engage in a highly integrative educational experience that will include academic courses, field placements, and research opportunities at the intersection of both professions. The joint degree program allows one to earn both degrees in four years rather than five.

Increasingly, social work professionals and attorneys are working together to promote the well-being of their clients. These areas of convergence exist in practice with individuals, families, and groups as well as with communities and organizations. The intersection of legal and social work concerns is also evident at the policy level, and research from both professional disciplines has been used to inform these activities. It is not uncommon for practitioners from both fields to work in concert to draft, implement, and/or advocate for legislation at the local, state, and federal levels.

The MSW-JD program is one among several programs that the Schools of Social Work and Law have jointly established throughout their long and rich history of collaboration.

Faculty Advisors

University of Pittsburgh School of Law
Professor Kevin Deasy, MSW, JD
3900 Forbes Avenue
Pittsburgh, PA 15260

(412) 648-5642
deasy@pitt.edu

University of Pittsburgh School of Social Work

Professor Jeffrey Shook, MSW, JD, PhD
2117 Cathedral of Learning
Pittsburgh, PA 15260
(412) 648-9365
jes98@pitt.edu

Requirements

Students enrolled in the joint degree program will receive integrated training in social work and law over a four year period. The combined credit-hour requirements for the MSW and JD degrees obtained separately is 148 credits (60 for the MSW, usually completed in four full-time semesters, and 88 for the JD, usually completed in six full-time semesters). In the joint degree program, the two degrees are awarded for a combined total of 121 credits (46 in Social Work and 75 in Law). This reduction in credit-hour requirements is achieved through the acceptance of up to 14 credit hours of JD course work receiving a grade of C or higher toward the MSW degree and the acceptance of up to 13 credit hours of MSW work receiving a grade of B or higher toward the JD degree. All didactic foundation SW courses must be completed in a single academic year; likewise, all first-year JD courses must be completed in a single academic year. Neither degree may be granted prior to the fulfillment of all requirements for the joint degree program.

For Students Interested in Practicing in New York

Please be advised that students who wish to be admitted to practice in New York should not enroll in a joint degree program that entitles the student to more than 12 credits of advance standing at the Law School (i.e., the JD/MSW with the School of Social Work). See New York Rules of Court § 520(c)(5).

Integrative seminar

All students must complete an Integrative Seminar, to be jointly presented by the School of Social Work and Law School, during each Fall and Spring semester of their enrollment in the MSW-JD program. The integrative seminar will meet twice each Fall and Spring semester. The goal of the seminar will be to allow students the space to discuss issues related to integration and to listen to and have a dialogue with outside speakers who have integrated law and social work in their practice, research, and/or teaching.

Required electives in the Law School

Students must complete at least 2 courses from the Law School menu of MSW-JD "required electives."

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Master's

Law - Foreign Law Graduates, LLM

The Master of Laws (LLM) degree provides foreign law graduates with critical training in the common law legal tradition and the U.S. legal system during an academic year at the University of Pittsburgh, located in Pittsburgh's vibrant Oakland neighborhood. Pitt Law's LLM program provides lawyers who have completed their law degree outside the United States with an opportunity to study the common law legal tradition and the U.S. legal system in the United States.

Degree Requirements

Students must complete a minimum of 24 credits to graduate. The program is completed in one academic year from August to May. Part-time admission is considered on a case-by-case basis. The CILE Academic Director, Executive Director and Program Administrator take an active role in personally counselling each LLM student on their course choices, helping you to plan a course of study that is uniquely tailored to your personal needs. Courses taken must include:

- LAW 5977 - INTRODUCTION TO AMERICAN LAW
- LAW 5813 - U.S. LEGAL ANALYSIS & WRITING
- LAW 5820 - LL.M COLLOQUIUM
Writing Requirement - Choose one of the following:
- LAW 5902 - INDEPENDENT STUDY
or a Seminar Course (Usually 3 credits-various courses are offered each semester). In seminars, the class will meet once a week for two hours with the guidance of a faculty member. The students will conduct research on the seminar topic and prepare drafts of their paper throughout the semester. Each student will present their paper in class and submit a final paper at the end of the semester.

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Law - Master of Studies in Law (MSL)

The Master of Studies in Law at the University of Pittsburgh School of Law is a 30-credit advanced degree designed for graduates and mid-career professionals seeking to enhance their careers with a versatile alternative to the traditional three-year Juris Doctor degree. The MSL degree can be earned in one academic year (August to May) full-time or two to four years in a flexible part-time schedule.

MSL students seek to gain foundational and specialized knowledge of laws and legal systems. Law is a pervasive influence on almost all aspects of life across the globe, but higher education often ill-prepares students and professionals for navigating laws and legal dynamics in business and life. The MSL degree addresses this critical knowledge gap.

Pitt Law commands one of the oldest Master of Studies in Law programs in the country. Only a handful of students are admitted per year. Pitt Law offers a large number of areas of specialization from which to choose, including a self-designed specialization.

This is not an online program. MSL students take the same vast array of courses as Juris Doctor candidates taught by world-class legal scholars, judges and attorneys, and they gain the advantages and benefits of attending the University of Pittsburgh.

Degree Requirements

Applicants must have completed at least an undergraduate bachelors degree. Applicants need to provide official transcripts of all college, graduate and professional studies, whether a degree was obtained or not. No standardized test is required.

International students are welcome and encouraged to apply. They must have completed the equivalent of a US bachelors degree, and they must submit a TOEFL score. The minimum acceptable TOEFL scores are 600 paper, 250 computer, 110 internet. IELTS scores are also accepted in lieu of TOEFL. International students are encouraged to apply as early as possible because of greater amount of time needed to process the application, obtain visas, and obtain housing.

Students must complete 30 course credits in the School of Law to receive the MSL degree. Students are required to take Introduction to Law and Legal Reasoning, one first-year JD course, and the required courses in their selected area of specialization.

The areas of specialization from which students may choose are as follows:

Biomedical & Health Services Research
Business Law
Commercial Law
Corporate Law

Criminal Law and Justice
Disability Law
Elder and Estate Planning Law
Employment and Labor Law
Energy Law
Environmental Law
Family Law
Health Law
Intellectual Property and Technology Law
International Business Law
International and Human Rights Law
Jurisprudence
Real Estate Law
Sports and Entertainment Law
Tax Law

Students may also design their own unique concentration.

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

Professional

Law - Juris Doctor (JD)

Pitt Law offers the Juris Doctor (JD) degree as well as a number of joint degree programs with other Pitt schools, which lead to both a JD and a second master's degree.

In all of these programs, Pitt Law's essential mission is to help lawyers and legal institutions to meet the demands of a rapidly changing legal and professional environment.

The program's first-year curriculum offers a solid foundation in legal analysis and reasoning through courses in subject areas traditionally viewed as basic for legal education.

Pitt Law JD students enjoy a large degree of latitude in designing courses of study that meet their individual goals and interests, with only a handful of graduation requirements beyond the first year.

Pitt Law offers particularly rich opportunities in:

- International law, featuring prominent international/comparative law faculty, a rich international and comparative law curriculum, several courses each year taught by visiting foreign law professors, internships abroad, internationally focused scholarships and fellowships, Languages for Lawyers courses, strong University programs (including area studies certificate programs), and international moot law competitions.
- "Live-client" clinics in a range of substantive areas and practice settings, giving students opportunities to develop valuable lawyering skills in the context of real-life, not simulated, legal disputes and transactions. Students grapple with legal, ethical, and practical issues, under the supervision of - and in close counsel with - a seasoned attorney faculty member.
- The Semester in D.C. Program, during which students spend a semester in Washington, D.C., earning a full semester's worth of academic credit while working full-time as an extern with a non-profit organization or government agency.
- Seven certificate programs/areas of concentration enabling students to concentrate their studies in particular areas of law. These programs include specialized advanced courses that incorporate lawyering skills relevant to particular areas of practice.
- Cross-disciplinary learning - Pitt Law students may take courses in other schools at Pitt or other local colleges and universities (up to six non-law graduate credits can be used toward the JD requirements).

Some Pitt Law courses incorporate multiple disciplines, such as Law & Human Behavior and Law & Economics Seminar, or are jointly taught by law faculty and faculty from other disciplines to classes comprising both law and other graduate/professional students - for example, Commercializing New Technologies.

Pitt Law joint degree programs enable students to earn the JD as well as a master's degree in another discipline through an integrated program, more quickly than earning the two degrees separately.

Degree Requirements

Admission applications for the Pitt Law JD program will be accepted starting September 1 through our deadline of April 1. Applications are considered only for the current year for the fall semester. We require all applicants submit their applications on-line through the Law School Admission Council (LSAC). Pitt Law is highly competitive and decisions are based upon many factors. Once your application is complete, our Admissions Committee will review your application. Once we are able to make a decision, you will be notified by mail within several weeks. You can also verify your application status on-line with a user name and password, which will be sent to you electronically once you apply. We ask for your patience during the admissions cycle as it can become very busy during key times of the year.

Application Requirements:

- Applicants must submit a \$65 application fee
- Applicants must have completed a bachelor's degree from a regionally accredited college or university in the United States before the first day of law school.
- In cases where an applicant has completed studies outside the United States, the requirement is education deemed by the University of Pittsburgh to be comparable to a bachelor's degree from a regionally accredited college or university in the United States. [Click here for more information](#)
- When evaluating an undergraduate degree, the committee pays careful attention to the strength of the major field of study, as evidenced by the courses listed on the undergraduate transcript. Pitt Law is looking for applicants who have demonstrated the discipline and ability to handle a rigorous and demanding program. The admissions committee carefully evaluates graduate work and professional experience, although utilizes the undergraduate GPA.
- Applicants are required to register with the Credential Assembly Service (CAS) through LSAC and must take the LSAT. If an applicant takes the LSAT more than one time the highest score is considered by the admissions committee when making a decision. The latest test score that will be considered for all entrance is the score from the previous February examination. Scores from tests taken more than four years prior to the current admissions year will not be considered. More information can be obtained from the Law School Admission Council (LSAC).
- A required personal statement gives the committee a view into the non-academic world of the applicant and serves as the interview. This is critical in our ability to enroll a diverse class. We ask that you keep your personal statement to no more than two pages, typed, double spaced.
- Letters of recommendation play an equally important role in this process as they can reveal the strengths of the academic achievements of the applicant. We recommend three letters, although none are required. Letters should be submitted through the LSAC letter of recommendation service.
- We encourage applicants to submit a Resume, as they highlight for the admissions committee a broader view of your achievements.
- In addition to a bar examination, there are character, fitness, and other qualifications for admission to the bar in every U.S. jurisdiction. Applicants are encouraged to determine the requirements for any jurisdiction in which they intend to seek admission by contacting the jurisdiction. Addresses for all relevant agencies are available through the National Conference of Bar Examiners.

In order to graduate, a student pursuing a JD must complete 88 credits, including the following:

- A prescribed first-year curriculum, as follows: Contracts, Criminal Law, Legislation and Regulation, Torts, Civil Procedure, Constitutional Law, Property, and Legal Analysis and Writing, as well as attendance at a minimum of five programs (for students entering Fall 2019 or later) or six programs (for students entering before Fall 2019) in the Pitt Law Academy speaker series
- The upper-level writing requirement
- A course in Legal Profession
- Six credits in a course designated as satisfying the professional skills requirement
- The one-credit Foundations of Legal Research course
- A course designated as satisfying the international/comparative law requirement
- A course designated as satisfying the writing ("W") requirement

Additional graduation requirements apply for those students whose grade point averages place them in the bottom 15% of their class at the end of their first or second year. The upper-level writing requirement and other academic requirements are described in the Academic Rules and Graduation sections of the School of Law's web site.

Note

For detailed term-specific course descriptions, please go to the Schedule of Classes Course Lists on the Law School web site.

First-Year Curriculum

The first-year curriculum is comprised of the following required courses, as well as attendance at a minimum of five programs (for students entering Fall 2019 or later) or six programs (for students entering before Fall 2019) in the **Pitt Law Academy**:

Fall:

- LAW 5020 - CONTRACTS
- LAW 5046 - CRIMINAL LAW
- LAW 5720 - LEGAL ANALYSIS AND WRITING
- LAW 5032 - LEGISLATION AND REGULATION
- LAW 5028 - TORTS

Spring:

- LAW 5033 - CIVIL PROCEDURE
- LAW 5101 - CONSTITUTIONAL LAW
- LAW 5076 - LEGAL ANALYSIS AND WRITING
- LAW 5024 - PROPERTY

Year Long Program

- LAW 5061 - PITT LAW ACADEMY

School of Law Faculty

Full Time

Jessie Allen, Associate Professor of Law
JSD, Columbia University School of Law
JD, Brooklyn Law School

Chaz Arnett, Assistant Professor of Law
JD, Harvard Law School

Kevin D. Ashley, Professor of Law and Intelligent Systems
JD, Harvard Law School
PhD, University of Massachusetts and Amherst

Elena A. Baylis, Associate Professor of Law
JD, Yale Law School

Deborah L. Brake, John E. Murray Faculty Scholar and Professor of Law
Associate Dean for Research & Faculty Development
JD, Harvard Law School

Ronald A. Brand, Professor of Law
Academic Director, CILE
Chancellor Mark A. Nordenberg University Professor and John E. Murray Faculty Scholar
JD, Cornell University

Ben Bratman, Professor of Legal Writing
JD, Vanderbilt University Law School

Teresa Kissane Brostoff, Professor of Legal Writing
JD, University of Pittsburgh School of Law

Tomar Pierson-Brown, Clinical Assistant Professor of Law
Director - Health Law Clinic
JD, Case Western Reserve University School of Law
LLM, University of the District of Columbia, David A. Clarke School of Law

William M. Carter, Jr., Professor of Law
JD, Case Western Reserve University School Of Law

Pat K. Chew, Judge J. Quint Salmon and Anne Salmon Chaired Professor
JD, University of Texas
M.Ed, University of Texas

Mary Crossley, Professor of Law
JD, Vanderbilt University

Vivian Curran, Distinguished Professor of Law
JD, Columbia University
PhD, Columbia University
MPhil, Columbia University

Kevin Deasy, Associate Professor of Legal Writing
Associate Dean of Students
JD, University of Pittsburgh School of Law

Gerald S. Dickinson, Assistant Professor of Law
JD, Fordham Law

Greer Donley, Assistant Professor of Law
JD, University of Michigan Law School

Jasmine B. Gonzales Rose, Assistant Professor of Law
JD, Harvard Law School

Philip Hackney, Associate Professor of Law
LLM, (Tax), New York University School of Law
JD, LSU Paul M. Herbert Law Center

Haider Ala Hamoudi, Professor of Law
Vice Dean of the University of Pittsburgh School of Law
JSD, Columbia University
JD, Columbia University

David A. Harris, Sally Ann Semenko Endowed Chair, Professor of Law
John E. Murray Faculty Scholar
LLM, Georgetown University
JD, Yale Law School

Bernard J. Hibbitts, Professor of Law
LLM, Harvard University
LLM, University of Toronto
LLB, Dalhousie University
BA (Juris.), Oxford University

David J. Hickton, Professor of Law
Founding Director, Institute for Cyber Law, Policy and Security
JD, University of Pittsburgh School of Law

Anthony C. Infanti, Professor of Law
Affiliate Faculty, Gender, Sexuality & Women's Studies Program
Buchanan, Ingersoll & Rooney Faculty Scholar

LLM (Taxation), New York University
JD, University of California, Berkeley

Jules Lobel, Professor of Law
JD, Rutgers University

Grant MacIntyre, Assistant Professor of Law
JD, University of Pittsburgh School of Law

Michael J. Madison, Professor of Law
Faculty Director, Innovation Practice Institute
JD, Stanford Law School

Martha M. Mannix, Clinical Associate Professor of Law
JD, Hastings College of the Law

Alan Meisel, Professor of Law and Psychiatry
Dickie, McCamey & Chilcote Professor of Bioethics
Director of MSL Program, Health Law Certificate Program, and Certificate in Disability Legal Studies
JD, Yale University

Peter B. Oh, Professor of Law
JD, The University of Chicago

Ann Sinsheimer, Professor of Legal Writing
PhD, Rhetoric, Carnegie Mellon University
JD, University of Pittsburgh School of Law

Matiangai Sirleaf, Assistant Professor of Law
JD, Yale Law School

George H. Taylor, Professor of Law
JD, Harvard University

David Thaw
Assistant Professor of Law and Information Sciences
JD, Berkeley Law
PhD, University of California, Berkeley

Lu-in Wang, Professor of Law
JD, University of Michigan Law School

Sheila I. Velez Martinez, Clinical Assistant Professor of Law
Director of Clinical Programs

Rhonda Wasserman, Professor of Law
JD, Yale Law School

Amy J. Wildermuth, Professor of Law
Dean of the University of Pittsburgh School of Law
JD, College of Law, University of Illinois

Professor Emeritus of Law

Douglas M. Branson, W. Edward Sell Professor of Business Law
LL.M., University of Virginia
JD, Northwestern University

William J. Brown
LLM, Yale University
Certificate in International Business Law, City of London College

Nancy M. Burkoff
JD, University of Pittsburgh

John M. Burkoff
LL.M, Harvard University
JD, University of Michigan

Richard Delgado
JD, University of California - Berkeley

Harry M. Flechtner
JD, Harvard Law School

Cyril A. Fox, Jr.
JD, University of Pittsburgh School of Law

Lawrence A. Frolik
LLM, Harvard Law School
JD, Harvard Law School

Robert Berkley Harper
JD, University of Pittsburgh School of Law

Arthur D. Hellman
JD, Yale University

William V. Luneburg, Jr.
JD, Harvard University

Margaret M. Mahoney
JD, University of Michigan

Francis Barry McCarthy
LLM, Columbia University
JD, Boston College

Thomas Ross
JD, University of Virginia

Richard Harry Seeburger
LLM, Harvard University
LLB, Harvard University

Stella L. Smetanka
JD, University of Pittsburgh School of Law

Research Professor Emerita

Jean Stefancic
MA, University of San Francisco

Professor of Practice

Charles C. Cohen
JD, University of Michigan

Honorable Judith K. Fitzgerald
JD, University of Pittsburgh School of Law

Honorable Laurie Marin
JD, Brooklyn Law School

Marily Nixon
JD, University of Virginia School of Law

Visiting Faculty

Anne W. Bauer
LLM, Georgetown University Law Center 2009
JD, University of Pittsburgh School of Law, 2008

William A. Congelio, Esquire

Leigh Coogan
JD, University of Pittsburgh School of Law

Joshua Galperin
JD, Vermont Law School

Marco Gardini
LLM, University of Pittsburgh School of Law
JD, University of Parma (Italy)

Jacqueline Lipton
PhD, LLM, Cambridge University
PhD, Griffith University
LLM, Monash University

Alice L. Stewart, Visiting Clinical Assistant Professor
JD, Duquesne University School of Law

Judith A. Teeter, Visiting Professor
JD, Boston University School of Law

Adjunct

Kevin C. Abbott
JD, University of Pittsburgh School of Law

Sara Burhan Abdullah
LLM, University of Pittsburgh School of Law
JD, University of Pittsburgh School of Law

Rodney R. Akers
JD, Harvard University

Lynn J. Alstadt
JD, University of Pittsburgh School of Law

Heather Batzel

Alan S. Baum
JD, Ohio Northern University School of Law

Jaclyn M. Belczyk
JD, University of Pittsburgh School of Law

Thomas Beline
JD, University of Pittsburgh School of Law

Dan Berlin

C. Allen Black, Jr.
PhD, University of Newcastle (Australia)
JD, University of Pittsburgh School of Law

Paul D. Boas

Alison Bonebrake
MPA, Public Management and Policy, University of Pittsburgh School of Law

Honorable Edward J. Borkowski
MWS, University of Pittsburgh
JD, Duquesne University

Eduardo H. Bozzo
JD, University of Argentina

Samuel W. Braver
JD, Duquesne University

Robert Marc Brenner

Christopher S. Channel
JD, Marshall-Wythe School of Law at the College of William and Mary

Susan K. Cohen
PhD, University of Minnesota

James P. Coletta
JD, University of Pittsburgh School of Law

Julie R. Colton

Timothy Conboy
JD, University of Pittsburgh School of Law

Pamela Wilkins Connelly
JD, University of Pittsburgh School of Law

James V. Corbelli
JD, University of Pittsburgh School of Law

Mary Nell Cummings
JD, SUNY Buffalo Law School

Stephanie Dangel
JD, Yale Law School

Robert E. Dapper, Jr.
JD, University of Pittsburgh School of Law

Elliot Dater

Claudia Davidson

Marshall L. Dayan

Michelle DeBord

Elizabeth A. DeLosa.
JD, Duquesne University

Charles A. DeMonaco
JD, Ohio Northern University

Cecile C. M. Desandre
Baccalaureate A2, the Sorbonne, Paris

Steven A. Diaz

Louis A. DiNardo, C.P.A., J.D.
JD, Duquesne University

Matthew R. Divelbiss
JD, University of Pittsburgh School of Law

Christian Ehret
JD, University of Pittsburgh School of Law

Jack W. Elliott
JD, Wake Forest University School of Law

Karen Engro
JD, Tulane Law School

Adam S. Ennis
JD, Benjamin N. Cardozo School of Law, Yeshiva University

Thomas J. Farrell
JD, New York University School of Law

Ralph G. Fischer
JD, University of Pittsburgh School of Law

Paige Forster
JD, University of Pittsburgh School of Law

Susan Frietsche
JD, Temple University

Craig Frischman
JD, University of Pittsburgh School of Law

Michael George
JD, Duquesne University

Mark Gesk
JD, Duquesne University

Myles Getlan
LLM, Georgetown University Law Center
JD, University of Pittsburgh School of Law

John P. Gismondi
JD, University of Pittsburgh School of Law

Bret Grote
JD, University of Pittsburgh School of Law

Harry Gruener
JD, University of Pittsburgh School of Law

K. Mark Hall

John F. Hammond

Kevin Harkins
JD, University of Pittsburgh School of Law

Tina Batra Hershey

Craig S. Heryford
JD, Duquesne University

Leo N. Hitt
LLM, New York University
JD, University of Pittsburgh School of Law

Joseph S. Hornack
JD, Rutgers University

Vicki Kuftic Horne

Kenneth J. Horoho, Jr.
JD, Duquesne University

Honorable Philip A. Ignelzi
JD, University of Pittsburgh School of Law

John E. Iole
JD, University of Pittsburgh School of Law

Ira Karoll
JD, Northwestern University

Stephen R. Kaufman

Adam Kelson
JD, Boston University School of Law

Barbara Kern

Oliver Kim
LLM, Georgetown University
JD, University of Minnesota

Miles A. Kirshner
JD, University of Pittsburgh School of Law

George Kontos
JD, University of Pittsburgh School of Law

James E. Kopelman
JD, University of Pittsburgh School of Law

Daniel Kovalik
JD, Columbia Law School

Honorable Beth A. Lazzara
JD, University of Pittsburgh School of Law

Lawrence M. Lebowitz
JD, University of Pittsburgh School of Law

Honorable Lisa Pupo Lenihan
JD, University of Pittsburgh School of Law

Richard C. Levine
JD, University of Pittsburgh School of Law

John Kent Lewis
JD, Duquesne School of Law

Penina K. Lieber
JD, University of Pittsburgh School of Law

Alexander H. Lindsay, Jr.
JD, University of Pittsburgh School of Law

Blaine Lucas
JD, University of Virginia

John P. Lydon
JD, University of Pittsburgh School of Law

Thena Robinson Mock
JD, Loyola University New Orleans College of Law

Beverly Weiss Manne
JD, University of Pittsburgh School of Law

Jason Manne
JD, University of Pittsburgh School of Law

Lisa Zeidner Marcus
JD, Columbia University Law School

Cathy Martin

Lisa A. Martinelli

Moshe Z. Marvit
JD, Chicago-Kent College of Law

Jason Matzus
JD, University of Pittsburgh School of Law

Regis McClelland
JD, Duquesne University

John W. McIlvaine, III
JD, Pepperdine University

William McKendree
JD, Duquesne University

Laura A. Meaden
JD, University of Pittsburgh School of Law

Kemal Mericli

Reid P. Meyer

Clay Nestler
JD, University of Pittsburgh School of Law

Timothy O'Brien

Brian O'Connor

Deborah Olszewski
JD, University of Pittsburgh School of Law

David R. Overstreet
JD, Villanova University School of Law

Stephen Paschall

Jon R. Perry
JD, Duquesne University

Jeffery D. Peters
JD, University of Pittsburgh School of Law

Orlando G. Portela Valentin
PhD, University of the Basque Country, Spain
LLM, University of the Basque Country, Spain
JD, University of Puerto Rico Law School

William C. Price
JD, University of Pittsburgh School of Law

J. Matthew Pritchard IV
JD, University of Pittsburgh School of Law

James A. Prozzi
JD, University of Pittsburgh School of Law

Jeffrey Ramaley
JD, Duquesne University

Robert B. Ramsey, III
JD, St. Louis University, 1984

David J. Rosenberg
JD, University of Pittsburgh School of Law

Michael Rosenzweig
JD, University of Pittsburgh School of Law

John Samuel Rozel
MSL, University of Pittsburgh School of Law

Stephanie W. Schreiber
JD, University of Pittsburgh School of Law

Robert Schupansky

Stephanie L. Sciullo
JD, University of Pittsburgh School of Law

Steven Seel
JD, University of Pittsburgh School of Law

Joseph W. Selep
JD, Ohio Northern University

Matt Shames
JD, University of Pittsburgh School of Law

Rachael Shaw

Marc Silverman
MA, University of Pittsburgh
Master of Library Science, University of Pittsburgh

Larry A. Silverman
JD, Duquesne University

Jennifer A. Smokelin
JD, University of Pittsburgh School of Law

Marcy Smorey-Giger
JD, Duquesne University

Steven M. Stadtmiller
JD, University of Pittsburgh Law School

John Stember
JD, University of Pittsburgh School of Law

Natalya Stepanova-Sipper
LLM, University of Pittsburgh School of Law
JD, Tashkent State Law Institute

Edward Van Stevenson
JD, University of Kentucky

Stephen C. Tanzilli
JD, University of Pittsburgh School of Law

Linda Tashbook
JD, University of Pittsburgh School of Law
MLS, University of Pittsburgh

Richard Thorpe
PhD, Princeton University
JD, Yale Law School

Honorable David B. Torrey
JD, Duquesne University

Chatón T. Turner
JD, University of South Carolina

James S. Urban
JD, Duquesne University

Jonathan P. Vallano
PhD, Experimental (Legal) Psychology, Florida International University

Elizabeth Van Nostrand
JD, Tulane University

Joshua Vaughn

Honorable William F. Ward
JD, Temple University School of Law

Honorable Christine A. Ward
JD, University of Pittsburgh School of Law

Peter M. Watt-Morse
JD, Northwestern University

Jillian Wein Riley

Heather Weiner
JD, Syracuse University

Rob Wible
JD, Duquesne University

Patricia H. Wysor
MEd, University of Pittsburgh School of Law
MFA, University of Pittsburgh School of Law

Affiliated Faculty

Karen Clay
PhD, Stanford University

Matthias Grabmair
PhD, Intelligent Systems, University of Pittsburgh
LLM, University of Pittsburgh School of Law

Robert M. Hayden
PhD, State University of New York at Buffalo
JD, State University of New York at Buffalo

Kenneth M. Lehn
Ph.D, Washington University

Jeffrey Shook, Affiliated Assistant Professor of Law
PhD, Social Work, University of Michigan
MSW, University of Michigan
JD, American University

Distinguished Jurist in Residence

Honorable D. Michael Fisher
JD, Georgetown University

School of Medicine

The mission of the University of Pittsburgh School of Medicine is to improve the health and well-being of individuals and populations through cutting-edge biomedical research, innovative educational programs in medicine and biomedical science, and leadership in academic medicine. We strive to implement this mission with the highest professional and ethical standards, in a culture of diversity and inclusiveness, and in an environment that enables each individual to develop to his or her fullest potential.

First Professional Program (MD)

The mission of the [University of Pittsburgh School of Medicine](#) is to improve the health and well-being of individuals and populations through cutting-edge biomedical research, innovative educational programs in medicine and biomedical science, and leadership in academic medicine. We strive to implement this mission with the highest professional and ethical standards, in a culture of diversity and inclusiveness, and in an environment that enables each individual to develop to his or her fullest potential.

UPSOM has a well-developed curricular infrastructure that combines a lecture- and problem-based curriculum with early and in-depth clinical experiences and an integrated organ systems approach to the preclinical sciences. The clinical years are characterized by an integrated clerkship structure and an emphasis on student flexibility. The UPSOM educational objectives, which are used to guide course content and learning objectives, underwent a school-wide review and update in 2017.

The [current UPSOM curriculum](#) was implemented in 2004 and features active, participatory learning; a problem-based approach; an early introduction to the patient and the community; and the integration of a rigorous foundation in basic and clinical biomedical sciences with the social and behavioral aspects of medicine. Key subject matter is longitudinally integrated throughout the curriculum, building upon a foundation of prior learning while providing a level-appropriate and well-synchronized introduction of new content.

Scheduled instructional time in the first two years of the curriculum is a mix of lecture; small group learning (much of which is problem-based learning; the remainder includes demonstrations, faculty-directed problem-solving exercises, skill-practice sessions, and other activities); and other activities (which includes observation of and appropriate participation in patient care, community-site visits, experiences with [standardized patients](#), [high-fidelity simulations](#), patient conferences, laboratory exercises, and other activities). Student achievement of course objectives is supported by a host of technologies, including the online curriculum and podcasts. A longitudinal performance-based assessment program provides formative support as students hone their clinical skills.

The patient focus of the UPSOM curriculum begins on day one, in the Introduction to Being a Physician course. Students interview patients about their experience of illness and experiences with their physicians, to develop an understanding of their roles as medical professionals. Medical interviewing and physical examination courses follow, along with exercises examining the many facets of physician life-in society, ethical and legal settings, and at the patient bedside.

Throughout the first two years, students apply their new skills in local practices and hospitals one afternoon per week. The [Foundations of Medicine](#) block runs through three-fourths of the first year and provides language and concepts that underlie the scientific basis of medical practice. [Organ Systems block](#) courses integrate physiology, pathophysiology, pharmacology, and introduction to medicine with concurrent courses in the Introduction to Patient Care and Patient, Physician and Society blocks. Weekly discussions, patient interviews, and examination of hospitalized patients reinforce essential clinical skills.

The [third-year curriculum](#) consists of ten required clerkships. They are designed to optimize the balance between out-of-hospital and inpatient learning opportunities, eliminate unintentional curriculum redundancy, and optimize opportunities for student-designed curricula in the junior and senior years. The third year is punctuated by three one-week clinical focus courses.

Every student engages in a mentored [longitudinal research project](#) conducted longitudinally throughout the four-year curriculum. Completion and presentation of the scholarly project is due in the spring of the senior year and is a requirement for graduation. Students pursue their projects through several program options, which may include [areas of concentration](#). An innovative system of web-based learning portfolios facilitates learner-mentor communication and enriches the possibilities for collaboration within and beyond the University.

Many key topics are integrated throughout the curriculum as [longitudinal themes](#). These topics include communication skills; cultural competence; critical thinking skills; disabilities medicine; geriatric medicine; evidence-based medicine; interprofessional education and team communications; palliative care; population medicine and public health; prevention; professionalism; public health preparedness; and substance abuse.

The information above details the school's MD program.

Contact Information

Office of Admissions and Financial Aid
S520 Scaife Hall
3550 Terrace Street
Pittsburgh, PA 15261
412-648-9891
Fax: 412-648-8768
E-mail: admissions@medschool.pitt.edu
www.medschool.pitt.edu

Requirements for Admission

Admission Process

The admissions process is described in great detail on the Office of Admissions and Financial Aid [web site](#).

The by-laws of the Admissions Committee specifically state the school's criteria for selecting students for admissions. The by-laws are reviewed and updated at the year-end business meeting of the UPSOM Admissions Committee.

<https://www.medadmissions.pitt.edu/admissions/you-apply/policies-restrictions>

Financial Aid

Financial aid for medical students is available in the form of scholarships, need-based grants, and loans (federal, private, and institutional resources). For maximum consideration of all resources, students should complete the "Need Access Application" and the Free Application for Federal Student Aid (FAFSA). These applications should include the student's information, his/her spouse's information (if applicable), and his/her parents'

information. Signed copies of federal tax returns (for student/spouse and parents) must be provided to the financial aid office. Aid is awarded on the basis of financial need, as determined from the financial aid applications and supporting documentation.

Newly admitted students should apply no later than either one month after acceptance or by March 1 to ensure that an award letter is provided prior to the national decision date of April 30th.

Upperclassman should provide all required information no later than April 1. The Free Application for Federal Student Aid (FAFSA) should be submitted prior to April 1 to ensure results are available prior to the deadline.

Students who do not wish to provide parental information are still considered for Federal Stafford loans, Federal Graduate PLUS loans, and private loans; these students should complete the FAFSA and provide a signed copy of their federal tax return.

The financial aid process is described in detail on the [Office of Financial Aid's website](#).

Academic Standards

The University of Pittsburgh School of Medicine offers a centrally governed, integrated, interdisciplinary curriculum that emphasizes problem solving and self-directed learning. The academic year is in session between 10 and 12 months, depending on the level of study. Academic calendars specific to each year can be found on the [Office of Medical Education's web site](#). The first three years is a set curriculum and the fourth year is a combination of both set and elective offerings. To be considered to be making satisfactory academic progress, the student must complete the first two years of the curriculum by the end of the third year after initial enrollment. The full text of the guidelines for student promotion can be found in the [medical student handbook](#) on the Office of Student Affairs web site. Students are governed by an Honor Code, which seeks to support and sustain respect for each other as well as for patients. The full text of the Honor Code can be found in the [student handbook](#).

Grading

The UPSOM makes use of a 2 tiered grading system.

The first two years of the curriculum are graded as Satisfactory/Unsatisfactory.

The last two years are graded using a five point narrative grading system that includes Honors, High Pass, Pass, Low Pass, or Unsatisfactory.

Degree Requirements

To receive the MD degree, students must:

1. Successfully complete curricular requirements for each of the four years.

First year: Courses in foundations of medicine including medical anatomy, cell communication and pharmacology. tissues in health and disease, human genetics, fuel metabolism, immunology in health and disease, medical microbiology; organ systems including neuroscience, introduction to psychiatry; scientific reasoning in medicine including evidence-based medicine-fundamentals and evidence-based medicine-applied, patient, physician and society courses including introduction to being a physician; ethics, law, and professionalism, behavioral medicine, and the introduction to patient care courses.

Second year: Course work in organ systems including body fluid homeostasis, digestion and nutrition, hematology, endocrine, reproductive and developmental biology, skin and musculoskeletal diseases, and integrated case studies; investigation and discovery, population health, and introduction to patient care courses.

Third year: Rotations in inpatient medicine; family medicine; inpatient pediatrics; obstetrics and gynecology; neurology; psychiatry; surgery, anesthesiology; and outpatient experiences in pediatrics; medicine; emergency medicine; otolaryngology; and ophthalmology. The third and fourth year schedule is viewed as a continuum and designed so students may enroll in clinical or research electives at any time during the third or fourth years.

Fourth year: An acting internship in either internal medicine, pediatrics, family medicine, or surgery; four weeks of an integrated life science course of the student's selection; a boot camp; and seven to eight months of clinical and/or research elective experiences.

2. Pass the United States Medical Licensing Examination, both Steps 1 and 2 (CK and CS).
3. Meet accepted standards of professional conduct and emotional stability.

Degree Options

In addition to the MD program, the UPSOM offers a structured MD/PhD dual degree program, an MD/MA in Bioethics, a certificate program in Clinical Research, and a five—year non-degree— granting program for physician-scientists.

First Professional Program, MD Curriculum

MS-1

Patient, Physician & Society Block (PPS)

- Introduction to Being a Physician - [MED 5124](#)
- Ethics, Law & Professionalism - [MED 5124](#)
- Behavioral Medicine - [MED 5128](#)

Fundamentals of Basic Science Block (FBS)

- Medical Anatomy - [MED 5112](#)
- Human Genetics - [MED 5127](#)
- Fuel Metabolism - [MED 5127](#)
- Cellular and Pathologic Basis of Disease - [MED 5127](#)
- Immunology in Health & Disease - [MED 5116](#)
- Medical Microbiology - [MED 5116](#)

Organ Systems Pathophysiology Block (OSP)

- Neuroscience - [MED 5133](#)
- Introduction to Psychiatry - [MED 5133](#)

Introduction to Patient Care Block (IPC)

- Medical Interviewing - [MED 5137](#)
- Introduction to Physical Examination - [MED 5137](#)
- Advanced Physical Examination 1 - [MED 5138](#)
- Clinical Experiences 1 - [MED 5138](#)

Evidence and Discovery Block (E&D)

- Evidence-Based Medicine - Fundamentals - [MED 5180](#)
- Evidence-Based Medicine - Applied - [MED 5181](#)
- [Scholarly Project](#)

MS-2

Patient Physician & Society Block (PPS)

- Population Health - [MED 5261](#)

Organ Systems Pathophysiology Block (OSP)

- Body Fluid Homeostasis: Cardiovascular - [MED 5218](#)
- Body Fluid Homeostasis: Renal - [MED 5218](#)
- Body Fluid Homeostasis: Pulmonary - [MED 5218](#)
- Digestion & Nutrition - [MED 5223](#)
- Skin & Musculoskeletal Diseases - [MED 5223](#)
- Hematology - [MED 5223](#)
- Endocrine - [MED 5223](#)
- Reproductive & Developmental Biology - [MED 5223](#)
- Integrated Case Studies - [MED 5227](#)

Evidence and Discovery Block (E&D)

- Investigation and Discovery - [MED 5265](#)
- [Scholarly Project](#)

Introduction to Patient Care Block (IPC)

- Advanced Physical Examination 2 - [MED 5233](#)
- Clinical Experiences 2 - [MED 5233](#)
- Advanced Medical Interviewing - [MED 5234](#)
- Clinical Procedures - [MED 5234](#)

Clinical Skills Assessment in IPC Block

- [Clinical Competency Assessment Orientation Handbook](#)

MS-3

Clerkships

- [Adult Inpatient Medicine](#)
- Anesthesiology
- [Neurology](#)
- [Combined Ambulatory Medicine and Pediatrics](#)
- [Family Medicine](#)
- [Obstetrics and Gynecology](#)
- [Pediatric Inpatient Medicine](#)
- [Psychiatry](#)
- [Specialty Care](#)
- [Surgery and Perioperative Care](#)

Clinical Clerkships

Eight required clerkships form the core of the combined clinical years. The overall aim of the clerkship experience is to provide students with the essential experiences where they will apply their knowledge and skills as they develop competence in the care of patients. Together, the clerkships, and all other clinical experiences, share a fundamental set of objectives.

Overall, the objectives of the required clerkships are for students to be able to:

- Integrate basic science concepts with clinical reasoning.
- Establish and maintain appropriate therapeutic relationships with patients.

- Obtain a sensitive and thorough medical history.
- Perform a sensitive and accurate physical examination.
- Perform general clinical procedures.
- Participate in discussions and decision-making with patients and families.
- Clearly communicate medical information in spoken and written form.
- Develop knowledge, skills, and attitudes to practice the basic principles of prevention.
- Demonstrate sound clinical reasoning.
- Appropriately assess patients with common signs and symptoms.
- Appropriately use testing to guide diagnostic and therapeutic decisions.
- Diagnose and demonstrate basic understanding of common diseases and conditions.
- Describe therapeutic options and participate in the care of patients with common problems.
- Recognize acute life-threatening medical problems and initiate care.
- Develop the knowledge and exhibit the skills necessary to assist in the management of chronic diseases.
- Participate in care in a variety of settings.
- Develop the knowledge, skills and attitudes necessary to provide culturally competent care.
- Use information and educational technology to facilitate research, education and patient care.
- Incorporate ethical and legal principles in clinical practice and research.
- Demonstrate professional behaviors.
- Work effectively with others as a member or leader of a health care team or other professional group.
- Develop an understanding of the impact of nonmedical determinants of health on health outcomes and health equity.

Clinical Focus Courses

The third year is punctuated by three one-week learning experiences, spread over the 48 weeks of the third year.

1. The [Preclerkship Course](#) is an introduction that is presented immediately prior to the start of the third year. It includes aspects of clinical, humanistic, and administrative preparation for clinical experiences.

2. The [Geriatrics Course](#) uses a combination of learning formats, including classroom sessions and experiences at clinical sites, to provide a highly focused exposure to key topics in this important discipline. A major emphasis is on developing skills to succeed in and lead inter-professional teams. This curriculum builds upon the new perspectives gained by students during the first six rotations of the third year.
3. [Assessment Week](#) is conducted at the time of transition from third to fourth year. Students complete a series of structured assessments and participate in focused review sessions. Together these activities provide students with timely and specific formative feedback about their progress toward the objectives of the curriculum.

MS-4

General Schedule for Fourth Year

Clerkship Period	1	2	3	4	5	6	7	8	9	10	11	12	12.5
Length (in Weeks)	4	4	4	4	4	4	4	4	4	4	4	4	4

During the combined clinical years (MS-3 & MS-4) students rotate through 10 required clerkships in any sequence. Additional requirements are 1 Acting Internship, 1 Integrated Life Sciences Selective, 9 electives, and 3 Clinical Focus Courses.

What do the 12.5 Periods in the MS-4 year include?

- Nine electives
- One acting internship (family medicine, internal medicine, pediatrics, surgery)
- One integrated life science course
- Two recess/interview periods
- One recess week in the fall between periods 18 and 19

Acting Internship

An acting internship (sub-internship) of four-week duration is required during the senior year. An AI is a clinical rotation offered on an in-patient service in which one or more attending physicians have overall responsibility for coordinated patient care. The service will be structured with both attending staff and house staff.

The acting internship should include the assignment to the student of specific groups of patients upon whom he or she completes an initial history and physical examination, constructs a differential diagnosis, formulates a treatment plan, writes orders, and carries out necessary therapy, all under careful supervision.

Acting internships that fulfill this requirement are offered in:

- Family medicine
- Internal medicine

- Pediatrics
- Surgery

Search the [Course Catalog](#) for more information on Acting internships.

Acting internships in other departments or out of the city will not fulfill the AI requirement.

Integrated Life Science Course

The fourth year Integrated Life Science (ILS) Program includes a choice of courses that revisit some aspect of basic science after students have had several years of clinical experience. Because of the level of sophistication that students have developed by this stage in their medical education, they can better understand the relevance of basic science to clinical problems. Each student is required to complete one ILS course.

ILS Courses

- Changing Science, Changing Society: A Guide to 21st Century Medicine - [MSELC 5700](#)
- Clinical Pharmacology - [MED 5710](#)
- Infectious Disease in Obstetrics, Gynecology and Reproductive Medicine - [OBYN 5725](#)
- Molecular Medicine - [PEDS 5720](#)
- Neoplasia and Neoplastic Disease - [MED 5715](#)
- Neurosurgery and Head and Neck Dissection - [NSURG 5705](#)
- Science of Resuscitation - [EMED 5735](#)
- Surgery Integrated Life Sciences - [SURG 5700](#)

Recommended Electives

In order to provide diversity, it is strongly recommended that you take at least one elective in each of the following blocks:

1. Medicine or neurology
2. Pediatrics, pediatric neurology, pediatric pathology, pediatric surgery
3. Surgery or surgical subspecialties, obstetrics and gynecology
4. Ambulatory care, community medicine, or psychiatry.

Clinical Competency Assessment (CCA)

- [Clinical Competency Assessment Orientation Handbook](#)

5121

Bioethics, MD/MA

Students enrolled in the University of Pittsburgh School of Medicine may elect to earn the Master of Arts in Bioethics in conjunction with their medical degree. This allows the 30 credit MA degree to be earned in an accelerated program, taking a year away from the MD program, usually between the second and third years of medical school. During this one year, the student will follow the Dietrich School of Arts and Sciences calendar for the fall and spring terms, pay tuition at the in-state tuition rate set for Dietrich School graduate students, and must adhere to the rules, regulations, policies, and procedures of the Dietrich School. Applicants must complete the on-line application and provide official transcripts from their undergraduate and graduate studies, 3 letters of recommendation, a personal statement, writing sample, and official MCAT or GRE scores. Additional information about the MD/MA program may be found [here](#).

Core Course Requirements

The following courses are required for the major:

- BIOETH 2658 - PHILOSOPHY OF MEDICINE
- BIOETH 2661 - THEORETICAL FOUNDATIONS
- BIOETH 2664 - BIOETHICS
-
- LAW 5464 - BIOETHICS AND LAW

Clinical Practica

The following courses are required for the major:

- BIOETH 2604 - CLINICAL PRACTICUM 1
- BIOETH 2606 - CLINICAL PRACTICUM 2

Thesis Research

Students must complete a research project and write a thesis under the supervision of and advisor, and defend it before a committee. Students may register for up to 6 course credits related to their thesis research.

Restrictive Electives

Students choose one elective from a list of “restricted elective” courses. Courses placed on this pursue ethical issues related to a particular area in greater depth than the Bioethics core course, or employ a particular disciplinary perspective to explore issues in medicine and research. In recent years, restricted electives have included:

- Bioethics and Health Law
- Ethical Issues in Medical Genetics
- Gender, Ethics, and the Body
- Historical and Sociological Perspectives in Public Health
- Medical Anthropology

- Medical Sociology

Electives

The remaining credits may be taken in electives approved by the program director. Students work with the program director and their thesis advisor to ensure that their particular needs are met. Students may take a Special Topics in Bioethics or Directed Reading in Bioethics course, or may identify relevant elective courses from various departments and schools of the University, including:

- Anthropology
- Communication
- Cultural Studies
- English
- Film Studies
- Gender, Sexuality, and Women's Studies
- History and Philosophy of Science
- Law
- Philosophy
- Psychology
- Public Health
- Sociology
- Women's Studies
- Graduate Course Offerings

In addition, through the Pittsburgh Council on Higher Education, full-time students may take courses at ten consortium-affiliated colleges and universities, including Carnegie Mellon University, Duquesne University, and the Pittsburgh Theological Seminary.

Clinical Science Training Program, MD/MS

The Clinical Scientist Training Program (CSTP) offers clinical research training and scholarships to University of Pittsburgh medical students who are committed to careers in clinical investigation. Students may complete the dual MD/MS in clinical research or the MD/Certificate in clinical research.

The CSTP involves a research year between third and fourth year of medical school, typically scheduled July 1 - June 30. We expect students to take their research year after completing their core clerkships in the third year of medical school in order to ensure that their research will be informed by their clinical knowledge. The research year includes:

- Formal coursework: Students complete the ICRE core curriculum (11 credits). Those completing the MD/Certificate complete 7 additional elective credits. Those completing the dual MD/MS program complete 6 units of thesis research and 10 additional track-specific required and elective credits.
- [Mentored clinical research](#): Students complete a mentored clinical research project with their SP mentor.
- [Financial support](#): During the research year, students receive a living stipend, health insurance, and travel funds. Additionally, they receive a full tuition scholarship for the cost of the Certificate. The cost of the additional credits for the MS are the student's responsibility to pay. Students who successfully complete their research year objectives additionally receive a substantial tuition scholarship toward the fourth year of medical school upon returning from the research year.

For more information, contact [us](#).

Core Curriculum

All CSTP students complete the core curriculum during the CSTP research year.

- CLRES 2005 - COMPUTER METHODS FOR CLINICAL RESEARCH
- CLRES 2010 - CLINICAL RESEARCH METHODS
- CLRES 2020 - BIOSTATISTICS
- CLRES 2040 - MEASUREMENT IN CLINICAL RESEARCH
- CLRES 2075 - SEMINAR FOR UNDERSTANDING PRINCIPLES AND PRACTICES OF RESEARCH TECHNIQUES (SUPPORT)
-
- MEDEDU 2140 - MEDICAL WRITING & PRESENTATION SKILLS (ONLINE)
- or
- NROSCI 2014 - SPEAKING OF SCIENCE

MD/Certificate

Students completing the dual MD/Certificate register for 18 units during their CSTP research year (9 units in Summer, 4.5 units in Fall, and 4.5 units in Spring). These credits include the 11-credit core curriculum and 7 credits of elective credits.

MD/MS

Students completing the dual MD/MS degree receive 3 credits from pre-clinical courses in the MD curriculum ([MED 5180](#), [MED 5181](#), & [MED 5265](#)) toward the 30-credit MS degree. Students register for the remaining 27 credits during their CSTP research year (9 credits in Summer, 6 credits in Fall, and 6 credits in Spring) and after returning to medical school.

Medical Scientist Training Program, MD/PhD

The Medical Scientist Training Program (MSTP) offers exceptionally talented individuals the opportunity to undertake a physician-scientist training program tailored to their specific research interests. Our primary directive is to create future biomedical investigators by providing the highest quality graduate medical training. This program offers a range of special services and opportunities to facilitate the completion of a dual degree (MD/PhD). In addition to efficiency, the close integration of clinical and basic science training better reflects the future careers of biomedical scientists. Information regarding the application process can be found on the [MSTP web site](#).

Admissions Process: Prospective students must apply individually to the University of Pittsburgh School of Medicine through the American Medical College Application Service (AMCAS) and complete the MSTP online application. The criteria for acceptance to the MSTP include an outstanding academic record and letters of recommendation, positive personal interviews, and significant prior research experience. Admission to the MSTP is competitive, as is admission to graduate school, with students applying to the PhD programs of their choice after the first year of medical school.

Every year the program receives approximately 400 applications for a maximum of 15 available positions. The application review committee screens each completed application and well-qualified applicants are invited for an interview in Pittsburgh. Students currently enrolled in the MSTP have an average undergraduate GPA of 3.82 and an average Medical College Admission Test score of 515.8. (These scores are for general assessment purposes only; applications are considered holistically.) We also review the letters of recommendation that are submitted to the medical school as part of candidates' School of Medicine application. Please be sure to include two letters of recommendation from faculty and/or scientists who are conversant with your research training. Previous research experience and commitment to a career as a physician-scientist are crucial in the evaluation of applications. Please convey your anticipated research interests and plans as well as past work. Additionally, a bachelor's degree or equivalent must be completed prior to matriculating.

1. **MSTP Application Deadline:** Applicants must submit an initial application through AMCAS by October 1, 2018. In order to be considered for the MSTP, your MD application along with the supplemental application for Pitt-CMU MSTP and all supporting documents, including letters of recommendation, are due no later than **11:59 PM on OCTOBER 15, 2019**. We do not grant application deadline extensions. Early applications is strongly encouraged, as interview offers are made on a rolling basis. Our MSTP admits only U.S. citizens and U.S. permanent residents; international students are ineligible for the MSTP.
2. **Acceptances:** We accept students on a rolling basis; therefore, it is very important to complete the application, including recommendation letters, as early as possible. Applicants must complete their MD secondary application as soon as possible. Starting October 17, those with completed applications will be informed of their acceptance to our program within roughly three weeks of their interview date. Applicants are ranked and notified of the following action:
 1. Acceptance into MSTP with full funding for all years of medical school and graduate school (including tuition and stipend)
 2. Wait-listed for acceptance into MSTP with funding
 3. Not accepted into MSTP

A second group of students is placed on the wait list. The University of Pittsburgh MSTP also accepts a small number of matriculated second-year medical students into the dual-degree program based upon their outstanding performance and developing interest in research pursuits during their medical school experience. Once admitted to the program, we do not accept any transfer credits from undergraduate or graduate courses to fulfill the MSTP course requirements.

The University of Pittsburgh and Carnegie Mellon University MSTP recognizes that our training environment is positively enriched by trainees with diverse backgrounds and needs. Our program gives full consideration to all eligible applicants and does not discriminate on the basis of race, color, sex, veteran status, disability, national origin, creed, marital status, age, disability, gender identity, or sexual orientation.

Tuition and Fees:

MSTP students are fully supported through the entire program. Tuition, health insurance, and stipend are supported by a combination of funds from a National Institute of Health training grant, individual graduate programs, and School of Medicine funds.

Degree and Program Requirements

The MSTP program has many unique aspects of the curriculum, designed to integrate MSTP education through courses such as molecular medicine, the research basis of medical knowledge, professional development, ethics, and longitudinal clinical clerkships. MSTP students begin training to become physician-scientists from the very first week, and are well advised about possible courses and research opportunities. Descriptions of additional MSTP courses are listed below:

- MSTP 5010 - MOLECULAR MEDICINE

- MSTP 5973 - PROFESSIONAL DEVELOPMENT II: METHODS AND ANALYSIS
 - MSTP 5290 - RESEARCH BASIS OF MEDICAL KNOWLEDGE
 - MSTP 5971 - MSTP PROFESSIONAL DEVELOPMENT
 - MSTP 5983 - ETHICS FOR MEDICAL SCIENTISTS
 - MSTP 5990 - LONGITUDINAL CLINICAL COURSES 1 & 2
 - MSTP 5993 - LONGITUDINAL CLINICAL COURSE 3
 - MSTP 5955 - MSTP WORKSHOPS
-
- MSTP 5010 - MOLECULAR MEDICINE
 - MSTP 5973 - PROFESSIONAL DEVELOPMENT II: METHODS AND ANALYSIS
 - MSTP 5290 - RESEARCH BASIS OF MEDICAL KNOWLEDGE
 - MSTP 5971 - MSTP PROFESSIONAL DEVELOPMENT
 - MSTP 5983 - ETHICS FOR MEDICAL SCIENTISTS
 - MSTP 5990 - LONGITUDINAL CLINICAL COURSE
 - MSTP 5955 - MSTP WORKSHOPS

Physician Scientist Training Five-Year Non-Degree Program

Overview: The Physician Scientist Training Program (PSTP) at the University of Pittsburgh School of Medicine is a five-year tuition assistance non-degree granting program through which students with a strong basic/translational research interest can start to build careers as physician-scientists. The PSTP website is located at pstp.pitt.edu.

Tuition Assistance: Medical school tuition is partially covered by the program (\$10,000 for each of the four years of medical school). Students do not pay tuition during their research year between MS2 and MS3.

Admissions Process: Applicants invited for an interview at the University of Pittsburgh School of Medicine are eligible to apply to the PSTP. A completed PSTP application consists of both the PSTP supplemental application and two research-focused letters of recommendation.

The PSTP interviews approximately 20 qualified candidates per year. Qualified applicants demonstrate a high degree of scholastic excellence, a sincere commitment to a career in academic medicine, and the potential to be a leader in biomedical research.

Program Completion Requirements

All PSTP students successfully complete paid research rotations during the summer before and after the first year of medical school, and a paid research year between the second and third years of medical school. PSTP students also participate in a longitudinal enrichment curriculum of research-oriented classes:

- MSELCT 5100 - PSTP PROFESSIONAL DEVELOPMENT 1
 - MSELCT 5120 - PSTP PROFESSIONAL DEVELOPMENT 2
 - MSELCT 5130 - PSTP RESEARCH BASIS OF MEDICAL KNOWLEDGE
 - MSELCT 5950 - PSTP WORK IN PROGRESS SEMINAR
-
- MSELCT 5100 - PSTP PROFESSIONAL DEVELOPMENT 1
 -
 - MSELCT 5120 - PSTP PROFESSIONAL DEVELOPMENT 2
 -
 - MSELCT 5130 - PSTP RESEARCH BASIS OF MEDICAL KNOWLEDGE

-
- MSELECT 5950 - PSTP WORK IN PROGRESS SEMINAR

Mini-Electives

Medical student curricula are packed with essential courses and content that all students must master, yet most students find time to pursue areas of personal interest. A goal of the recent curricular revision was to provide increased opportunities for such exploration and growth. We believe, and students confirm, that pursuing studies beyond the required curriculum helps students understand the connection between their basic science coursework and medical practice, and provides exposure to topics and specialties that cannot readily be included in the core curriculum. A mini-elective structure was developed to provide well-structured, rigorous and high quality experiences in areas not typically available to students (especially students in the pre-clinical years).

These courses are offered to any first- or second-year student who is able to commit to attending all course sessions, typically four to eight of them. Most mini-electives are only offered during the Spring Term of each academic year. Updates to the course list as well as date changes typically occur in the late Fall. An email is sent to students in early December announcing registration dates. Please note that the longitudinal mini-electives begin in the fall and registration for those mini-electives are made separately by contacting the course director listed on the course description.

Students who have other assigned academic commitments at the course times must meet those commitments. Therefore, some students may not be able to enroll in some mini-electives.

Course space is limited, based on the maximum number of students designated by the course director.

Students who successfully complete a mini-elective course will receive a certificate of completion. It will not be shown on their official University transcript.

For a complete list of courses, please [click here](#).

Additional questions about mini-elective courses should be directed to Betsy Nero in the Office of Medical Education at 412-648-9829 or betsy@medschool.pitt.edu.

Graduate Programs

The University of Pittsburgh School of Medicine has a long tradition of research excellence and training by world-class faculty committed to mentoring the next generation of scientists. The School of Medicine offers a variety of programs leading to the Doctor of Philosophy, the Master of Science, or a certificate. In addition, it works with other schools of the University through collaborative graduate programs. The School of Medicine also offers an MD degree as well as a joint MD/PhD program enabling exceptionally able students to earn both degrees simultaneously. These programs are described in the First Professional Program section of the School of Medicine catalog.

Contact Information

Associate Dean for Graduate Studies
Office of Graduate Studies

M240 Scaife Hall
412-648-8957
Fax: 412-648-1077
<http://www.somgrad.pitt.edu>

Degree Requirements

In addition to School of Medicine requirements, all University requirements as detailed in the *Regulations Governing Graduate Study at the University of Pittsburgh* section of this catalog apply.

Graduate Programs (PhD, MS, Certificate)

[Biomedical Informatics \(PhD, MS, Certificate\)](#)

[Biomedical Sciences \(MS\)](#)

[Computational Biology \(PhD\)](#)

[Computational Biomedicine and Biotechnology \(MS\)](#)

[Institute for Clinical Research Education](#)

Clinical & Translational Science (PhD)
Clinical Research (MS, Certificate)
Comparative Effectiveness Research (Certificate)
Medical Education (MS, Certificate)

[Integrative Systems Biology \(PhD\)](#)

[Interdisciplinary Biomedical Graduate Program](#)

Cell Biology & Molecular Physiology (PhD)
Cellular & Molecular Pathology (PhD)
Molecular Genetics & Developmental Biology (PhD)
Molecular Pharmacology (PhD)

[Microbiology and Immunology \(PhD\)](#)

[Molecular Biophysics and Structural Biology \(PhD\)](#)

[Neurobiology/Neuroscience \(PhD\)](#)

Biomedical Informatics (PhD, MS, Certificate)

Biomedical informatics is the science and engineering of information handling in health care delivery and biomedical research, studying and developing models of the various aspects of health care delivery and biomedical research in order to better understand how they operate. Those models suggest interventions that may improve health care delivery and biomedical research, including new methods for capturing, organizing, analyzing, and conveying clinical information to clinicians and researchers. Experiments are performed in

which the effect of promising interventions on health care delivery or biomedical research are observed and compared to existing methods, which serve as controls. The analysis of the results of such experiments can lead to greater understanding of health care delivery and biomedical research, and thereby to methods with which to improve them.

Example areas of investigations in biomedical informatics at the University of Pittsburgh include the development and evaluation of new computer-based methods for (1) analyzing proteomic data to diagnosis disease, (2) supporting clinical trials, (3) providing clinical information to patients, (4) understanding the mechanism of diseases from genomic data, (5) natural language processing of electronically available medical text to extract important clinical features, (6) alerting clinicians when patient care appears atypical, (7) real-time detection and assessment of outbreaks of infectious disease and (8) teaching clinical trainees.

This program offers both master's and doctoral degrees. Most students choose to follow a general course of study in biomedical informatics; some, however, elect a specialization in one of the following areas: bioinformatics, clinical informatics, image informatics, or biosurveillance/infectious disease informatics. The specific curricula for the specializations, which are variations of the general course of study in biomedical informatics, can be found on the Training Program Web site at <http://dbmi.pitt.edu>.

Individuals who want a less intensive exposure to informatics may seek a 15-credit certificate in lieu of an academic degree. The biomedical informatics certificate can be a means of augmenting professional training in fields related to informatics and/or fulfilling educational needs associated with a professional position. Trainees across all health professions are welcome.

Contact Information

Toni Porterfield
Training Program Coordinator
415 Baum
412-648-9203
Fax: 412-648-9118

More information on Admissions, Financial Aid, Curriculum, Courses, Degree Requirements, and Faculty, can be found at <http://dbmi.pitt.edu>.

PhD Requirements

Credits: To earn the PhD degree in biomedical informatics, a student must complete a program of study approved by a committee of biomedical informatics faculty. The program requirements include a minimum of 72 credits consisting of a required Foundations course (15 credits); Research Skills (7 credits); Teaching Practicum (3 credits); doctoral dissertation research (18 credits), elective courses (12 credits); additional electives and/or independent study (19 credits); successful completion of a preliminary evaluation; successful completion of a doctoral comprehensive examination composed by a doctoral committee; and research work leading to an acceptable dissertation. All required courses must be taken for a letter grade, with the exception of

the Journal Clubs/Colloquiums and some independent and/or dissertations studies (to be determined by the faculty advisors). A minimum “B” grade is required in all graduate courses.

Admission to Candidacy/Dissertation: To qualify for admission to candidacy, a student must have completed formal coursework with a 3.3 GPA or higher, passed the comprehensive examination, and received approval of the proposed subject and plan for the dissertations from their dissertation committee following a prospectus meeting. The dissertation committee usually includes the principal dissertation advisor and three additional faculty (a majority of the committee must be biomedical informatics core faculty, and have University graduate faculty status).

An appropriate dissertation project involves a substantive piece of original and independent biomedical informatics research, grounded in an appropriate mode of literature and providing a significant contribution to the field. The dissertation must be successfully defended in a public oral defense. The dissertation process will follow the applicable regulations and procedures of the University and the School of Medicine, as described in the Regulations Pertaining to Doctoral Degrees section of this document.

MS Requirements

Credits: The Master of Science in Biomedical Informatics requires a minimum of 36 credits consisting of required biomedical informatics core Foundation (15 credits); Research Skills (4 credits); electives/independent study (14 credits); and Research (3 credits).

All required courses must be taken for a letter grade, with the exception of the Journal Clubs/Colloquiums and some independent and/or dissertation studies (to be determined by faculty advisors). A minimum “B” grade is required in all graduate courses.

Research Project or Thesis: A key element of the program is a research project with two key deliverables: (1) the writing and submission of a paper of publishable quality based upon the research and (2) the completion of an oral examination on its contents. A master’s project committee will oversee the student’s research progress, including the oral comprehensive examination. Students have the option of developing their projects into a formal master’s thesis.

Successful completion of the oral examination on the research project satisfies the comprehensive examination requirement of the University’s Committee on Graduate Studies. Final certification of the completion of the master’s degree requires submission of the hard copy of the master’s research project to the program coordinator.

Certificate Requirements

The biomedical informatics certificate is a 15-credit (minimum) experience. The curriculum of all students in this program will have the following general structure: required Foundation (9 credits); electives (minimum 3 credits); and research project (3 credits)

Research Project: The research project should be summarized in a report commensurate with its scope, one copy of which must be submitted to the training program coordinator after approval by the student's research advisor.

Additional Requirements for Doctoral, Master's, and Certificate Students in Biomedical Informatics

Instruction in the Responsible Conduct of Research: This Web-based set of instructions and evaluation modules may be accessed at <http://www.ctsi.pitt.edu/RCR/index.shtml>.

Attendance at and participation in the Department of Biomedical Informatics' invited lectures, symposia, conferences, etc. (particularly the Annual Training Program Retreat and special departmental lectures). Such lectures are considered important educational experiences, as well as introducing students to primary researchers and their work in the field of biomedical informatics.

Biomedical Sciences (MS)

The Biomedical Master's Program (BMP) is designed to develop critical scientific thinking skills and train students for successful application to professional degree programs in the health sciences. Biomedicine is the centerpiece of the health sciences, interconnecting everything from medicine, dentistry and pharmacy, to clinical and biomedical research. The field of Biomedicine ultimately studies and advances understanding of the human body, how it works in health and how it goes awry in disease. The BMP at the University of Pittsburgh School of Medicine offers educational and experiential training in Biomedicine as preparation for successful careers in the health sciences within a faculty mentored community individualizing each student's success.

Contact Information

Office of Graduate Studies
M240 Scaife Hall
412-383-8716
Fax: 412-648-1077
Email: bmppitt@pitt.edu
www.bmp.pitt.edu

Admissions

Admissions Criteria:

The BMP welcomes candidates who are U.S. Citizens, non-citizen nationals, or lawfully admitted permanent residents of the U.S., or individuals who already hold, or can obtain a J-1, H1-B, or F1 transfer visa.

The program is designed for applicants with long-term goals of entering careers in the health sciences, or applying to MD, DMD, and PhD degree programs.

Candidates must have distinguished personal qualifications of past academic ability, research efforts or publications, and references. Application requirements include a bachelor's degree with a 3.0 GPA, and preference is given to applicants with a 3.3 or higher GPA, and completion of courses required for application to a professional degree program. MCAT, DAT, PCAT, or GRE scores are not required for admission, but should be reported by any applicant who has taken one of these tests. Candidates with community service, physician or dentist shadowing, patient volunteering, clinical or basic research experiences, and strong academic performance will be viewed very favorably.

Applicants who are citizens of countries where English is not the official language (and the Province of Quebec in Canada) are required to submit evidence of English Language proficiency by submitting the official results of the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS). A minimum TOEFL score of 600 (paper) or 100 (iBT), or IELTS score of at least 7.00 is required for admission to the Program. We actively seek qualified applicants from underrepresented minorities and students with disabilities.

Application Process:

- The online application process starts October 1st and closes on June 1st the following year. Admissions is conducted on a rolling basis. Responses to offers are required within 30 days of an offer being extended, or the final responses deadline of June 15th, whichever is first. Students matriculate for the beginning of the fall semesters. A strong focus on promoting diversity of successful applicants will be employed in the admissions process.
- Admissions are based upon the student's academic record, letters of recommendation, previous professional or research experience, written statement of interest, an updated resume/CV, and a online or in-person interview.

The online application is available

at: <https://admissions.gradbiomed.pitt.edu/ApplicantRegistration/ApplicantRegistration>

Financial Assistance

Financial guidance is available through the University of Pittsburgh Office of Admissions and Financial Aid: <http://oafa.pitt.edu/learn-about-aid/>. All students are responsible for their own tuition.

Degree Requirements

All requirements detailed in the Regulations Governing Graduate Study at the University of Pittsburgh will be met. The MS in Biomedical Sciences requires the completion of a minimum of 32 credits with a GPA of 3.0 or higher. Maximum credits allowed per term will be 15, and a typical course load will be 15 credits for the fall and spring terms and 2 credits for the summer term.

Foundational Components:

The Curriculum. The BMP employs science-based instruction designed to improve student preparation for professional degree programs in medicine, dentistry, research, and other related health science professions. By emphasizing understanding and how to think in addition to what to know, the BMP promotes the development of study habits that enable our students to excel and thrive in the first two years of these demanding professional

degree programs. These goals will be achieved through an integrated series of required core courses and elective courses and experiential training opportunities together with dedicated one-on-one advising and mentorship that will enable students to successfully apply to and perform well in their chosen professional school.

Experiential Training. The BMP affords opportunities for experiential training specifically tailored to the strengths and weaknesses of each individual student. The areas selected correspond to the typical aspects considered in the review of standard professional school applications: community service, patient volunteering, physician or dentist shadowing, and research training.

Mentoring. The BMP provides a three-tiered mentoring model to all students. Each student will meet with their assigned advisor during the initial phase of the program in order to identify strengths and weaknesses of the previous training received by the student. The student and advisor will prepare a preliminary set of career goals, identifying areas that require special attention for success in the student's chosen field. Periodic assessments of each student's progress towards these goals will follow. Each student receives mentorship through the career development coursework in the BMP. This includes group and one-on-one mentoring facilitated by the course instructor. Each student receives access to an International Coaching Federation career coach. This provides further personal and professional development that is entirely confidential. The students will also receive mentoring during the preparation of applications to professional and graduate schools, emphasizing standardized test preparation, personal statement writing, identifying most meaningful experiences, and honing interviewing skills.

Expanding on these three components, the BMP enables the student to differentiate with elective courses, experiential opportunities and mentoring to focus on specialized interests. These Areas of Concentration (AOCs) are in Medicine, Dentistry, or Biomedical Research. The AOCs are designed to individualize the program for students seeking future professional programs leading to the MD, DMD, or PhD degree, respectively.

Successful completion of the BMP results in conferral by the University of Pittsburgh of the Master of Science (MS) degree in the major of Biomedical Sciences. The BMP is a 12 month program. Applicants who are working may complete the program part-time over the course of two academic years

Curriculum

The BMP curriculum includes three major components: core, electives, and experiential activities. A common "core" has been designed to provide the foundational sciences for students who have a minimal level of basic science training as well as advanced education in health science thinking skills to serve students well into the first two years of professional degree programs. These courses are complemented by electives and experiential activities that are chosen based on each student's interests in his/her AOC.

Core Courses: Biochemistry and Physiology; Method and Logic in Biomedicine; Cell Signaling and Pharmacology; Comprehensive Analysis of Disease; Foundations of Successful Career Planning and Development 1 and 2, Professionalism and Non-cognitive Development 1 and 2.

Elective Courses: Human Anatomy; Histology and Cell Function in Health and Disease; Cell Biology Pathways in Treatment of Disease; Organ Systems Physiology.

Additional Elective Courses: Additional courses are available through the School of Medicine Molecular Pharmacology and Cell Biology & Molecular Physiology Graduate Programs, and the School of Dental Medicine at the University of Pittsburgh.

Experiential Courses: The BMP will provide ample opportunities in community service, hospital volunteering, and clinical shadowing. Available opportunities are matched each term to optimize the experiential benefit for all students during their tenure in the program. Research training experiences are also available in a wide range of biomedical and clinical research laboratories. Students are expected to take the initiative, guided by their faculty advisor, to find suitable matches and schedule experiential education and training sessions during the Fall, Spring, and/or Summer terms.

Training in Ethics: Ethical conduct and scientific integrity is an essential aspect of the health sciences. The BMP program instructs students on the significance and practice of ethical conduct in an annual workshop.

Academic Standards

Students must maintain a minimum cumulative GPA of 3.0. In addition, a minimum of a B grade must be earned in each of the required courses and in each of the program core courses.

Computational Biology (PhD)

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

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

*NIH Working Definition, July 17, 2000.

Contact Information

Director:

James Faeder, PhD

Associate Professor

Department of Computational & Systems Biology

School of Medicine, University of Pittsburgh

3501 Fifth Avenue, BST3, Room 3082

Pittsburgh, PA 15260

Phone: 412-648-8171

Fax: 412-648-3163

faeder@pitt.edu

Program Coordinator:

Kelly Gentile

Educational Programs Administrator

Department of Computational and Systems Biology

School of Medicine, University of Pittsburgh

3501 Fifth Avenue, BST3, Room 3067

Pittsburgh, PA 15260

Phone: 412-648-8107

Fax: 412-648-3163

kmg120@pitt.edu

Program Website:

www.compbio.pitt.edu

Admissions

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

Recommended Prerequisites

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

Application

REQUIRED MATERIALS - Deadline December 10, 2019

- The Online Application
- Statement of Purpose
- Three letters of Recommendation
- Unofficial Transcripts (submitted online)
- Conversion of GPA (for international students only)
- Unofficial TOEFL Scores (submitted online)
- Application Fee
- Applications are reviewed by the Joint CMU-Pitt PhD Program in Computational Biology. Each admitted student is assigned an initial university of matriculation, and receives an admissions offer letter from that university. Incoming students can be placed directly in a laboratory (if mutual interest exists between a student and an advisor), or go through a period of three rotations, after which the student chooses an advisor. Students have the ability to change advisors (subject to agreement of the new advisor and availability of support) and to transfer between the two universities to reflect advisor changes.
- For more information on application process, see www.compbio.pitt.edu/?page_id=163
- **Financial Aid**
- All students are provided with a stipend and full tuition remission. Assistance is also provided for health insurance.
- **Teaching Assistantships**
- Although all students are supported as research assistants throughout their time in the program, students are required to TA for one semester. There are also opportunities to assist in the teaching courses of the program. Students are also encouraged to develop teaching skills by mentoring other students and passing on their knowledge to lab mates and fellow students.

Curriculum

The curriculum is designed to train students who will shape the next generation of discovery in computational biology in academia and industry. Students are required to complete 72 credit hours of academic work toward partial fulfillment of the requirements for completion of dissertation study. Of these, 30+ are formal coursework, and the remaining to be completed with full-time research.

All students are required to take five core graduate courses. The core courses aim at providing a strong common background in computational biology before they specialize in particular research areas

Core Courses

- Machine Learning
- Introduction to Computational Structural Biology
- Computational Genomics
- Cellular and Systems Modeling
- Laboratory Methods for Computational Biologists

In addition, all students are required to take three graduate elective courses: a life science/physical science course; an advanced interdisciplinary elective specified for the student's chosen area of specialization; and one general elective.

Specialization Areas

- Computational Genomics
- Computational Structural Biology
- Cellular and Systems Modeling
- Bioimage Informatics

For more information on the curriculum, see www.compbio.pitt.edu/?page_id=87

Other Courses

In addition to core and elective courses, students take complementing courses, if needed, and participate in program seminar, journal clubs, ethics courses and directed studies toward their dissertation projects.

Program Seminar Series

Students enrolled in the program are expected to attend scientific seminars during all years of training. Beginning in their second year and ending in the year before their thesis defense, students present their research progress to fellow students and the faculty on at least an annual basis.

CPCB Course

Effective presentation of scientific data is an invaluable aspect of graduate training. Therefore, all first- and second-year students must present a scientific article on a topic (selected by a faculty member) that introduces students to the methodology and applications of computational biology. The talk is made in a format that allows the student to develop basic presentation skills. Students subsequently receive feedback on their talks, thereby improving their presentations skills as their graduate training advances.

Training in Ethics

Ethical conduct and scientific integrity is an essential aspect of research. This is especially important given the competitive nature of funding processes and the high demand for productivity. Hence, the program instructs students on the significance and practice of ethical conduct.

Directed Study

Credits are given for laboratory projects (wet or computer labs) under the direction of the dissertation advisor prior to admission to candidacy for the doctorate.

Scheduling

We anticipate two types of course schedules for students in the program. The default for students who have taken the prerequisites will be to take three courses in each of the first two terms (50-75% time) and spend the remaining time on research. Such students would normally take the core courses in the first year along with one additional course. The third and fourth terms would be split between taking electives and doing research.

Students who enter with some biology or computer science or physical science background but not with sufficient background to take all of the core courses would take a mix of missing prerequisites and core courses in each of the first two terms (approx. 90% time) and spend 10% time on research. These students would then

take a mix of remaining core courses and electives in the third and fourth terms (along with 30% research) and finish electives in the fifth and/or sixth terms.

Comprehensive Examination

Students are required to pass a comprehensive examination after completion of their courses, prior to being officially admitted to candidacy to the PhD degree. Students are expected to complete this examination no later than the beginning of the spring term of their third year. The comprehensive examination consists of two parts: a 12-page “grant-style” written proposal of the proposed research, followed by an oral defense of the proposed research.

Post-Comprehensive Qualifying Examination

Students who have been accepted to PhD candidacy conduct research on a full time basis, and are required to complete a minimum of 40 credit hours (9-14 credits per term) of full-time dissertation study in order to meet the criteria for dissertation defense. Hence, all students will have completed at least 72 credit hours of study prior to graduation, including 29 credit hours of core + elective courses, and at least 40 credit hours of dissertation research.

Completion of Degree

The program is structured in such a way that students can finish their degree within four years of entering their dissertation laboratory. However, it is recognized that the actual time required to attain the degree depends on the specific type of research undertaken and how quickly progress is made in completing the experimental program.

Terminal Master’s Degree

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

For more information on the program, such as list of training faculty, please see www.compbio.cmu.edu/?page_id=31615

Computational Biomedicine and Biotechnology, MS

The Computational Biomedicine and Biotechnology (CoBB) Master’s of Science program trains leaders who can translate cutting-edge computational technologies into real-world advances in biomedicine and biotechnology. Seated in the Department of Computational and Systems Biology, the program focuses on the interface between computer science and applied biology. It is appropriate for students with backgrounds in either quantitative disciplines (computer science, engineering) or biological sciences and who seek to have an impact in the rapidly evolving field of computational biotechnology. Students in the CoBB program will learn to develop and apply novel computational, mathematical, statistical, and *in silico* techniques to meet current challenges in biotechnology. Our trainees will be equipped with the necessary skills for successful biomedical data science and biocomputing technology careers in the health care and biotechnology industry, government, and academia.

Contact Information

Executive Director:

Tim Lezon, PhD

Department of Computational and Systems Biology

Suite 3064 BST3

3501 Fifth Avenue

Pittsburgh, PA 15260

412.383.8042

lezon@pitt.edu

Master's Program Administrator:

Kristin Pierce

Department of Computational and Systems Biology

Suite 3064 BST3

3501 Fifth Avenue

Pittsburgh, PA 15260

412.648.3333

kristin.pierce@pitt.edu

Executive Committee:

Joseph Ayoob, PhD

Ivet Bahar, PhD

Chakra Chennubhotla, PhD

James Faeder, PhD

Program Website:

www.csb.pitt.edu/cobb/

Admissions

CoBB welcomes students from various backgrounds, including life science, computer science, physical science, mathematics and statistics, and engineering majors, students with interdisciplinary or multi-disciplinary backgrounds.

Application

Required Materials:

- The Online Application
- Statement of Purpose
- Three letters of Recommendation
- Unofficial Transcripts
- Unofficial TOEFL Scores
- Application Fee

Financial Assistance

Financial guidance is available through the University of Pittsburgh Office of Admissions and Financial Aid: <http://oafa.pitt.edu/learn-about-aid/>. All students are responsible for their own tuition.

Degree Requirements

To receive the CoBB MS, all students are required to complete a minimum of 30 credits of masters-level coursework and to maintain an overall GPA of 3.0 or higher.

Curriculum

- At least 4 research credits of independent study
- A summer internship or additional independent study, worth 3 credits
- 3 credits of Fundamentals of Computational Biology
- 2 credits of Professional Development
- One course (taken or waived) from each of the five groups
 - Computational Structural Biology
 - Computational Systems Biology
 - Computational Genomics
 - Computer Science
 - [Electives](#)

Independent Study

Gaining hands on experience in solving problems in computational biology is an essential part of CoBB training. Each student is therefore required to take a minimum of 4 credits of independent study with a

University of Pittsburgh faculty member. Students are expected to select a research mentor for the independent study in their first semester, and to complete the research requirement in the second and/or third semesters.

Internship

To gain experience in the professional application of computational biology, students are required to participate in a 2 to 3 month summer internship at a company of their choosing. Acceptable internship sites include industrial labs, biotech/pharma companies, and governmental organizations.

Students will present a written report with well-defined structure and content at the end of their internship to summarize their experience and the skills they acquired during their experiential training, and to make recommendations for future work. They will also make an oral presentation to share their experience with others.

Completion of Degree

The program is structured in such a way that students can finish their degree within 12-20 months, depending on the background of the student. To complete the degree in one year, students must demonstrate proficiency in programming, calculus and linear algebra.

For more information on the program, please visit www.csb.pitt.edu/cobb/

Institute for Clinical Research Education

The Institute for Clinical Research Education (ICRE) is the home for the University of Pittsburgh's premier clinical and translational research training programs. The ICRE has developed customized degree programs that emphasize the multidisciplinary nature of clinical and translational research and engage adult learners by focusing on applied approaches to building skills. <http://www.icre.pitt.edu/>

Graduate Training Programs:

- [Clinical and Translational Science \(PhD\)](#)
- [Clinical Research \(MS\)](#)
- [Clinical Research \(Certificate\)](#)
- [Medical Education \(MS\)](#)
- [Medical Education \(Certificate\)](#)
- [Certificate in Clinical and Translational Science for Doctoral Students in the Health Sciences](#)

Clinical and Translational Science (PhD)

The Institute for Clinical Research Education at the University of Pittsburgh has designed the PhD Program in Clinical and Translational Science to train researchers in this emerging field that aims to close the gap between basic science and clinical research. This rigorous and advanced training program is intended primarily for clinicians, and aims to substantially enhance the capabilities of scientists to conduct high-quality clinical and translational research.

Contact Information

Institute for Clinical Research Education
200 Meyran Ave, Suite 300
Pittsburgh, PA 15213
Phone: 412-586-9632
Fax: 412-586-9672
email: icre@pitt.edu

<http://www.icre.pitt.edu/ClinTransPhD/index.html>

Admissions

Admissions Criteria

Applicants must meet the following requirements before filling out an online application.

- Candidates must have completed one of the following degrees: MD, DDS, DMD, DO, ND, OD, PharmD, PhD, DNS in nursing, PhD with clinical responsibilities, or other professional degree as deemed appropriate by the selection committee.
- Candidates must have a high level of interest and potential for the pursuit of innovative clinical research as a major focus of their career plan.
- Candidates from departments who ensure 50%-75% of protected time during their pursuit of the degree.
- A minimum GPA of 3.5 on a 4.0 scale
- TOEFL or IELTS test results (when applicable)

Timeline

The PhD Program in Clinical and Translational Science accepts applications from September 1 through January 31 each year. In order to guarantee that you are considered for admission, we must receive your application and all component parts by January 31. Students will be notified via email of admission decisions approximately 1-2 months following the close of the application cycle.

Financial Assistance

The Institute for Clinical Research Education does not provide financial aid. Unless students have other funding sources, they are responsible for covering the tuition costs, taxes, and fees associated with their course enrollment.

Degree Requirements

The PhD in Clinical and Translational Science curriculum is organized into 4 categories of coursework: Core, Advanced Selectives, Research Specialization, and Dissertation Research. While students advance through the program they will also complete the Preliminary Evaluation, Comprehensive Exam, and Dissertation Milestone.

To view the curriculum in detail, please visit this [page](#).

Non-credit Requirements/Milestones

Responsible Conduct of Research (RCR) Requirement

Responsible Conduct of Research (RCR) Requirement: Clinical Research Degree Program students are required to attend 8, 1-hour Responsible Conduct in Research workshops. These workshops are offering through the Clinical and Translational Science Institute (CTSI).

Comprehensive Examination

PhD in CTS students are required to complete a Comprehensive exam. This exam consists of a written examination in the form of an NIH R01-style proposal (including, at a minimum, specific research aims, background and significance, and research methods) and an oral defense of the written portion.

Doctoral Prospectus and Dissertation

PhD in CTS students must complete both a Doctoral Prospectus and successfully complete and defend a Doctoral Dissertation.

- Individuals must prepare a dissertation proposal for presentation to a doctoral dissertation committee at a formal dissertation overview meeting. At this meeting, the dissertation committee members will provide guidance in shaping the conceptualization and methodology for the individual's Doctoral Dissertation.
- The proposal, writing, and defense of a culminating research project. The written work must conform to the University of Pittsburgh style manual (www.pitt.edu/~graduate/etd/formatguidelineshtml.html) The Final Oral Defense is a public defense of the Doctoral Dissertation.

More information:

Please view the [PhD in CTS Program Handbook](#) (http://www.icre.pitt.edu/documents/PhD_in_CTS_Handbook.pdf) for complete program details.

Clinical Research (MS)

This 30-credit Master of Science Program is for highly talented individuals from a broad range of disciplines who want concentrated training in the design and implementation of high-quality clinical research.

Contact Information

Institute for Clinical Research Education
200 Meyran Ave, Suite 300
Pittsburgh, PA 15213
Phone: 412-586-9632
Fax: 412-586-9672

Email: icre@pitt.edu
<http://www.icre.pitt.edu/MSClinicalResearch/index.html>

Admissions

Admissions Criteria

- Applicants must meet the following requirements before filling out an online application.
- Candidates are encouraged, but not required, to have completed a graduate or professional degree.
- Candidates must have a high level of interest and potential for the pursuit of innovative clinical research as a major focus of their career plan.
- Candidates from departments who ensure 50%-75% of protected time during their pursuit of the degree.
- A minimum GPA of 3.2 on a 4.0 scale
- TOEFL or IELTS test results (when applicable)

Timeline

The Master of Science in Clinical Research Program accepts applications from December 15 through February 28 each year. In order to guarantee that you are considered for admission, we must receive your application and all component parts by February 28. Students will be notified via email of admission decisions approximately 1-2 months following the close of the application cycle.

Financial Assistance

The Institute for Clinical Research Education does not provide financial aid. Unless students have other funding sources, they are responsible for covering the tuition costs, taxes, and fees associated with their course enrollment.

Degree Requirements

Core Curriculum

The purpose of the core curriculum is to provide trainees with the basic set of skills that are required by clinical investigators in all fields of interest. These skills include an understanding of research design, epidemiologic methods, biostatistics, study and survey design, and measurement of outcomes.

The four core courses that comprise the core curriculum are offered in July and August. They are commonly taken together but can be distributed over two summer terms with the guidance of an academic advisor.

[CLRES 2005 - COMPUTER METHODS FOR CLINICAL RESEARCH](#)

[CLRES 2010 - CLINICAL RESEARCH METHODS](#)

[CLRES 2020 - BIOSTATISTICS](#)

[CLRES 2040 - MEASUREMENT IN CLINICAL RESEARCH](#)

Advanced Grant Writing Course

This course focuses on research design and development and is a two-part course offered during the fall and spring terms. The Advanced Grant Writing course is taken by MS students during year 2.

[CLRES 2071 ADVANCED GRANT WRITING PART 1](#)

[CLRES 2072 - ADVANCED GRANT WRITING PART 2](#)

Specialty Track Requirements:

Students who enter the Master of Science in Clinical Research Program will select a curriculum track that offers specialized training in a specific clinical research area. Each specialty track offers a different curriculum of required courses, which can be viewed in the Program Handbook. The MS program has 5 specialty tracks:

- Clinical Trials Research Track
- Comparative Effectiveness Research Track
- Health Services Research Track
- Translational Research Track
- Innovation Track

Each of these tracks has a distinct set of required courses that allow students to specialize in an area of clinical research. All MS students will also take a selection of elective courses to reach the 30 credit minimum required for this degree.

Comprehensive Competency Review:

The Comprehensive Competency review is a program check-in completed at the midpoint of a student's degree progress. The MS in Clinical Research Program is designed to train students in the skills, knowledge, and

professional norms for clinical researchers and the Comprehensive Competency Review helps students be confident that they are on track to develop competence in all key areas.

Thesis or Substantive Research Project:

The MS in Clinical Research requires each student to complete a formal thesis or substantive research project. Students are able to write a standard thesis, grant proposal, or 2 manuscripts to fulfill this requirement.

Students must successfully defend their research project to a review committee as required by the University's Committee on Graduate Studies.

Responsible Conduct in Research (RCR) Requirement

Clinical Research Degree Program students are required to attend 8, 1-hour Responsible Conduct in Research workshops. These workshops are offered through the Clinical and Translational Science Institute (CTSI).

More Information:

For additional program details, please visit the Master of Science in Clinical Research Program (<http://www.icre.pitt.edu/MSClinicalResearch/index.html>) and review the Program Handbook (http://www.icre.pitt.edu/documents/Clinical_Research_Handbook.pdf.)

Clinical Research (Certificate)

The Certificate in Clinical Research Program is aligned with the mission of the Institute for Clinical Research Education to offer the highest-caliber training and education in clinical research and to enhance collaboration among trainees from multiple disciplines. This program is geared toward clinicians who are pursuing a research career, and can be completed over a year of part-time study.

Contact Information

Institute for Clinical Research Education
200 Meyran Ave, Suite 300
Pittsburgh, PA 15213
Phone: 412-586-9632
Fax: 412-586-9672

Email: icre@pitt.edu
<http://www.icre.pitt.edu/CertClinicalResearch/index.html>

Admissions

Admissions Criteria

- Applicants must meet the following requirements before filling out an online application.

- Candidates are encouraged, but not required, to have completed a graduate or professional degree.
- Candidates must have a high level of interest and potential for the pursuit of innovative clinical research as a major focus of their career plan.
- Candidates from departments who ensure 50%-75% of protected time during their pursuit of the degree.
- A minimum GPA of 3.2 on a 4.0 scale
- TOEFL or IELTS test results (when applicable)

Timeline

The Certificate in Clinical Research Program accepts applications from December 15 through February 28 each year. In order to guarantee that you are considered for admission, we must receive your application and all component parts by February 28. Students will be notified via email of admission decisions approximately 1-2 months following the close of the application cycle.

Financial Assistance

The Institute for Clinical Research Education does not provide financial aid. Unless students have other funding sources, they are responsible for covering the tuition costs, taxes, and fees associated with their course enrollment.

Degree Requirements

Coursework Requirement:

Core Curriculum

The purpose of the core curriculum is to provide trainees with the basic set of skills that are required by clinical investigators in all fields of interest. These skills include an understanding of research design, epidemiologic methods, biostatistics, study and survey design, and measurement of outcomes.

The four core courses that comprise the core curriculum are offered in July and August. They are commonly taken together but can be distributed over two summer terms with the guidance of an academic advisor.

[CLRES 2005 - COMPUTER METHODS FOR CLINICAL RESEARCH](#)

[CLRES 2010 - CLINICAL RESEARCH METHODS](#)

[CLRES 2020 - BIostatISTICS](#)

[CLRES 2040 - MEASUREMENT IN CLINICAL RESEARCH](#)

Electives

Students collaborate with your academic advisor to enroll in ICRE courses that most benefit their research and future career goals. Certificate students take a minimum of 6 elective credits.

Responsible Conduct of Research (RCR) Requirement:

Clinical Research Degree Program students are required to attend 8, 1-hour Responsible Conduct in Research workshops. These workshops are offering through the Clinical and Translational Science Institute (CTSI).

More Information:

For additional program details, please visit the certificate program [page](#) and review the [program handbook](#).

Medical Education (MS)

The Master of Science in Medical Education Program is designed to help academically oriented health care professionals enhance their education, strengthen their teaching skills, and expand their ability to facilitate the learning process of students and residents in a variety of clinical teaching environments. This program is typically completed over 2 years of part-time study. Alumni of this program have gone on to make valuable contributions to the field of medical education, many of them through leadership positions in top training programs across the country.

Institute for Clinical Research Education
200 Meyran Ave., Suite 300
412-586-9632
Fax: 412-586-9672

Email: icre@pitt.edu
http://www.icre.pitt.edu/MS_MedEdu/index.html

Admissions

Admissions Criteria

Candidates must have completed one of the following degrees: MD, DDS, DMD, DO, ND, OD, PharmD, PhD, DNS in nursing, PhD with clinical responsibilities, or other professional degree as deemed appropriate by the selection committee.

Candidates must have a high level of interest in and potential for the pursuit of innovative medical education as a major focus of their career plan.

Candidates must be based in departments that ensure adequate protected time to participate in courses and complete a research project during their pursuit of the degree.

A minimum GPA of 3.2 on a 4.0 scale

TOEFL or IELTS results (when applicable)

Timeline

The Master of Science in Medical Education Program has two application cycles per year. The application period for the Spring Term occurs from September 1 through October 31. The application period for the

Summer Term occurs from December 15 through February 28. In order to guarantee that you are considered for admission, we must receive your application and all component parts by the last day of the admission cycle. Students will be notified via email of admission decisions 1-2 months following the close of the application cycle.

Financial Assistance

The Institute for Clinical Research Education does not provide financial aid. Unless students have other funding sources, they are responsible for covering the tuition costs, taxes, and fees associated with their course enrollment.

Degree Requirements

The University requires the successful fulfillment of a minimum of 30 credits for awarding a Master of Science in Medical Education. The degree is granted upon the completion of a tightly integrated curriculum with three components: (1) coursework plus observed teaching activities focusing on adult learning, classroom and clinical teaching skills, curriculum development, innovation in medical education, professional development, and medical administration; (2) additional courses to provide trainees with fundamental research skills; and (3) a project on curriculum development or a mentored research project.

Core Curriculum

All Master of Science trainees in the Medical Education Program enroll in 10 required courses that cover the fundamental aspects of the field of medical education. The total number of required credits ranges from 17 to 19 credits depending on the number of [MEDEDU 2080 - MASTERS RESEARCH](#) credits taken (trainees can enroll in 1 to 3 thesis research credits). Below are the required courses:

[MEDEDU 2005 - COMPUTER METHODS FOR CLINICAL RESEARCH](#)

[MEDEDU 2010 - CLINICAL RESEARCH METHODS](#)

[MEDEDU 2020 - BIostatISTICS](#)

[MEDEDU 2040 - MEASUREMENT IN CLINICAL RESEARCH](#)

[MEDEDU 2080 - MASTERS RESEARCH](#)

[MEDEDU 2100 - ENHANCING TEACHING SKILLS](#)

[MEDEDU 2111 - FUNDAMENTALS OF ADULT LEARNING PART 1](#)

[MEDEDU 2120 - PROFESSIONAL DEVELOPMENT](#)

[MEDEDU 2130 - CURRICULUM DEVELOPMENT & EVALTN](#)

Electives

Trainees choose elective coursework to reach the required 30 credits. These courses may be offered through the [Medical Education](#) or [Clinical Research](#) program.

Independent Research Project

Trainees pursuing the Master of Science in Medical Education are required to complete a substantive research project. This thesis requirement can take the form of a curriculum development project, survey research, qualitative research, or other type of research project. The trainee must be the principal investigator for their thesis project and plan to publish their research in a peer-reviewed journal.

More Information

To learn more about the Medical Education Academic Programs, please visit the program [page](#) and review the [program handbook](#)

Medical Education (Certificate)

This certificate program is flexible and allows students to choose courses within the Medical Education program that align with their learning and professional goals. Students in this program typically choose courses in teaching and learning to enhance their skills as a clinician-educator at either a university or community-based program. The program is typically completed over one year of part-time study.

Contact:

Institute for Clinical Research Education
200 Meyran Ave., Suite 300
412-586-9632
Fax: 412-586-9672
http://www.icre.pitt.edu/Cert_MedEdu/index.html

Admissions

Admissions Criteria

Applicants must meet the following requirements before filling out an online application.

Candidates must have completed one of the following degrees: MD, DDS, DMD, DO, ND, OD, PharmD, PhD, DNS in nursing, PhD with clinical responsibilities, or other professional degree as deemed appropriate by the selection committee.

Candidates must have a high level of interest in and potential for the pursuit of innovative medical education as a major focus of their career plan.

Candidates must be based in departments that ensure adequate protected time to participate in courses and complete a research project during their pursuit of the degree.

A minimum GPA of 3.2 on a 4.0 scale

TOEFL or IELTS results (when applicable)

Timeline

The Certificate in Medical Education Program has two application cycles per year. The application period for the Spring Term occurs from September 1 through October 31. The application period for the Summer Term occurs from December 15 through February 28. In order to guarantee that you are considered for admission, we must receive your application and all component parts by the last day of the admission cycle. Students will be notified via email of admission decisions 1-2 months following the close of the application cycle.

Financial Assistance

The Institute for Clinical Research Education does not provide financial aid. Unless students have other funding sources, they are responsible for covering the tuition costs, taxes, and fees associated with their course enrollment.

Degree Requirements

The Certificate in Medical Education offers a very flexible curriculum. Students are required to complete 15 credits, but are able to choose courses based on their individual educational interests and research goals. A minimum of 9 credits out of the 15 must be Medical Education courses. Please see the ICRE [courses page](#) for a complete list of our courses.

More information

To learn more about the Medical Education Program at the Institute for Clinical Research Education, please visit the program [page](#) and review the [program handbook](#).

Integrative Systems Biology (PhD)

ISB is an innovative program in graduate training that rapidly immerses students into a research environment, then mentors them to become independent scientific practitioners, skilled not only in the art of technical execution but in the creative multidisciplinary thinking required to address important questions in systems biology. Students receive a PhD in Integrative Systems Biology.

Integrative Systems Biology is a field of study that has emerged within the last decade as a unifying discipline that focuses on placing the molecules that comprise living systems within functional and organism contexts.

The goal of ISB is to utilize all of our available resources to create a training and research environment to answer challenging questions of fundamental importance in biomedical and life sciences. The ISB faculty are drawn from cellular, developmental, molecular and systems biologists across the University of Pittsburgh campus and are distributed between research foci:

Quantitative Biology

Translational Medicine

Contact Information

Integrative Systems Biology Program

Shari Murphy - Program Administrator

Biomedical Science Tower 3, 5th floor, 5061

3501 5th Avenue

University of Pittsburgh

Pittsburgh, PA 15213

412-383-4318

Fax: 412-383-2211

E-mail: sas101@pitt.edu

<http://www.isb.pitt.edu>

Admission Requirements and Procedures

Students most likely to gain admittance will have a baccalaureate degree from a natural science, physical science, or engineering program, a grade point average of 3.0 (on a scale of 4), and three letters of recommendation. As this is an accelerated program, students should have prior immersive experience in research studies. Applicants who are citizens of countries where English is not the official language (and the Province of Quebec in Canada) are required to submit evidence of English language proficiency by submitting the official results of the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS). A minimum TOEFL score of 650 (paper), IELTS score of at least 7.50 or iBT score of at least 100 is required for admission to the Program.

Additional information and a link to the online application can be found at <http://www.isb.pitt.edu/how-apply>

Financial Assistance

All full-time students receive a stipend, educational enrichment fund, computing and network service, and individual health insurance (with option to purchase additional family coverage) during their graduate training.

Degree Requirements

This is an accelerated program that provides the opportunity for students to complete their degrees in approximately 4 years. Students enter the program in the fall session, and after performing three rotations identify an advisor and area of research dissertation research project. Areas of research focus include Cell, Development, and Molecular Biology, Quantitative Biology, Translational Medicine, and Genes and Evolution. Required course work is completed during the first two years. After Spring of the students' second year, they take a comprehensive examination that includes the generation of a research proposal ready for submission to national fellowship programs. Students receive career mentoring throughout their ISB training to ensure a seamless transition to the postdoctoral level. Additional information can be found in the Student Handbook: https://www.isb.pitt.edu/sites/default/files/ISB-Handbook_043019.pdf.

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

ISB 2000 - LABORATORY RESEARCH ROTATION

ISB 2070 - THE BEDSIDE TO BENCH

INTBP 3240 - GRADUATE STUDENT WRITING SEMINAR

MSCBIO 2025 - INTRODUCTION TO BIOINFORMATICS PROGRAMMING IN PYTHON

BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS

ISB 2020 - SYSTEMS BIOLOGY I

ISB 2035 - SYSTEMS BIOLOGY II

ISB 2060 - ISB CONFERENCE

ISB 3090 - PHD DISSERTATION RESEARCH

Interdisciplinary Biomedical Graduate Program

Through the Interdisciplinary Biomedical Graduate Program, students may be admitted into one of the following 4 PhD degree-granting programs in the School of Medicine:

[Cell Biology and Molecular Physiology \(PhD\)](#)

[Cellular and Molecular Pathology \(PhD\)](#)

[Molecular Genetics and Developmental Biology \(PhD\)](#)

Molecular Pharmacology (PhD)

Students will not be admitted to pursue a master's degree. However, students who cannot complete the PhD program due to extenuating personal, financial, academic, or medical reasons may be awarded a master's degree.

The Interdisciplinary Biomedical Graduate Program is flexible and accommodates students whose research interests are still evolving by introducing them to a variety of fields through interdisciplinary courses and laboratory experiences. For those students who have a clearly defined research interest, the program offers the opportunity to move quickly into a laboratory and accelerate their study.

For more information on Admissions, Financial Assistance, Training Faculty, etc. please visit www.gradbiomed.pitt.edu

Contact Information

Associate Dean for Graduate Studies

Office of Graduate Studies

M240 Scaife Hall

3550 Terrace Street, Pittsburgh PA 15261

412-648-8957

Fax: 412-648-1077

E-mail: gradstudies@medschool.pitt.edu

www.gradbiomed.pitt.edu

Academic Standards

Students must maintain a minimum overall cumulative GPA of 3.00. In addition, a minimum of a B grade must be earned in each of the required courses and in each of the degree-granting program core courses.

General Degree Requirements - All Interdisciplinary Biomedical Graduate Students

The first term core course, Foundations of Biomedical Science, is required of all students and is followed by increasingly specialized course work in the discipline-specific program the student has chosen. A course in biomedical experimental design and analysis and a course in research ethics are also required of all students.

The first year includes three laboratory research rotations. (*See listing of Required Courses below.*) Students are guided through their first year of graduate study by a faculty mentor assigned by the program.

The mentor helps to identify rotation laboratories, provides advice on classes, and ensures that students reach appropriate milestones in the first year of the program. At the end of the first year, a preliminary student performance evaluation is conducted by the Program Steering Committee. When a student has successfully completed the preliminary evaluation and chosen a dissertation advisor, the student transfers into one of the degree-granting programs.

Evaluation following the first year is undertaken by the degree-granting program and includes course performance and a comprehensive exam at the end of the second year of study. The comprehensive exam is in the form of an original research proposal followed by an oral examination before a faculty committee. Upon successful completion of the comprehensive exam, the student nominates a dissertation advisory committee composed of a minimum of 5 members. A majority of the committee (including the major advisor) must have graduate faculty status. The student then presents a dissertation proposal to the committee and is admitted to candidacy. The training program is completed by execution of an original and independent research project and defending a dissertation. *Please see Regulations Pertaining to Doctoral Degrees.*

Required Courses-All Students

The following courses are required of all students in the Interdisciplinary Biomedical Graduate Program:

[INTBP 2000 - FOUNDATIONS OF BIOMEDICAL SCIENCE](#)

[INTBP 2005 - FOUNDATIONS CONFERENCE](#)

[INTBP 2013 - D2K: FROM DATA TO KNOWLEDGE- BIOMEDICAL EXPERIMENTAL DESIGN AND ANALYSIS](#)

[INTBP 2290 - SCIENTIFIC ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH](#)

[INTBP 2010 - LABORATORY RESEARCH ROTATION](#)

A minimum of 72 credits (32 course credits and 40 PhD dissertation research credits) beyond the baccalaureate degree is required for the PhD degree.

Cell Biology and Molecular Physiology (PhD)

The graduate program in Cell Biology and Molecular Physiology has a rich tradition of scientific training and discovery. Graduates of the PhD program have gone on to become chairs of departments at six major U.S. medical schools, and are represented at all levels of academic and biomedical research. The program combines basic and clinical research faculty who are dedicated to the training of students. Faculty employ an integrative biology focus: combining tools of imaging, genetics, biochemistry, molecular biology, structural biology, computational modeling and physiological approaches to understand the functions of cells, tissues and organisms. Both basic scientists and clinical researchers seek to investigate dysregulation of normal cell biological functions in human disease. The program is home to the Center for Biologic Imaging, a state-of-the-art imaging center and the NIH-supported, O'Brien Kidney Center. Areas of expertise in the program include the cellular trafficking of proteins and lipids, genetic disorders of ion channels, regulation of gene expression during development, DNA damage repair and cancer, models of neurodegeneration and aging, signal

transduction in diabetes, cell biology and physiology of renal diseases and the regulation of male and female reproduction systems.

Core Courses

Apart from the general degree requirements for all Interdisciplinary Biomedical Science Graduate students, students take the following 4 required courses for the Cell Biology and Molecular Physiology program:

MSCBMP 2880 - CELLULAR BIOLOGY OF NORMAL AND DISEASE STATES and

MSCBMP 2885 - IMAGING CELL BIOLOGY IN LIVING SYSTEMS

OR

MSCBMP 2860 - MULTIPARAMETRIC MICROSCPC IMAGNG and

MSCBMP 2875 - EXPERIMENTS AND LOGIC IN CELL BIOLOGY

AND

INTBP 3240 - GRADUATE STUDENT WRITING SEMINAR

Other electives include:

MSCBMP 2870 - HISTOLOGY

MSCBMP 2840 - REGULATION OF MEMBRANE TRAFFIC

MSCBMP 2860 - MULTIPARAMETRIC MICROSCPC IMAGNG

MSCBMP 2885 - IMAGING CELL BIOLOGY IN LIVING SYSTEMS

Cellular and Molecular Pathology (PhD)

The Cellular and Molecular Pathology program integrates the fields of cellular and molecular biology with the study of human disease, primarily in the context of Regenerative Medicine with translational goals. Utilizing the latest technologies, the program combines both basic science and clinical research to explore fundamental questions related to the biology of normal tissue growth and embryonic development, current best practices in tissue engineering, and the cellular and molecular pathways that lead to the development of disease. Active

research programs investigate diverse topics such as liver development, disease and transplantation in the Pittsburgh Liver Research Center; developmental neuroscience and neurological diseases; mechanisms of gene regulation; cancer biology; angiogenesis; pulmonary disease; inflammation and autoimmunity; genetics; bioinformatics; and molecular diagnostics. Research laboratories are located throughout the medical center campus and research studies involve both basic research scientists (PhD's) and clinician scientists (MD/PhD's).

Core Courses

Apart from the general degree requirements for all Interdisciplinary Biomedical Science Graduate students, the following are core courses for the Cellular and Molecular Pathology program:

INTBP 3240 - GRADUATE STUDENT WRITING SEMINAR

MSCMP 2730 - MOLECULAR MECHANISMS OF CELL GROWTH & DIFFERENTIATION AND EITHER

MSCMP 3710 - CANCER BIOLOGY AND THERAPEUTICS OR

MSCMP 2740 - MOLECULAR PATHOBIOLOGY OR

MSCMP 3790 - BASICS OF PERSONALIZED MEDICINE

Additionally we require at least 5 terms of:

MSCMP 2750 - RESEARCH SEMINAR

As well as two electives of your choice

From the above electives or from courses throughout the School of Medicine on diverse topics of interest to students such as the following CMP-sponsored courses:

MSCMP 3735 - EXTRACELLULAR MATRIX IN TISSUE BIOLOGY AND BIOENGINEERING

MSCMP 3740 - STEM CELLS

MSCMP 3750 - ANGIOGENESIS

MSCMP 3770 - CELL THERAPY

Molecular Genetics and Developmental Biology (PhD)

The Molecular Genetics and Developmental Biology (MGDB) graduate program provides an exciting and vigorous academic environment for highly motivated and qualified students to prepare for a rewarding career in biomedical research. The MGDB program brings together faculty in both basic and applied sciences, including researchers from the School of Medicine, the School of Arts and Sciences, the University of

Pittsburgh Cancer Institute, the Children's Hospital of Pittsburgh, the Magee-Womens Research Institute and the Department of Biological Sciences. MGDB faculty have a wide diversity of interests and are pursuing research projects that address fundamental, contemporary issues in biology and medicine. MGDB research is at the cutting edge of many emerging fields, including developmental and reproductive biology, stem cell biology, proteomics, computational biology, genomics and DNA replication, damage and repair. Our work has direct relevance to acute injury, cancer, diabetes, muscular dystrophy, heart disease, kidney disease, fertility/infertility, congenital disorders and other genetic diseases and regenerative medicine. We are committed translating lab bench discoveries to the bedside and graduate students are fully integrated in all aspects of our investigative work.

Core Courses

Apart from the general degree requirements for all Interdisciplinary Biomedical Science Graduate students, the following are core courses in the Molecular Genetics and Developmental Biology program:

MSMGDB 2525 - DEVELOPMENTAL MECHANISMS OF HUMAN DISEASE

MSMGDB 2535 - MODEL ORGANISMS

MSMGDB 2550 - RESEARCH SEMINAR

INTBP 3240 - GRADUATE STUDENT WRITING SEMINAR

Molecular Pharmacology (PhD)

Biomedical research in the Molecular Pharmacology program is focused on cutting-edge discovery of molecular and cellular mechanisms of intracellular signaling using a combination of biochemical, molecular biological, biophysical, ultrastructural, and imaging approaches. Basic research into cellular communication in health and disease is the main emphasis of the program with the added advantage of an array of translational opportunities into the development and testing of novel therapeutic agents. Applications of this common theme are directed toward research in molecular biology of cancer, neuropharmacology, cell and organ system pharmacology, signal transduction, neurodegenerative diseases and drug discovery. Formal collaborative interactions with the Pittsburgh Cancer Institute, the Center for Neuroscience, the Pittsburgh Institute for Neurodegenerative Diseases (PIND), the Division of Clinical Pharmacology, the University of Pittsburgh Drug Discovery Institute, University of Pittsburgh Structural Biology Imaging Center, the Vascular Medicine Institute and the Center for Biological Imaging provide a broad multidisciplinary approach to training in modern molecular pharmacology.

Core Courses

Apart from the general degree requirements for all Interdisciplinary Biomedical Science Graduate students, the following are core courses in the molecular pharmacology program:

MSMPHL 2310 - PRINCIPLES OF PHARMACOLOGY

MSMPHL 3360 - MOLECULAR PHARMACOLOGY

MSMPHL 2360 - BIOLOGY OF SIGNAL TRANSDUCTION

MSMPHL 3310 - CANCER BIOLOGY AND THERAPEUTICS

MSMPHL 3375 - NEUROPHARMACOLOGY

MSMPHL 2370 - DRUG DISCOVERY

Microbiology and Immunology (PhD)

The Program in Microbiology and Immunology (PMI) is an innovative program in graduate education that is administered through the School of Medicine of the University of Pittsburgh. The program aims to train highly motivated PhD students as self-reliant scholars in an environment where they have ready access to the breadth of expertise, approaches and sub-disciplines of microbiology and immunology. Students in this program will gain broad knowledge of diverse fields within microbiology and immunology, which is supplemented by seminars, journal clubs and laboratory rotations. The program rapidly immerses students into a research environment, and mentors them to become independent and creative scientists.

PMI brings together faculty in basic and translational sciences, including researchers from the University of Pittsburgh School of Medicine (Departments of Microbiology & Molecular Genetics and Immunology; Center for Vaccine Research; Microbiome Center), Magee-Women's Research Institute, Rangos Research Center at the Children's Hospital of Pittsburgh, and the University of Pittsburgh Cancer Center (e.g. Cancer Virology and Cancer Immunology Programs).

Faculty research interests in the PMI can be broadly divided into the following areas:

Autoimmunity

Basic immunological mechanisms

Bacteriology

Cancer immunology

Discovery and development of novel antimicrobial therapies

Host-pathogen interactions

Immunology of organ transplantation

Innate Immunity

Parasitology

Viral and bacterial pathogenesis

Virology

Contact Information**Director:**

Jennifer Bomberger, PhD

Associate Professor, Department of Microbiology and Molecular Genetics

University of Pittsburgh, School of Medicine

450 Technology Drive, 416 BRDG2

Pittsburgh, PA 15219

Phone: 412-624-1963

Email: jbomb@pitt.edu

Associate Director:

Robert Binder, PhD

Associate Professor, Department of Immunology

University of Pittsburgh, School of Medicine

200 Lothrop Street, E1058 BST

Pittsburgh, PA 15213

Phone: 412-383-7722

Email: rjb42@pitt.edu

Program Coordinators:

Kristin DiGiacomo

Email: k.digi@pitt.edu

Jesse Rosenthal

Email: jrosenthal@pitt.edu

Program Website:

www.pmi.pitt.edu

Admission Requirements and Procedures

Students with at least a baccalaureate degree in biological or physical science or in mathematics, computer science or engineering are encouraged to apply. Admissions are based upon the student's academic record, letters of recommendation, previous research experience, written statement of interest and a personal interview. Applicants who are citizens of countries where English is not the official language (and the Province of Quebec in Canada) are required to submit evidence of English Language proficiency by submitting the official results of the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS). A minimum TOEFL score of 600 (paper) or 100 (iBT), or IELTS score of at least 7.00 is required for admission to the Program. Applicants who have earned a bachelor's degree or a higher degree from a regionally accredited institution in the United States are exempt from submitting English language proficiency test results.

Additional information and a link to the online application can be found at <https://www.pmi.pitt.edu/admissions>

Financial Assistance

All full-time students receive a stipend, educational enrichment fund, computing and network service, and individual health insurance (with option to purchase additional family coverage) during their graduate training.

Degree Requirements

This is an accelerated program that provides the opportunity for students to complete their degrees in approximately 4-6 years. Students enter the program in the summer or fall sessions, and perform four research rotations during their first year. It is expected that four rotations of seven weeks each will be performed in different laboratories of members of the PMI training faculty, but there are several circumstances where the requirement for four rotations or laboratories might be relaxed. Additional information can be found in the Student Handbook: https://www.pmi.pitt.edu/sites/default/files/KristinD-Files/Handbook_PMI%2012-8-17.pdf

A minimum of 72 credits is required for graduation with a PhD. Of these, 32 credits must come from approved courses, both required and elective course work, and 40 of these credits are taken as dissertation research

credits upon completing the comprehensive examination, to be held during the fall term of the second year and advancing to candidacy. Required course work includes the following:

MSMI 2100 - FIRST PMI LABORATORY ROTATION and

MSMI 2110 - SECOND PMI LABORATORY ROTATION (taken during fall and spring terms of the first year)

MSMI 2000 - PRINCIPLES OF MICROBIOLOGY AND IMMUNOLOGY (taken during the fall of the first year)

MSMI 2200 - COMPREHENSIVE MICROBIOLOGY: MOLECULAR VIROLOGY & MOLECULAR PATHOGENESIS and/or

MSMI 2210 - COMPREHENSIVE IMMUNOLOGY (taken during the spring of the first year)

MSMI 2250 - TA: MEDICAL MICROBIOLOGY (taken during the spring of the second and third years)

MSMI 2300 - SCIENTIFIC WRITING IN MICROBIOLOGY AND IMMUNOLOGY (taken during the summer of the first year)

MSMI 2350 - INTRODUCTION TO BIOSTATISTICS FOR MICROBIOLOGY AND IMMUNOLOGY GRADUATE STUDENTS (taken during the summer of the first year)

INTBP 2290 - SCIENTIFIC ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH (taken during the summer of the first year)

MSMI 2450 - IMMUNOLOGY RESEARCH SEMINAR (taken every fall and spring term from the second year through graduation)

MSMI 2460 - MICROBIOLOGY AND RELATED TOPICS SEMINAR SERIES (taken every fall and spring term from the second year through graduation)

MSMI 3220 - CONTEMPORARY TOPICS - IMMUNOLOGY (taken during the fall and/or spring terms of the second and/or third years)

MSMI 3230 - MICROBIOLOGY RESEARCH IN PROGRESS (taken every fall and spring term from the second year through graduation)

Molecular Biophysics and Structural Biology (PhD)

The Molecular Biophysics and Structural Biology graduate program at the University of Pittsburgh and Carnegie Mellon University educates students to conduct research at the interface between biology, chemistry, and physics. The disciplines of Molecular Biophysics and Structural Biology aim to unravel and explain biological phenomena and processes in atomic and molecular detail. Research carried out by program faculty covers a diverse range of topics in Molecular Biophysics and Structural Biology. Areas of study focus on understanding fundamental principles involved in reactions and regulatory interactions in biological systems. Our research projects attempt to answer key questions, such as: How do proteins fold and can we prevent misfolding? Can we design proteins with novel functions? How does the coordinated interaction between proteins and nucleic acids lead to cellular differentiation and the formation of an organism? How do macromolecules assemble into molecular machines and viruses? How do these assemblies operate? How do signals traverse membranes?

Contact Information

University of Pittsburgh and Carnegie Mellon University
Molecular Biophysics and Structural Biology Graduate Program
Graduate Studies Office
3550 Terrace Street
M240 Scaife Hall

Pittsburgh, PA 15261
412-648-8957

Fax: 412-648-1077
E-mail: MBSBinfo@medschool.pitt.edu
www.mbsb.pitt.edu

Admission Requirements and Procedures

Students with at least a baccalaureate degree in physics, chemistry and mathematics or cellular and molecular biology are encouraged to apply. Admissions are based upon the student's academic record, CV, letters of recommendation, previous research experience, written statement of interest, and a personal interview. Applicants who are citizens of countries where English is not the official language (and the Province of Quebec in Canada) are required to submit evidence of English Language proficiency by submitting the official results of the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS). A minimum TOEFL score of 600 (paper) or 100 (iBT), or IELTS score of at least 7.00 is required for admission to the Program. We actively seek qualified applicants from underrepresented minorities and students with disability.

Additional information and a link to the online application can be found at <http://www.mbsb.pitt.edu/index.php/apply-for-the-mbsb-program>.

Financial Assistance

All students receive complete financial support in the form of stipend, tuition, and health insurance.

Degree Requirements

All students enter the Program in the fall session and after performing three rotations identify an advisor and area of research. Areas of research focus include: Macromolecular recognition; Virus, lipid and protein structure and interactions; Principles of protein structure and dynamics; Membrane proteins; Gene regulation and signaling; Cellular biophysics; Chemical structure and dynamics. Methodologies employed comprise NMR spectroscopy, X-ray crystallography, cryo electron microscopy, atomic force microscopy, mass spectrometry, infrared spectroscopy and computational molecular biology. Required coursework is completed during the first two years. Students are required to complete the Comprehensive Exam by August 31 of their second year in the graduate program.

A minimum of 72 credits beyond the baccalaureate degree is required for the PhD degree. The 72 credits are completed by taking required and elective course work as well as dissertation research credits upon being admitted to candidacy.

MSMBPH 2000 - LABORATORY RESEARCH ROTATIONS or

MOLBPH 2000 - LABORATORY RESEARCH ROTATIONS - taken during the first fall, spring & summer term of the first year.

INTBP 2000 - FOUNDATIONS OF BIOMEDICAL SCIENCE - taken during the fall term of the first year

MSMBPH 2001 - MOLECULAR BIOPHYSICS 1: STRUCTURE or

MOLBPH 2001 - MOLECULAR BIOPHYSICS 1: STRUCTURE - taken during the fall term of the first year

MSMBPH 2012 - MOLECULAR BIOPHYSICS 2: MOLECULAR INTERACTIONS AND DYNAMICS or

MOLBPH 2012 - MOLECULAR BIOPHYSICS 2: MOLECULAR INTERACTIONS AND DYNAMICS - taken during the spring term of the first year

[09763 - MOLECULAR MODELING AND COMPUTATIONAL CHEMISTRY](#) taken during the spring of the first year

INTBP 2290 - SCIENTIFIC ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH - taken during the summer term of the first year

INTBP 2013 - D2K: FROM DATA TO KNOWLEDGE- BIOMEDICAL EXPERIMENTAL DESIGN AND ANALYSIS - taken during the summer term of the first year

MSMBPH 2020 - STRUCTURAL BIOLOGY/MOLECULAR BIOLOGY SEMINAR or

MOLBPH 2020 - STRUCTURAL BIOLOGY/MOLECULAR BIOPHYSICS SEMINAR - taken every fall and spring term through graduation

MSMBPH 2030 - DATA AND LITERATURE CLUB or

MOLBPH 2030 - DATA AND LITERATURE CLUB - beginning with the spring term of the first year, D&L Club is taken every fall and spring term through graduation

MSMBPH 2040 - TA: MBSB or

MOLBPH 2040 - TA: MBSB taken once in any term

Advanced Elective Courses (6 Credits Total)

The courses taken here will be chosen on an individual basis based on the background and interests of the individual student. During the first year, the choice will be made by the student in consultation with the First Year Advisor or Dissertation Advisor. Upon proper approval, the elective courses can be taken either at the University of Pittsburgh (both the Dietrich School of Arts & Sciences and the School of Medicine) as well as Carnegie Mellon University.

Additional information on the core curriculum can be found at
<http://www.mbsb.pitt.edu/index.php/training/curriculum>.

Neurobiology/Neuroscience (PhD)

The Center for Neuroscience (CNUP) Training Program is an interschool PhD degree-granting program offered cooperatively by the School of Medicine (Neurobiology, MSNBIO) and the Dietrich School of Arts and Sciences (Neuroscience, NROSCI). The program introduces students to the fundamental issues and experimental approaches in neuroscience and trains them in the theory and practice of laboratory research. Research interests of the training faculty focus on several prominent themes, including behavioral/systems/cognitive, cell and molecular, development/plasticity/repair, and the neurobiology of disease.

This large research-based training program offers outstanding opportunities for students to pursue research in laboratories within more than 30 different departments and University centers. Major features of the program include extensive collaborative interactions among its faculty members and its affiliation with Auditory Neuroscience, the Brain Institute, the Center for the Neural Basis of Cognition (a joint program with Carnegie Mellon University), Conte Center for Translational Mental Health Research, Pittsburgh Hearing Research Center, Pittsburgh Institute for Neurodegenerative Diseases, Pittsburgh Center for Pain Research, and other on-campus research centers.

Contact Information

Center for Neuroscience
E1440 Thomas E. Starzl Biomedical Science Tower
200 Lothrop Street
Pittsburgh, PA 15261
412-648-9537
Fax: 412-648-1441

<http://cnup.pitt.edu/>

argenzio@pitt.edu

Admission Requirements and Procedures

Students are admitted into the CNUP training program on the assumption that they will be able to meet all requirements for the PhD degree. Those who are selected show evidence of a high level of intellectual talent, a strong interest in neuroscience, and a commitment to scholarship and research.

Admission decisions are based on many factors including the candidate's statement of interest and goals in the field of neuroscience, evidence of research experience and accomplishment, letters of recommendation, test scores, grades, and personal interviews. An outstanding record in one of these areas may compensate for poorer performance in another area. In general, successful applicants have a BS degree in biology, chemistry, computer science, mathematics, neuroscience, or psychology with a cumulative grade point average (GPA) of at least 3.40 (on a 4.00 scale). Applicants with a GPA below 3.0 will not be considered.

Additional information and a link to our on-line application can be found at: <http://www.cnup.pitt.edu/training/phd-program>

Financial Assistance

All students receive full stipend support and individual health benefits. This support is derived from University fellowships and numerous grants funded by the federal government and private agencies. Students in the program also have access to sponsorship on NIH training grants.

PhD Degree Requirements

<http://www.cnup.pitt.edu/training/phd-program/phd-program-requirements>

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

Core courses:

MSNBIO 2010 - SCIENTIFIC ETHICS or

NROSCI 2010 - SCIENTIFIC ETHICS

MSNBIO 2100 - CELLULAR AND MOLECULAR NEUROBIOLOGY 1 or

NROSCI 2100 - CELLULAR AND MOLECULAR NEUROBIOLOGY 1

MSNBIO 2101 - CELLULAR & MOLECULAR NEUROBIOLOGY 2 or

NROSCI 2101 - CELLULAR & MOLECULAR NEUROBIOLOGY 2

MSNBIO 2102 - SYSTEMS NEUROBIOLOGY or

NROSCI 2102 - SYSTEMS NEUROBIOLOGY

MSNBIO 2624 - GRANT WRITING

Other requirements:

In addition to University requirements for graduate degrees, students are also required to complete a graduate level statistics course, obtain research experience in at least two separate laboratories; attend journal clubs and research seminars; pass a reprint exam following their first year of study, a comprehensive exam, and a doctoral dissertation and defense; and, to serve as a teaching assistant for at least one term (or course).

A list of CNUP Training Faculty may be viewed at: <http://www.cnup.pitt.edu/people/training-faculty>

A complete list of courses may be viewed at: <http://www.cnup.pitt.edu/graduate-course-list>

School of Medicine Faculty

Name	Department	Rank	Primary Degree	Conferring School
Abdel Massih, Rima	Medicine	Faculty.Professor.Assistant	M.D.	Lebanese University
Abdel-Hamid, Hoda, Zakaria	Pediatrics	Faculty.Professor.Associate	M.D.	Cairo University
Abdulmajeed, Firas	Critical Care Medicine	Faculty.Professor.Assistant	M.B.Ch.B.	University of Baghdad/College of Medicine
Abebe, Kaleab, Z	Medicine	Faculty.Professor.Associate	Ph.D.	University of Pittsburgh
Abesamis, Michael, Gary	Emergency Medicine	Faculty.Professor.Assistant	M.D.	Wayne State University
Abo, Steven, R	Medicine	Faculty.Professor.Assistant	M.D.	Albert Einstein College of Medicine
Abrams, Gordon, S	Radiology	Faculty.Professor.Associate	M.D.	University of Connecticut
Achilles, Sharon, Lynelle	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Ackenbom, Mary Fleming	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	Ohio State University
Ackerman, Kurt	Psychiatry	Faculty.Professor.Associate	M.D.	University of Rochester

Adams, Phillip Scott	Anesthesiology	Faculty.Professor.Assistant	D.O.	LECOM
Adelstein, Evan, C	Medicine	Faculty.Professor.Assistant	M.D.	Georgetown University
Agarwal, Vikas	Radiology	Faculty.Professor.Associate	M.D.	Boston University
Aggarwal, Nidhi	Pathology	Faculty.Professor.Assistant	M.B.B.S.	University of Delhi
Aggarwal, Rohit	Medicine	Faculty.Professor.Associate	M.B.B.S.	University of Delhi
Agha, Mounzer, E	Medicine	Faculty.Professor.Visiting Research Associate	M.D.	Aleppo University
Agnihotri, Sameer	Neurological Surgery	Faculty.Professor.Assistant	Ph.D.	Unviersity of Toronto
Ahmari, Susanne E.	Psychiatry	Faculty.Professor.Assistant	M.D.	Stanford University
Ahmed, Bestoun H.	Surgery	Faculty.Professor.Associate	M.B.B.Ch.	Unviersity of Mosul
Ahmed, Hesham, Mohamed	Radiology	Faculty.Professor.Associate	M.B.B.Ch.	Zagazig University
Ahn, Jinwoo	Structural Biology	Faculty.Professor.Assistant	Ph.D.	The Ohio State University
Ahonen, Lia	Psychiatry	Faculty.Professor.Assistant	Ph.D.	Orebro University
Airik, Rannar	Pediatrics	Faculty.Professor.Assistant	Ph.D.	Hannover Medical School
Aiyer, Aryan, Narayan	Medicine	Faculty.Professor.Assistant	M.D.	Albert Einstein College of Med
Aizenman, Elias	Neurobiology	Faculty.Professor.Professor	Ph.D.	Johns Hopkins University
Aizenstein, Howard, Jay	Psychiatry	Faculty.Professor.Professor	M.D.	Univeristy of Illinois
Akamagwuna, Unoma	Physical Medicine & Rehabilitation	Faculty.Professor.Assistant	M.D.	George Washington University
Akilov, Oleg, Eugeniemich	Dermatology	Faculty.Professor.Assistant	M.D.	Ural State Medical Academy
Al Ghouleh, Imad	Medicine	Faculty.Professor.Assistant	Ph.D.	McGill University
Al Hashash, Jana Ghazi	Medicine	Faculty.Professor.Assistant	M.D.	American University of Beirut
Alaggio, Rita	Pathology	Faculty.Professor.Professor	M.D.	Universita Cattolica del Sacro Cuore
Alarcon, Louis, H	Surgery	Faculty.Professor.Professor	M.D.	University of Pittsburgh
Al-Bataineh, Mohammad Mahmmoud	Medicine	Faculty.Professor.Assistant	D.V.M.	Jordan University of Science and Technology
Albers, Kathryn	Neurobiology	Faculty.Professor.Professor	Ph.D.	SUNY at Stony Brook
Albright, Deborah Dawn	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Pittsburgh SoM
Alcorn, John, Francis, Jr	Pediatrics	Faculty.Professor.Associate	Ph.D.	Duke University
Alder, Jonathan Kimball	Medicine	Faculty.Professor.Assistant	Ph.D.	Johns Hopkins University SoM
Alessi, Lauren	Pediatrics	Faculty.Professor.Assistant	M.D.	Stony Brook University

Alexander, Peter	Orthopaedic Surgery	Faculty.Professor.Research Assistant	Ph.D.	Thomas Jefferson University
Alissa, Feras, Tawfiq	Pediatrics	Faculty.Professor.Assistant	M.B.B.S.	University of Jordan
Al-Khafaji, Ali, H	Critical Care Medicine	Faculty.Professor.Professor	M.B.Ch.B.	Al-Mustansiriya University
Al-Khoury, Georges, Elie	Surgery	Faculty.Professor.Assistant	M.D.	Lebanese University
Allada, Stacey, Drant	Pediatrics	Faculty.Professor.Associate	M.D.	Brown University
Allada, Vivekanand	Pediatrics	Faculty.Professor.Professor	M.D.	University of Michigan
Allen, Steven	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Tennessee Health Science Center
Alper, Cuneyt, Metin	Otolaryngology	Faculty.Professor.Professor	M.D.	Hacettepe University
Alper, Gulay	Pediatrics	Faculty.Professor.Associate	M.D.	Hacettepe University
Althouse, Andrew, D	Medicine	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Altschuler, Daniel, Leonardo	Pharmacology and Chemical Biology	Faculty.Professor.Associate	Ph.D.	University of Buenos Aires
Alvarado, John, J	Microbiology and Molecular Genetics	Faculty.Professor.Research Assistant	Ph.D.	Purdue University
Amankulor, Ndukaku Mgbechinyere	Neurological Surgery	Faculty.Professor.Assistant	M.D.	Yale School of Medicine
Ambrose, Zandrea	Medicine	Faculty.Professor.Associate	Ph.D.	University of Washington
Ambrosio, Fabrisia	Physical Medicine & Rehabilitation	Faculty.Professor.Associate	Ph.D.	University of Pittsburgh
Amesur, Nikhil, B	Radiology	Faculty.Professor.Professor	M.D.	Tufts University School of Medicine
Amin, Rajnikant, M	Pathology	Faculty.Professor.Associate	M.B.B.S.	Baroda Medical College
Anderson, Carolyn J.	Medicine	Faculty.Professor.Professor	Ph.D.	Florida State University
Anderson, Kelley A.	Orthopaedic Surgery	Faculty.Professor.Assistant	D.O.	Lake Erie College of Osteopathic Medicine
Anderst, William J.	Orthopaedic Surgery	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Andrescu, Carmen	Psychiatry	Faculty.Professor.Associate	M.D.	University of Medicine and Pharmacy
Andrews, Carol L.	Radiology	Faculty.Professor.Associate	M.D.	University of Utah
Andrews, Glenn S.	Radiology	Faculty.Professor.Assistant	M.D.	Eastern Virginia Medical School
Aneja, Rajesh, K	Critical Care Medicine	Faculty.Professor.Associate	M.B.B.S.	Christian Medical College
Anetakis, Katherine Melonakos	Neurological Surgery	Faculty.Professor.Assistant	M.D.	University of Pittsburgh

Angus, Derek	Critical Care Medicine	Faculty.Professor.Distinguished	M.B.Ch.B.	University of Glasgow SOM
Anish, Eric, J	Medicine	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Anthonymuthu, Tamil Selvan	Critical Care Medicine	Faculty.Instructor.Research	Ph.D.	Anna University
Antonucci, Maria C	Pediatrics	Faculty.Professor.Assistant	M.D.	Ross University
Antony, Arun Raj	Neurology	Faculty.Professor.Assistant	M.B.B.S.	Kerala University
Apetrei, Cristian	Microbiology and Molecular Genetics	Faculty.Professor.Professor	M.D.	University if Iasi
Apodaca, Gerard, L	Medicine	Faculty.Professor.Professor	Ph.D.	University of California
Appleman, Leonard, J	Medicine	Faculty.Professor.Associate	M.D.	New York University
Arani, Keerthi Narasimhulu	Radiology	Faculty.Professor.Assistant	M.D.	University of Washington
Arenth, Patricia, Marie	Physical Medicine & Rehabilitation	Faculty.Professor.Assistant	Ph.D.	Ohio State University
Aridor, Meir	Cell Biology	Faculty.Professor.Associate	Ph.D.	Weizmann Institute of Science
Arjunan, Palaniappa	Pharmacology and Chemical Biology	Faculty.Instructor.Instructor	Ph.D.	Indian Institute of Science
Arnold, Georgianne L.	Pediatrics	Faculty.Professor.UCR Visiting	M.D.	SUNY
Arnold, Robert, M	Medicine	Faculty.Professor.Distinguished Service	M.D.	University of Missouri SOM
Arora, Gaurav	Pediatrics	Faculty.Professor.Associate	M.D.	Baylor College
Arsanian, Silva, A	Pediatrics	Faculty.Professor.Professor	M.D.	American University of Beirut
Arteel, Gavin A	Medicine	Faculty.Professor.UCR Visiting	Ph.D.	University of North Carolina
Arteel, Juliane Ingeborg	Medicine	Faculty.Professor.Assistant		
Asato, Miya, R	Pediatrics	Faculty.Professor.Associate	M.D.	Jefferson Medical College
Ashokkumar, Chethan, Shravanabelagola	Surgery	Faculty.Professor.Research Assistant	Ph.D.	Mysore University
Atianand, Maninjay K	Immunology	Faculty.Professor.Assistant	Ph.D.	Albany Medical College
Atwood, Charles, W, Jr	Medicine	Faculty.Professor.Associate	M.D.	University of Alabama School of Medicine
Au, Alicia Ka Win	Critical Care Medicine	Faculty.Professor.Assistant	M.D.	Jefferson Medical College
Austin, Kelly Miller	Surgery	Faculty.Professor.Associate	M.D.	Temple University
Austin, Robert, Marshall	Pathology	Faculty.Professor.Professor	M.D.	Duke University
Averch, Timothy, David	Urology	Faculty.Professor.Professor	M.D.	University of Pittsburgh School of Medicine

Avgerinos, Efthymios	Surgery	Faculty.Professor.Associate	M.D.	University of Thessaly
Awais, Omar	Cardiothoracic Surgery	Faculty.Professor.Assistant	D.O.	New York College of New York
Ayoob, Joseph, C	Computational and Systems Biology	Faculty.Professor.Associate	Ph.D.	Johns Hopkins University
Azzam, Pierre, N	Psychiatry	Faculty.Professor.Assistant	M.D.	Baylor College of Medicine
Azzuqa, Abeer Aref	Pediatrics	Faculty.Professor.Assistant	M.B.B.S.	University of Science & Tech
Babbar, Jatinder, Pal	Psychiatry	Faculty.Professor.Assistant	M.B.Ch.B.	University of Pune
Bachman, Peter M	Psychiatry	Faculty.Professor.Assistant	Ph.D.	University of California
Badrane, Hassan	Medicine	Faculty.Professor.Research Assistant	Ph.D.	University Paris XI
Badylak, Stephen Francis	Surgery	Faculty.Professor.Professor	M.D.	Indiana University
Bae, Kyong, Tae	Radiology	Faculty.Professor.Professor	M.D.	University of Chicago
Bagic, Anto, Ivo	Neurology	Faculty.Professor.Professor	M.D.	University of Zagreb Medical School
Bahar, Ivet	Computational and Systems Biology	Faculty.Professor.Distinguished	Ph.D.	Istanbul Technical University
Bahary, Nathan	Medicine	Faculty.Professor.Associate	M.D.	Cornell University
Bai, Shoumei	OB-Gyn & Reproductive Science	Faculty.Professor.Research Assistant	Ph.D.	The Ohio State University
Bailey, Kelly Margaret	Pediatrics	Faculty.Instructor.Instructor	M.D.,Ph.D.	West Virginia University
Bailey, Nathanael G.	Pathology	Faculty.Professor.Associate	M.D.	West Virginia University
Baker, Evan, E	Pathology	Faculty.Professor.Assistant	M.D.	University of Pittsburgh School of Medicine
Baker, Nicholas	Cardiothoracic Surgery	Faculty.Professor.Assistant	M.D.	West Virginia University
Bakkenist, Christopher, James	Radiation Oncology	Faculty.Professor.Associate	Ph.D.	University of London
Balaban, Carey	Otolaryngology	Faculty.Professor.Professor	Ph.D.	University of Chicago
Baldisseri, Marie, R	Critical Care Medicine	Faculty.Professor.Professor	M.D.	University of Navarra
Balest, Arcangela Lattari	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Balsan, Michael, J	Pediatrics	Faculty.Professor.Associate	M.D.	Medical College of Wisconsin
Balzer, Jeffrey	Neurological Surgery	Faculty.Professor.Associate	Ph.D.	University of Pittsburgh
Banihashemi, Layla	Psychiatry	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Bansal, Amar Deep	Medicine	Faculty.Professor.Assistant	M.D.	New York University School of Medicine

Bantaganahalli Ningappa, Mylarappa	Surgery	Faculty.Professor.Research Assistant	Ph.D.	University of Mysore
Barak, Yaacov	OB-Gyn & Reproductive Science	Faculty.Professor.Associate	Ph.D.	Weizman Institute of Science
Barbash, Ian Joseph	Medicine	Faculty.Professor.Assistant	M.D.	Harvard Medical School
Barnum, Jessie Lee	Pediatrics	Faculty.Professor.Assistant	M.D.	Creighton University School of Medicine
Barretto, Greg Alcantara Jr.	Pediatrics	Faculty.Professor.Assistant	M.D.	De La Salle University Health Sciences Institute
Barrie, Arthur, M, III	Medicine	Faculty.Professor.Assistant	M.D.	University of Cincinnati
Barrington, William, Walker	Medicine	Faculty.Professor.Professor	M.D.	Ohio State University College of Medicine
Bart III, Robert D	Critical Care Medicine	Faculty.Professor.Visiting Associate	M.D.	John A. Burns School of Medicine
Bartels, Amelia, Gennari	Medicine	Faculty.Professor.Associate	M.D.	University of Virginia School of Medicine
Bartlett, David, L	Surgery	Faculty.Professor.Professor	M.D.	University of Texas
Bastacky, Sheldon, Ira	Pathology	Faculty.Professor.Professor	M.D.	Case Western Reserve School of Medicine
Basu, Dipanjan	Pathology	Faculty.Instructor.Research	Ph.D.	Visva-Bharati University
Bataller Alberola, Ramon	Medicine	Faculty.Professor.Visiting	M.D.	University of Valencia
Bates, Carlton, M	Pediatrics	Faculty.Professor.Professor	M.D.	Ohio State University
Batmanghelich, Nematollah	Biomedical Informatics	Faculty.Professor.Assistant	Ph.D.	University of Pennsylvania
Baty, Catherine, Jackson	Medicine	Faculty.Professor.Research Assistant	Ph.D.	North Carolina State
Bauer, Eileen	Surgery	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Baumann, Barbara, Lynn	Psychiatry	Faculty.Instructor.Research	Ph.D.	University of Pittsburgh
Bauza, Graciela Maria	Surgery	Faculty.Professor.Assistant	M.D.	Universidad Central del Caribe
Bayir, Hulya	Critical Care Medicine	Faculty.Professor.Professor	M.D.	Hacettepe University
Bazaz, Raveen, Raj	Medicine	Faculty.Professor.Assistant	M.B.B.S.	Grant Medical College
Beaman, Shawn, T	Anesthesiology	Faculty.Professor.Associate	M.D.	State University of New York
Beasley, Harley, Scott	Radiology	Faculty.Professor.Associate	M.D.	Indiana University
Becich, Michael, J	Biomedical Informatics	Faculty.Professor.Distinguished	M.D.	Northwestern University Medical School
Beck, Stacy L	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	University of Toledo

Beckel, Jonathan Maxwell	Pharmacology and Chemical Biology	Faculty.Instructor.Research	Ph.D.	University of Pittsburgh
Becker, Devra B	Plastic Surgery	Faculty.Professor.Visiting Associate	M.D.	Washington University School of Medicine
Becker, Dorothy, J	Pediatrics	Faculty.Professor.Professor	M.B.B.Ch.	University of Witwatersrand Med School
Becker, James, T	Psychiatry	Faculty.Professor.Professor	Ph.D.	Johns Hopkins University
Beeney, Joseph Edward	Psychiatry	Faculty.Professor.Assistant	Ph.D.	Penn State University
Beerman, Lee, B	Pediatrics	Faculty.Professor.Professor	M.D.	University of Pittsburgh SOM
Beers, Sue, R	Psychiatry	Faculty.Professor.Professor	Ph.D.	University of Pittsburgh
Begum, Gulnaz	Neurology	Faculty.Instructor.Research	Ph.D.	NIMHANS
Behari, Jaideep	Medicine	Faculty.Professor.Associate	M.B.B.S.	Sawai Man Singh Medical Center
Beigi, Richard, H	OB-Gyn & Reproductive Science	Faculty.Professor.Professor	M.D.	Hahnemann University
Bell, Aaron, W	Pathology	Faculty.Professor.Research Assistant	Ph.D.	University of Pittsburgh School of Medicine
Bell, Kevin, Michael	Orthopaedic Surgery	Faculty.Professor.Research Assistant	Ph.D.	University of Pittsburgh
Bell-Cheddar, Yolande Rena	Critical Care Medicine	Faculty.Professor.Assistant	M.B.B.S.	University of West Indies
Bellissimo, Daniel B.	OB-Gyn & Reproductive Science	Faculty.Professor.Associate	Ph.D.	Duke University
Bender, Charles, V	Pediatrics	Faculty.Professor.Associate	M.D.	Ohio State University College of Medicine
Bender, Filitsa, H	Medicine	Faculty.Professor.Associate	M.D.	Aristotelian University SOM
Benoit, Ronald, M, Jr	Urology	Faculty.Professor.Associate	M.D.	University of Pittsburgh School of Medicine
Benos, Panagiotis	Computational and Systems Biology	Faculty.Professor.Professor	Ph.D.	University of Crete
Benosman, Benjamin	Ophthalmology	Faculty.Professor.Visiting	Ph.D.	University Pierre and Marie Curie
Benson, Maggie K.	Medicine	Faculty.Professor.Assistant	M.D.	Indiana University
Berg, Aaron N.	Pathology	Faculty.Professor.Assistant	M.D.	West Virginia University
Berg, Jeremy Mark	Computational and Systems Biology	Faculty.Professor.Professor	Ph.D.	Harvard University
Berg, Wendie Anderson	Radiology	Faculty.Professor.Professor	M.D.	Johns Hopkins University

Berger, Jessica Layne	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	Medical College of Wisconsin
Berger, Rachel, Pardes	Pediatrics	Faculty.Professor.Professor	M.D.	Columbia College of Physicians & Surgeon
Bergman, Ira	Pediatrics	Faculty.Professor.Professor	M.D.	University of Chicago Pritzker SOM
Beriwal, Sushil	Radiation Oncology	Faculty.Professor.Professor	M.D.	Post Graduate Institute of Medical Education and Research
Berlacher, Kathryn, L	Medicine	Faculty.Professor.Assistant	M.D.	The Ohio State University
Berman, Sarah, Beth	Neurology	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Bernstein, Cheryl, Denise	Anesthesiology	Faculty.Professor.Associate	M.D.	University of Rochester
Bernstein, Kara Anne	Microbiology and Molecular Genetics	Faculty.Professor.Associate	Ph.D.	Yale University
Berry , Jessica Brooke	Physical Medicine & Rehabilitation	Faculty.Professor.Assistant	M.CH.	University of Maryland School of Medicine
Bertrand, Carol, Ann	Pediatrics	Faculty.Professor.Research Assistant	Ph.D.	Case Western Reserve Univ
Bhagwat, Amar Ramdas	Microbiology and Molecular Genetics	Faculty.Professor.Visiting Research Assistant	Ph.D.	Cornell University
Bhargava, Rohit	Pathology	Faculty.Professor.Professor	M.B.B.S.	Sawai Man Singh
Bhatnagar, Sonika	Pediatrics	Faculty.Professor.Associate	M.D.	MCP Hahnemann University
Bhatt, Riha G.	Pediatrics	Faculty.Professor.Assistant	M.D.	Virginia Commonwealth University
Bhende, Mananda, S	Pediatrics	Faculty.Professor.Professor	M.B.B.S.	University of Bombay
Bhonsale, Aditya	Medicine	Faculty.Professor.Assistant	M.D.	Seth G.S. Medical College
Bhuiyan, Mohammad Iqbal Hossain	Neurology	Faculty.Instructor.Research	Ph.D.	University of Science and Techonology
Bhutto, Imran Ahmed	Ophthalmology	Faculty.Professor.Research Assistant	M.D.	University of Sindh
Bigley, Joel David	Urology	Faculty.Professor.Visiting Assistant	M.D.	West Virginia University
Billaud, Marie Maude Laurence	Cardiothoracic Surgery	Faculty.Professor.Research Assistant	Ph.D.	Universite Bordeaux 2
Biller, Aimee, Beth	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Billiar, Timothy, R	Surgery	Faculty.Professor.Distinguished	M.D.	University of Chicago Pritzker SOM
Bina, James E.	Microbiology and Molecular Genetics	Faculty.Professor.Associate	Ph.D.	University of British Columbia
Bina, Xiaowen Renee	Microbiology and Molecular Genetics	Faculty.Professor.Research Assistant	Ph.D.	University of British Columbia

Binder, Robert, Julian	Immunology	Faculty.Professor.Associate	Ph.D.	Fordham University
Binion, David, G	Medicine	Faculty.Professor.Professor	M.D.	SUNY
Birder, Lori, Ann	Medicine	Faculty.Professor.Professor	Ph.D.	University of Pittsburgh School of Medicine
Birmaher, Boris	Psychiatry	Faculty.Professor.Professor	M.D.	Valle College of Medicine
Bisello, Alessandro	Pharmacology and Chemical Biology	Faculty.Professor.Associate	Ph.D.	University of Padova
Bissel, Stephanie, J	Pathology	Faculty.Professor.Research Assistant	Ph.D.	University of Pittsburgh
Biswas, Partha Sarathi	Medicine	Faculty.Professor.Associate	Ph.D.	University of Tennessee
Blackburn, Vint Rolston	Psychiatry	Faculty.Professor.Assistant	M.D.	University of New Mexico SoM
Blackrick, Lisa, Rose	Orthopaedic Surgery	Faculty.Professor.Assistant	M.D.	Case Western Reserve University
Blair, Harry, Colbert	Pathology	Faculty.Professor.Professor	M.D.	Washington University
Blair, Kimberly, A	Psychiatry	Faculty.Professor.Associate	Ph.D.	George Mason University
Blasiole, Brian	Anesthesiology	Faculty.Professor.Assistant	M.D.	Pennsylvania State University
Blosnich, John R	Medicine	Faculty.Professor.Assistant	Ph.D.	West Virginia University
Bluestone, Charles, D	Otolaryngology	Faculty.Professor.Distinguished	M.D.	University of Pittsburgh SOM
Bobrow, Michael Lorne	Radiology	Faculty.Professor.Assistant	M.D.	Drexel University College of Medicine
Bochkoris, Matthew, J	Critical Care Medicine	Faculty.Professor.Assistant	M.D.	Temple University
Bogen, Debra, Louise	Pediatrics	Faculty.Professor.Professor	M.D.	University of Colorado School of Medicine
Boggs, Kristy D.	Pediatrics	Faculty.Professor.Research Assistant	Ph.D.	University of South Carolina
Boisen, Michael L.	Anesthesiology	Faculty.Professor.Assistant	M.D.	University of Wisconsin-Madison
Boisen, Michelle M.	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	University of Wisconsin
Bomberger, Jennifer	Microbiology and Molecular Genetics	Faculty.Professor.Associate	Ph.D.	Michigan State University
Bonadio, Jeffrey Frank	Pathology	Faculty.Professor.Associate	M.D.	Medical College of Wisconsin
Bond, Geoffrey, James	Surgery	Faculty.Professor.Assistant	M.B.B.S.	Sydney University
Bondarenko, Vasyi	Anesthesiology	Faculty.Instructor.Research	Ph.D.	B. Verkin Institute-National Academy of Sciences of Ukraine
Bondi, Corina, Oana	Physical Medicine & Rehabilitation	Faculty.Professor.Assistant	Ph.D.	University of Texas

BonHomme, Gabrielle, Rachelle	Ophthalmology	Faculty.Professor.Assistant	M.D.	University of Pennsylvania
Bonidie, Michael, J.	OB-Gyn & Reproductive Science	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Boninger, Michael, Lee	Physical Medicine & Rehabilitation	Faculty.Professor.Professor	M.D.	Ohio State University College of Med
Bontempo, Franklin, A	Medicine	Faculty.Professor.Associate	M.D.	Hahnemann University SOM
Boone, David N.	Biomedical Informatics	Faculty.Professor.Assistant	Ph.D.	Vanderbilt University School of Medicine
Borghesi, Lisa, Ann	Immunology	Faculty.Professor.Associate	Ph.D.	University of Connecticut
Borhani, Amir, Ali	Radiology	Faculty.Professor.Assistant	M.D.	Tehran University
Borrero, Sonya, B	Medicine	Faculty.Professor.Associate	M.D.	Case Western Reserve
Bosch, Patrick Peter	Orthopaedic Surgery	Faculty.Professor.Associate	M.D.	University of Iowa
Both, Camila	Surgery	Faculty.Professor.Research Assistant	M.D.	Catholic University of Sao Paulo
Boucek, Charles, D	Anesthesiology	Faculty.Professor.Associate	M.D.	Temple University SOM
Boujoukos, Arthur, J	Critical Care Medicine	Faculty.Professor.Professor	M.D.	Tufts University SOM
Boutaoui, Nadia	Pediatrics	Faculty.Professor.Research Assistant	Ph.D.	University of Reading
Bovbjerg, Dana, H	Psychiatry	Faculty.Professor.Professor	Ph.D.	University of Rochester
Boyce, Richard, David	Biomedical Informatics	Faculty.Professor.Associate	Ph.D.	University of Washington
Boyiadzis, Michael	Medicine	Faculty.Professor.Associate	M.D.	University of Medicine School of Debrecen
Brackney, Christopher	Critical Care Medicine	Faculty.Professor.Assistant	D.O.	Arizona College of Osteo Medicine
Bradley, Megan Sara	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Brancolini, Scott, A	Anesthesiology	Faculty.Professor.Associate	M.D.	Pennsylvania State College of Medicine
Brand, Randall, E	Medicine	Faculty.Professor.Professor	M.D.	University of Michigan
Brand, Rhonda, Metter	Dermatology	Faculty.Professor.Visiting Associate	Ph.D.	University of Michigan
Brands, Judith	OB-Gyn & Reproductive Science	Faculty.Professor.Research Assistant	Ph.D.	Maastricht University
Branstetter, Barton, F	Radiology	Faculty.Professor.Professor	M.D.	Unviersity of California, San Diego
Brent, David, A	Psychiatry	Faculty.Professor.Professor	M.D.	Jefferson Medical College
Brocca Cofano, Egidio	Pathology	Faculty.Instructor.Research	Ph.D.	University of Padova

Brode, Susan, Elizabeth	Medicine	Faculty.Instructor.Instructor	M.D.	New York University School of Medicine
Broniscer, Alberto	Pediatrics	Faculty.Professor.Visiting	M.D.	Sao Paulo University Meidcal School
Brooks, Robert, C	Medicine	Faculty.Professor.Associate	M.D.	University of North Carolina
Brosenitsch, Teresa, A	Structural Biology	Faculty.Professor.Research Assistant	Ph.D.	Case Western Reserve University
Brown, Aaron M	Emergency Medicine	Faculty.Professor.Assistant	M.D.	University of Pennsylvania
Brown, Amanda Worf	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Tennessee
Brown, Charlotte	Psychiatry	Faculty.Professor.Associate	Ph.D.	American University
Brown, Merritt Weaver, III	Neurology	Faculty.Instructor.Instructor	M.D.	Jefferson Medical College
Brozanski, Beverly, S	Pediatrics	Faculty.Professor.Professor	M.D.	University of Pittsburgh SOM
Bruemmer, Dennis	Medicine	Faculty.Professor.Associate	M.D.	University Hospital Eppendorf
Brufsky, Adam, M	Medicine	Faculty.Professor.Professor	M.D.	University of Connecticut SOM
Bruno, Tullia C	Immunology	Faculty.Professor.Research Assistant	Ph.D.	Johns Hopkins University
Buchert, Andrew, R	Pediatrics	Faculty.Professor.Assistant	M.D.	University of North Carolina
Buckanovich, Ronald J	Medicine	Faculty.Professor.Visiting	M.D.	Cornell University Weill Medical College
Bueno Fernandez, Marta	Medicine	Faculty.Professor.Research Assistant	Ph.D.	University of Zaragoza
Buffer, Sam A Jr.	Medicine	Faculty.Professor.Assistant	M.D.	University of Pittsburgh SOM
Bui, Diemthuy, Duc	Medicine	Faculty.Professor.Associate	M.D.	Washington University School of Medicine
Bukowinski, Andrew J.	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Buffalo
Bulgari, Dinara	Pharmacology and Chemical Biology	Faculty.Professor.Research Assistant	Ph.D.	University of Illinois
Bullock, Grant C.	Pathology	Faculty.Professor.Assistant	M.D.	University of Iowa
Bulova, Peter, D	Medicine	Faculty.Professor.Associate	M.D.	University of Pittsburgh School of Medicine
Bump, Gregory, M	Medicine	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Bunge, Katherine, E	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	Johns Hopkins University
Bunimovich, Olga	Dermatology	Faculty.Professor.Assistant	M.D.	University of California
Bunimovich, Yuri Leonid	Dermatology	Faculty.Professor.Assistant	M.D.	University of Buffalo
Buranosky, Raquel, A	Medicine	Faculty.Professor.Associate	M.D.	Duke University School of Medicine

Burgess, Melissa Amber	Medicine	Faculty.Professor.Assistant	M.D.	Drexel University
Burman, Deepa	Pediatrics	Faculty.Professor.UCR Visiting Associate	M.B.B.S.	University College of Medical Sciences
Burns, Patrick, Raymond	Orthopaedic Surgery	Faculty.Professor.Assistant	D.P.M.	Scholl College of Podiatric Medicine
Burns, Timothy F.	Medicine	Faculty.Professor.Assistant	M.D.	University of Pennsylvania
Burton, Edward, Alan	Neurology	Faculty.Professor.Associate	M.B.B.S.	University of Birmingham Medical School
Butcher, Brad Wesley	Critical Care Medicine	Faculty.Professor.Assistant	M.D.	Duke University
Butterfield, Lisa, Helene	Medicine	Faculty.Professor.Professor	Ph.D.	University of California
Butters, Meryl	Psychiatry	Faculty.Professor.Associate	Ph.D.	University of Arizona
Butterworth, Michael, Bruce	Cell Biology	Faculty.Professor.Assistant	Ph.D.	University of Cape Town
Button, Sean Edwin	Pediatrics	Faculty.Professor.Assistant	M.D.	Ross University
Buysse, Daniel, J	Psychiatry	Faculty.Professor.Professor	M.D.	University of Michigan Med School
Byers, Karin, E	Medicine	Faculty.Professor.Associate	M.D.	Temple University School of Medicine
Byersdorfer, Craig Alan	Pediatrics	Faculty.Professor.Assistant	M.D.	Washington University
Bylsma, Lauren M	Psychiatry	Faculty.Professor.Assistant	Ph.D.	University of South Florida
Byrne, Leah Caroline Thomas	Ophthalmology	Faculty.Professor.Assistant	Ph.D.	University of California Berkeley
Cabacungan, Leonard, R	Physical Medicine & Rehabilitation	Faculty.Professor.Assistant	M.D.	University of the Philippines College of Med
Cabral, Carol, Lynn	Pediatrics	Faculty.Professor.Assistant	M.D.	Hahnemann School of Medicine
Cacciarelly, Thomas, Victor	Surgery	Faculty.Professor.Associate	M.D.	State University of New York
Calabro, Finnegan J.	Psychiatry	Faculty.Instructor.Research	Ph.D.	Boston University
Calero Velazquez, Guillermo	Structural Biology	Faculty.Professor.Associate	M.D.	UNAM
Callaway, Clifton, W	Emergency Medicine	Faculty.Professor.Professor	M.D.	Univ of California
Camacho, Carlos, Jaime	Computational and Systems Biology	Faculty.Professor.Associate	Ph.D.	University of Maryland
Cambi, Franca	Neurology	Faculty.Professor.Professor	M.D.	University of Florence
Cameron, Judy, L	Psychiatry	Faculty.Professor.Professor	Ph.D.	University of Arizona
Camhi, Sharon, Lynn	Medicine	Faculty.Professor.Assistant	M.D.	New York University
Camirand, Geoffrey	Surgery	Faculty.Professor.Assistant	Ph.D.	Laval University

Campfield, Brian, T	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Canavan, Timothy	OB-Gyn & Reproductive Science	Faculty.Professor.Associate	M.D.	SUNY
Candrilli, Carolyn, Coyne	Pediatrics	Faculty.Professor.Associate	Ph.D.	University of North Carolina
Canna, Scott William	Pediatrics	Faculty.Professor.Assistant	M.D.	George Washington University
Cannon, Glenn, M, Jr	Urology	Faculty.Professor.Associate	M.D.	Jefferson Medical College
Cao, Guo, Dong	Neurology	Faculty.Professor.Associate	Ph.D.	Beijing Medical University
Carattino, Marcelo, Daniel	Medicine	Faculty.Professor.Associate	Ph.D.	University of Buenos Aires
Carcillo, Joseph, Anthony, Jr	Critical Care Medicine	Faculty.Professor.Professor	M.D.	George Washington Univ SOM
Cardenes, Nayra	Medicine	Faculty.Instructor.Research	Ph.D.	Universidad Autonoma de Madrid
Carella, Beth Ann	Pediatrics	Faculty.Professor.Assistant	D.O.	Touro University
Caritis, Steleanos	OB-Gyn & Reproductive Science	Faculty.Professor.Professor	M.D.	West Virginia University SOM
Carlisle, Diane, L	Neurological Surgery	Faculty.Professor.Assistant	Ph.D.	George Washington University
Carlson, Shaun W	Neurological Surgery	Faculty.Professor.Research Assistant	Ph.D.	University of Kentucky
Carney, Jonathan, Paul	Radiology	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Carroll, Bryan T.	Dermatology	Faculty.Professor.Assistant	M.D.	Case Western Reserve University
Carter, Gloria, Jean	Pathology	Faculty.Professor.Associate	M.D.	Medical College of Pennsylvania
Carty, Sally, Elizabeth	Surgery	Faculty.Professor.Professor	M.D.	Pennsylvania State University College of Med
Carvunis, Anne-Ruxandra	Computational and Systems Biology	Faculty.Professor.Assistant	Ph.D.	Universite Joseph Fourier
Cascio, Sandra	Immunology	Faculty.Professor.Research Assistant	Ph.D.	University of Palermo
Casselbrant, Margaretha, L	Otolaryngology	Faculty.Professor.Professor	M.D.	University of Lund
Cassidy, Elaine, Ann	Pediatrics	Faculty.Professor.Assistant	M.D.	Northeastern Ohio Medical University
Castro, Carlos, A	OB-Gyn & Reproductive Science	Faculty.Instructor.Research	D.M.D.	Javeriana University
Catov, Janet, M	OB-Gyn & Reproductive Science	Faculty.Professor.Associate	Ph.D.	University of Pittsburgh
Cavalcante, Joao L.	Medicine	Faculty.Professor.Assistant	M.D.	Federal University of Ceara
Celebrezze, James, P, Jr.	Surgery	Faculty.Professor.Assistant	M.D.	Northeastern Ohio University
Celedon, Juan Carlos	Pediatrics	Faculty.Professor.Professor	M.D.	Pontificia Universidad Javeriana

Ceschin, Rafael	Radiology	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh School of Medicine
Chaer, Rabih, Antoine	Surgery	Faculty.Professor.Professor	M.D.	American University of Beirut
Chahine, Lana Marie	Neurology	Faculty.Professor.Assistant	M.D.	American University of Beirut
Chaillet, John, R	OB-Gyn & Reproductive Science	Faculty.Professor.Professor	M.D.	Yale University SOM
Chalasani, Geetha	Medicine	Faculty.Professor.Associate	M.B.B.S.	Government Medical College
Chalifoux, Thomas, Michael	Anesthesiology	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Challinor, Sue, M	Medicine	Faculty.Professor.Professor	M.D.	University of Pittsburgh SOM
Chan, Serena Hsi Ju	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	Oregon Health & Science University
Chan, Stephen Yu-Wah	Medicine	Faculty.Professor.Associate	M.D.,Ph.D.	Unviersity of California
Chandra, Divay	Medicine	Faculty.Professor.Assistant	M.D.	All India Institute of Medical Sciences
Chandran, Uma, R	Biomedical Informatics	Faculty.Professor.Research Associate	Ph.D.	University of Pittsburgh
Chang, Chung-Chou, Ho	Medicine	Faculty.Professor.Professor	Ph.D.	University of Pittsburgh
Chang, Jason, S	Emergency Medicine	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Chang, Judy, C	OB-Gyn & Reproductive Science	Faculty.Professor.Associate	M.D.	Baylor College
Chang, Wen-I	Pediatrics	Faculty.Professor.Assistant	M.D.	Columbia University College of Physicians and Surgeons
Chang, Yuan	Pathology	Faculty.Professor.Distinguished	M.D.	University of Utah
Chang, Yuefang	Neurological Surgery	Faculty.Professor.Research Assistant	Ph.D.	University of Illinois
Chao, Lisa	OB-Gyn & Reproductive Science	Faculty.Instructor.Visiting	M.D.	University of Illinois
Chappell, Catherine Anne	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	University of Texas Southwestern
Chase, Henry William Newton	Psychiatry	Faculty.Professor.Research Assistant	Ph.D.	University of Cambridge
Chaudhry, Rajeev	Urology	Faculty.Professor.Assistant	M.D.	Warren Alpert Medical School of Brown University
Chauhan, Bharesh Kumar	Ophthalmology	Faculty.Professor.Research Assistant	Ph.D.	Oxford University
Chaves-Gnecco, Diego	Pediatrics	Faculty.Professor.Associate	M.D.	Pontificia Universidad Javeriana
Cheetham, Claire E	Neurobiology	Faculty.Professor.Assistant	Ph.D.	King's College

Chelluri, Lakshmipathi	Critical Care Medicine	Faculty.Professor.Professor	M.D.	Andhra Medical College
Chelly, Jacques, E	Anesthesiology	Faculty.Professor.Professor	M.D.	Malades Medical School
Chen, Alex, FY	Surgery	Faculty.Professor.Professor	M.D.	Hunan Medical College
Chen, Beatrice, Allis	OB-Gyn & Reproductive Science	Faculty.Professor.Associate	M.D.	University of Michigan
Chen, Beibei	Medicine	Faculty.Professor.Associate	Ph.D.	University of Iowa
Chen, Jun	Neurology	Faculty.Professor.Professor	M.D.	Shanghai Medical University
Chen, Kong	Medicine	Faculty.Professor.Research Assistant	Ph.D.	Louisiana State University
Chen, Qiang	Anesthesiology	Faculty.Instructor.Research	Ph.D.	Iowa State University
Chen, Wei	Pediatrics	Faculty.Professor.Associate	Ph.D.	University of Michigan
Chen, Xiaohua	Pediatrics	Faculty.Professor.Research Assistant	M.D.	Capital Medical College Xuanwu Hospital
Chen, Xucai	Medicine	Faculty.Professor.Research Associate	Ph.D.	Yale University
Chen, Yi Jiun	Computational and Systems Biology	Faculty.Instructor.Research	Ph.D.	National Taiwan University
Chen, Yuanyuan	Ophthalmology	Faculty.Professor.Assistant	Ph.D.	Case Western Reserve University
Cheng, Hongying	Computational and Systems Biology	Faculty.Professor.Research Assistant	Ph.D.	Rensselaer Polytechnic Institute
Cheng, Jing	Pediatrics	Faculty.Professor.Research Assistant	Ph.D.	Peking University
Cheng, Shao, Ji	Medicine	Faculty.Professor.Research Associate	M.D.	Bengbu Medical College
Chengappa, Kadiamada, N	Psychiatry	Faculty.Professor.Professor	M.D.	Mysore University
Chennat, Jennifer S	Medicine	Faculty.Professor.Associate	M.D.	Jefferson Medical College
Chennubhotla, Srinivas, C	Computational and Systems Biology	Faculty.Professor.Associate	Ph.D.	University of Toronto
Chermansky, Christopher, John	Urology	Faculty.Professor.Visiting Assistant	M.D.	Georgetown University
Chew, Douglas	Medicine	Faculty.Instructor.Instructor	B.S.	University of Pittsburgh
Chi, David, Hyunjoon	Otolaryngology	Faculty.Professor.Associate	M.D.	University of Michigan
Chiarchiaro, Jared	Medicine	Faculty.Professor.Assistant	M.D.	University of Texas Medical Branch
Chibisov, Irina, Yefimovna	Pathology	Faculty.Professor.Assistant	M.D.	Ternopol Medical School
Chikina, Maria D.	Computational and Systems Biology	Faculty.Professor.Assistant	Ph.D.	Princeton University
Chilcote, Kaleena Christine	Psychiatry	Faculty.Professor.Assistant	M.D.	Wayne State University SOM

Childers, Julie, Wilson	Medicine	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Chiose, Simion, Ion	Pathology	Faculty.Professor.Associate	M.D.	State Medical & Pharmaceutical Univ
Choi, Sylvia, Seung Yun	Pediatrics	Faculty.Professor.Associate	M.D.	Boston University
Chong, Hey Jin	Pediatrics	Faculty.Professor.Assistant	M.D.	Virginia Commonwealth University
Chopra, Kapil, Brijmohan	Medicine	Faculty.Professor.Professor	M.B.B.S.	University of Bombay
Chou, Sherry Hsiang-Yi	Critical Care Medicine	Faculty.Professor.Associate	M.D.	McGill University
Choudhary, Sonal	Dermatology	Faculty.Instructor.Instructor	M.B.B.S.	Vardhman Mahavir Medical College
Choudry, Mohammad, Haroon Asif	Surgery	Faculty.Professor.Associate	M.B.B.S.	Aga Khan University
Chough, Denise, Marie	Radiology	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Christie, Neil, Alexander	Cardiothoracic Surgery	Faculty.Professor.Associate	M.D.	University of Toronto
Chu, Alan, Wei Kai	Physical Medicine & Rehabilitation	Faculty.Professor.Assistant	M.D.	Ohio State University College of Medicine
Chu, Charleen, T	Pathology	Faculty.Professor.Professor	M.D.,Ph.D.	Duke University
Chu, Danny	Cardiothoracic Surgery	Faculty.Professor.Visiting	M.D.	Tufts University
Chu, Edward	Medicine	Faculty.Professor.Professor	M.D.	Brown University
Chu, Kar Hai	Medicine	Faculty.Professor.Assistant	Ph.D.	Unviersity of Hawaii at Manoa
Chu, Tianjiao	OB-Gyn & Reproductive Science	Faculty.Professor.Associate	Ph.D.	Carnegie Mellon University
Chung, Tammy, Ann	Psychiatry	Faculty.Professor.Associate	Ph.D.	Rutgers University
Cifuentes-Pagano, Maria, Eugenia	Pharmacology and Chemical Biology	Faculty.Instructor.Research	Ph.D.	State University of New York
Cladis, Franklyn, Paul	Anesthesiology	Faculty.Professor.Associate	M.D.	University of Rochester
Clancy, Cornelius, Joseph	Medicine	Faculty.Professor.Associate	M.D.	Washington University
Clark, Beth, Zelenak	Pathology	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Clark, Duncan, B	Psychiatry	Faculty.Professor.Professor	M.D.	Harvard Medical School
Clark, Melissa	Medicine	Faculty.Professor.Assistant	M.D.	University of Southern Alabama
Clark, Nathaniel L.	Computational and Systems Biology	Faculty.Professor.Assistant	Ph.D.	University of Washington
Clark, Robert, B	Critical Care Medicine	Faculty.Professor.Professor	M.D.	Medical College of Wisconsin
Clarke, Jennifer San Jose	Pediatrics	Faculty.Professor.Assistant	M.D.	SUNY Upstate Medical University

Clarkson, Becky Dawn	Medicine	Faculty.Instructor.Research	Ph.D.	Newcastle University
Clavell, Maria, I	Pediatrics	Faculty.Professor.Associate	M.D.	University of Puerto Rico
Claxton, Rene, N	Medicine	Faculty.Professor.Associate	M.D.	University of Florida
Clemens, Paula, Ruth	Neurology	Faculty.Professor.Professor	M.D.	Medical College of Pennsylvania
Clermont, Gilles	Critical Care Medicine	Faculty.Professor.Professor	M.D.C.M.	McGill University
Cleveland, Christine, A	Physical Medicine & Rehabilitation	Faculty.Professor.Assistant	M.D.	University of North Carolina at Chapel Hill
Cleves Bayon, Catalina	Pediatrics	Faculty.Professor.Assistant	M.D.	Unversity El Bosque
Clump, II, David A.	Radiation Oncology	Faculty.Professor.Assistant	M.D.	West Virginia University
Coffman, Lan Gardner	Medicine	Faculty.Professor.Assistant	M.D.	Wake Forest University SoM
Cohen, Ann, D	Psychiatry	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Cohen, Cathy, S	Radiology	Faculty.Professor.Assistant	M.D.	Medical College of Pennsylvania
Cohen, Jeffrey, Stewart	Medicine	Faculty.Professor.Assistant	M.D.	University of Pennsylvania School of Medicine
Cohen, Justus, Bernhard	Microbiology and Molecular Genetics	Faculty.Instructor.Research	Ph.D.	Weizmann Institute of Science
Collinger, Jennifer, Lynn	Physical Medicine & Rehabilitation	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Collins, Michael, W	Orthopaedic Surgery	Faculty.Professor.Visiting	Ph.D.	Michigan State University
Comerci, John, T, Jr	OB-Gyn & Reproductive Science	Faculty.Professor.Visiting Associate	M.D.	Temple University School of Medicine
Conklin, Cynthia, Ann	Psychiatry	Faculty.Professor.Associate	Ph.D.	Purdue University
Conner, Ian P.	Ophthalmology	Faculty.Professor.Assistant	M.D.	West Virginia University
Conti, Kavitha Antonyraj	Pediatrics	Faculty.Professor.Assistant	M.D.	Georgetown University
Conti, Tracey, Denise	Family Medicine	Faculty.Professor.Assistant	M.D.	Temple University
Contis, Lydia, C	Pathology	Faculty.Professor.Associate	M.D.	University of Athens
Conway, James, Frederick	Structural Biology	Faculty.Professor.Professor	Ph.D.	Massey University
Cook, Stacey Christine	Pediatrics	Faculty.Professor.Assistant	M.D.	Boston University
Coombs, Carmen M	Pediatrics	Faculty.Professor.Assistant	M.D.	Johns Hopkins University
Cooper, Gregory, F	Biomedical Informatics	Faculty.Professor.Professor	M.D.	Stanford University SOM
Cooper, Gregory, M	Plastic Surgery	Faculty.Professor.Associate	Ph.D.	Unversity of Pittsburgh
Cooper, James, D, II	Pediatrics	Faculty.Professor.Associate	M.D.	University of Connecticut

Cooper, Vaughn Scott	Microbiology and Molecular Genetics	Faculty.Professor.Associate	Ph.D.	Michigan State University
Copley-Woods, Noedahn	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	Temple University
Corbelli, Jennifer A	Medicine	Faculty.Professor.Assistant	M.D.	University of Rochester
Corcoran, Timothy, E	Medicine	Faculty.Professor.Associate	Ph.D.	Carnegie Mellon University
Cordle, Andrew C.	Radiology	Faculty.Professor.Assistant	M.D.	Case Western Reserve University
Cortazzo, Megan, Helen	Physical Medicine & Rehabilitation	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Corti, Paola	Medicine	Faculty.Professor.Research Assistant	Ph.D.	University of Basilicata
Costello, Joanna, Michele	Radiology	Faculty.Professor.Assistant	M.D.	Medical College of Pennsylvania
Coudriet, Gina	Surgery	Faculty.Professor.Research Assistant	Ph.D.	University of Pittsburgh
Couey, Jonathan Jay	Neurobiology	Faculty.Professor.Research Assistant	Ph.D.	Vrije Universiteit
Counihan, Mary, Patrice	Dermatology	Faculty.Professor.Assistant	M.D.	The Royal College Medical Science
Counihan, Peter, J	Medicine	Faculty.Professor.Associate	M.B.B.Ch.	Royal College of Surgeons
Courcoulas, Anita, P	Surgery	Faculty.Professor.Professor	M.D.	Boston University SOM
Courtney-Brooks, Madeleine B.	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	Washington University
Coyne, Bonnie, A	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	University of Pittsburgh School of Medicine
Craig Steckbeck, Jodi, Kristine	Microbiology and Molecular Genetics	Faculty.Professor.Research Associate	Ph.D.	Northeastern Ohio University College of Med
Crammond, Donald, James	Neurological Surgery	Faculty.Professor.Associate	Ph.D.	University of Toronto
Crist, Lawrence, R	Cardiothoracic Surgery	Faculty.Professor.Assistant	D.O.	Philadelphia College of Osteopathic Medi
Crock, Fred, William	Medicine	Faculty.Professor.Assistant	M.D.	Temple University
Crowley, John, J	Radiology	Faculty.Professor.Associate	M.D.	Trinity College
Crumrine, Patricia, K	Pediatrics	Faculty.Professor.Professor	M.D.	Medical College of Pennsylvania
Cruz, Ruy, Jorge, Jr.	Surgery	Faculty.Professor.Associate	M.D.	University of Santo Amaro
Culyba, Alison Journey	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Pennsylvania
Culyba, Matthew J	Medicine	Faculty.Professor.Assistant	M.D.	University of Pennsylvania
Cummings, Dana D.	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Pennsylvania SOM
Cyktor, Joshua C.	Medicine	Faculty.Instructor.Research	Ph.D.	The Ohio State University

Da Silva, Jose Pedro	Cardiothoracic Surgery	Faculty.Professor.Visiting	M.D.	Sao Paulo State University
Dabbs, David, Joseph	Pathology	Faculty.Professor.Professor	M.D.	Medical College of Ohio
Dacic, Sanja	Pathology	Faculty.Professor.Professor	M.D.	University of Zagreb
D'Agostino, Louis A.	Urology	Faculty.Professor.Assistant	M.D.	Uniformed Services University
Dai, Hehua	Surgery	Faculty.Instructor.Research	M.D.	Jiangxi Medical College
D'Aiuto, Leonardo	Psychiatry	Faculty.Instructor.Research	Ph.D.	University of Bari
Dalby, Patricia	Anesthesiology	Faculty.Professor.Associate	M.D.	University of Pittsburgh SOM
Dalope, Kristin	Psychiatry	Faculty.Professor.Assistant	M.D.	Albany Medical College
D'Amico, Adrian, Anthony	Emergency Medicine	Faculty.Professor.Assistant	M.D.	Ohio State Medical College
D'Amore, Antonio	Surgery	Faculty.Professor.Research Assistant	Ph.D.	University of Palermo
Dansingani, Kunal K	Ophthalmology	Faculty.Professor.Visiting Associate	M.D.	Royal Free Hospital and UCL Medical School
Darby, Joseph, Michael	Critical Care Medicine	Faculty.Professor.Professor	M.D.	University of Illinois College of Medicine
Das, Rohit	Medicine	Faculty.Professor.Assistant	M.D.	Albert Einstein College of Medicine
Dasyam, Anil, Kumar	Radiology	Faculty.Professor.Associate	M.D.	Nizam Institute of Medical Science
Davar, Diwakar	Medicine	Faculty.Professor.Assistant	M.B.B.S.	Yong Loo Lin School of Medicine
Davies, Benjamin, John	Urology	Faculty.Professor.Associate	M.D.	Mt. Sinai Medical School
Davis, Amy, W	Pathology	Faculty.Professor.Assistant	M.D.	Texas Tech University
Davis, Brian, Mark	Neurobiology	Faculty.Professor.Professor	Ph.D.	State University of New York
Davis, Derek, J	Anesthesiology	Faculty.Professor.Assistant	M.D.	University of Wisconsin Med School
Davis, Esa, Matius	Medicine	Faculty.Professor.Associate	M.D.	UMDNJ
Davis, Peter, J	Anesthesiology	Faculty.Professor.Professor	M.D.	Albert Einstein College of Medicine
Davison, Jon, M	Pathology	Faculty.Professor.Associate	M.D.	University of Chicago
Davit, Alexander Joseph III	Plastic Surgery	Faculty.Professor.Assistant	M.D.	Wake Forest University
Day, Nancy, L	Psychiatry	Faculty.Professor.Professor	Ph.D.	University of California
Day, Roger, S	Biomedical Informatics	Faculty.Professor.Associate	Sc.D.	Harvard University
D'Cruz, Louise, Maria	Immunology	Faculty.Professor.Assistant	Ph.D.	University of California San Diego
D'Cunha, Jonathan	Cardiothoracic Surgery	Faculty.Professor.Associate	M.D.	Medical College of Milwaukee
De Castro, Laura M	Medicine	Faculty.Professor.Visiting Associate	M.D.	Universidad Autonoma de Santo Domingo

De La Cruz, Carolyn	Plastic Surgery	Faculty.Professor.Assistant	M.D.	Eastern Virginal Medical School
De Toledo, Frederico, Granchi Steidel	Medicine	Faculty.Professor.Associate	M.D.	Federal University of Rio de Janeiro
De Vallejo, Abbe, Niccolo	Pediatrics	Faculty.Professor.Associate	Ph.D.	University of Mississippi
DeBrunner, Mark Gerald	Pediatrics	Faculty.Professor.Assistant	M.D.	Wright State Unviersity
Decker, Michael, James	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Minnesota School of Medicine
Dede, Ozgur	Orthopaedic Surgery	Faculty.Professor.Assistant	M.D.	Hacettepe University
Defrances, Marie, Colette	Pathology	Faculty.Professor.Professor	M.D.	University of Pittsburgh
DeFranco, Donald, B	Pharmacology and Chemical Biology	Faculty.Professor.Professor	Ph.D.	Yale University
DeGenna, Natacha, Marie	Psychiatry	Faculty.Professor.Assistant	Ph.D.	Concordia University
Degroat, William, C	Pharmacology and Chemical Biology	Faculty.Professor.Distinguished	Ph.D.	University of Pennsylvania
Deible, Christopher, R	Radiology	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
DeKosky, Allison Sheryl	Medicine	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Dela Torre, Luis	Surgery	Faculty.Professor.Associate	M.D.	Universidad Nacional Autonoma de Mexico
Delfyett, William, T	Radiology	Faculty.Professor.Assistant	M.D.	University of Pennsylvania
Delgoffe, Greg M	Immunology	Faculty.Professor.Assistant	Ph.D.	Johns Hopkins University
DeLuca, Kerry, Gill	Physical Medicine & Rehabilitation	Faculty.Professor.Assistant	M.D.	Northwestern University
Deluca, Neal	Microbiology and Molecular Genetics	Faculty.Professor.Professor	Ph.D.	Pennsylvania State Univ
Dembowski, Jill, Ann	Microbiology and Molecular Genetics	Faculty.Professor.Research Assistant	Ph.D.	University of Pittsburgh
Demetris, Anthony, J	Pathology	Faculty.Professor.Professor	M.D.	University of Pittsburgh SOM
Deng, Meihong	Surgery	Faculty.Professor.Research Assistant	M.D.	University of Duisburg-Essen
Denko, Timothee, Charles	Psychiatry	Faculty.Professor.Assistant	M.D.	University of Cincinnati
Depietro, Frank, R	Psychiatry	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Dermody, Terence Shawn	Pediatrics	Faculty.Professor.Professor	M.D.	Columbia University
Derubertis, Frederick, R	Medicine	Faculty.Professor.Professor	M.D.	University of Pittsburgh SOM
DeSilva, Ranil, Nishan	Medicine	Faculty.Professor.Assistant	M.D.	Temple University

Deslouches, Berthony	Microbiology and Molecular Genetics	Faculty.Professor.Visiting Research Assistant	M.D.	University of Pittsburgh
Devine, William A.	Developmental Biology	Faculty.Instructor.Visiting Research		
Devlin, Bernard, J, Jr	Psychiatry	Faculty.Professor.Professor	Ph.D.	Pennsylvania State University
Devor, Daniel, Craig	Cell Biology	Faculty.Professor.Professor	Ph.D.	SUNY
Dew, Mary, Amanda	Psychiatry	Faculty.Professor.Professor	Ph.D.	Harvard University
Dewar, Stephanie, Buck	Pediatrics	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Dezfulian, Cameron	Critical Care Medicine	Faculty.Professor.Assistant	M.D.	Duke University
Dhaliwal, Deepinder, K	Ophthalmology	Faculty.Professor.Professor	M.D.	Northwestern University Medical School
Dhangana, Rajoo	Radiology	Faculty.Professor.Assistant	M.B.B.S.	Aga Khan University
Dhar, Cherie Priya	Pediatrics	Faculty.Professor.Assistant	M.D.	George Washington University
Dhir, Rajiv	Pathology	Faculty.Professor.Professor	M.B.B.S.	All India Institute of Medical Sciences
Dhupar, Rajeev	Cardiothoracic Surgery	Faculty.Professor.Assistant	M.D.	Robert Wood Johnson Medical School
Di Maio, Roberto	Neurology	Faculty.Professor.Research Assistant	Ph.D.	University of Palermo
Diacovo, Thomas, Gerard	Pediatrics	Faculty.Professor.Visiting	M.D.	McGill University Medical School
Dicianno, Brad, E	Physical Medicine & Rehabilitation	Faculty.Professor.Associate	M.D.	University of Pittsburgh
DiCicco, Leigh A	Pediatrics	Faculty.Professor.Assistant	M.D.	Temple University
Diego, Emilia Josefa Borromeo	Surgery	Faculty.Professor.Assistant	M.D.	University of the Philippines
Dietz, Stephanie Babion	Dermatology	Faculty.Professor.Assistant	M.D.	University of Pennsylvania
Diler, Rasim, Somer	Psychiatry	Faculty.Professor.Associate	M.D.	Istanbul University
Dilly, Ashok Kumar	Surgery	Faculty.Instructor.Research	Ph.D.	University of Madras
Dimartini, Andrea, F	Psychiatry	Faculty.Professor.Professor	M.D.	University of Chicago Pritzker SOM
Dimitrov, Dimiter Stanchev	Medicine	Faculty.Professor.Visiting	Ph.D.	University of Sofia
Ding, Qing	Surgery	Faculty.Professor.Research Assistant	Ph.D.	Shanghai Inst of Immunology
Dixon, Clifton, E	Neurological Surgery	Faculty.Professor.Professor	Ph.D.	Virginia Commonwealth University
Djokic, Miroslav, S	Pathology	Faculty.Professor.Assistant	M.D.	University of Belgrade
Dobbelstein, Christopher, R	Psychiatry	Faculty.Professor.Assistant	M.D.	Michigan State University

Dobrowolski, Steven F	Pathology	Faculty.Professor.Associate	Ph.D.	Cleveland State University
Doeden, Katherine Sue	Pathology	Faculty.Professor.Assistant	M.D.	Indiana University
Dohar, Joseph, E	Otolaryngology	Faculty.Professor.Professor	M.D.	Ohio State University
Doi, Yohei	Medicine	Faculty.Professor.Associate	M.D.	Nagoya University
Dombrovski, Alexandre, Yurievitch	Psychiatry	Faculty.Professor.Associate	M.D.	Sechenov Moscow Medical Academy
Domnina, Yuliya, Anatolievna	Critical Care Medicine	Faculty.Professor.Assistant	M.D.	Ivanovo & Nizhniy Novgorod St Med Acad
Domsic, Robyn, Therese	Medicine	Faculty.Professor.Associate	M.D.	University of Iowa
Donadee, Chenell Lee	Critical Care Medicine	Faculty.Professor.Assistant	M.D.	The Ohio State University
Donahoe, Michael, P	Medicine	Faculty.Professor.Professor	M.D.	Hahnemann University SOM
Donaldson, William, Fielding	Orthopaedic Surgery	Faculty.Professor.Professor	M.D.	Rush Medical College
Dong, Hengjiang	Pediatrics	Faculty.Professor.Professor	Ph.D.	Uppsala University
Dong, Wei	Cell Biology	Faculty.Instructor.Research	Ph.D.	Wuhan University
Donnellan, Nicole, Michelle	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Donnelly, Christopher James	Neurobiology	Faculty.Professor.Assistant	Ph.D.	University of Delaware
Donnenberg, Albert, D	Medicine	Faculty.Professor.Professor	Ph.D.	Johns Hopkins University
Donovan, Anna K.	Medicine	Faculty.Professor.Assistant	M.D.	West Virginia University
Donovan, John, E	Psychiatry	Faculty.Professor.Professor	Ph.D.	University of Colorado
Donovan, Maryann, Alice	Pathology	Faculty.Professor.Assistant	Ph.D.	Columbia University
Doolen, Suzanne	Anesthesiology	Faculty.Professor.UCR Visiting Research Associate	Ph.D.	University of California
Doperak, Jeanne, Marie	Orthopaedic Surgery	Faculty.Professor.Assistant	D.O.	Philadelphia College of Osteopathic Med
Dorfsman, Michele, L	Emergency Medicine	Faculty.Professor.Associate	M.D.	University of Pennsylvania School of Medicine
Dorman, Heather Rust	Microbiology and Molecular Genetics	Faculty.Instructor.Research		
Dorritie, Kathleen A	Medicine	Faculty.Professor.Assistant	M.D.	SUNY-Upstate
Doshi, Ankur, Ashok	Emergency Medicine	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Douaihy, Antoine, Boutros	Psychiatry	Faculty.Professor.Professor	M.D.	St. Joseph University School of Med and Dent

Douglas, Gerald, Paul	Biomedical Informatics	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Dovey, Mark Edward	Pediatrics	Faculty.Professor.Visiting Associate	M.D.	Duke University School of Medicine
Doyle, John, Joseph	Neurology	Faculty.Professor.Professor	M.D.	University of Pittsburgh SOM
Drabek, Tomas	Anesthesiology	Faculty.Professor.Associate	M.D.	Charles University
Drain, Peter, Francis	Cell Biology	Faculty.Professor.Associate	Ph.D.	Massachusetts Institute of Technology
Drappatz, Jan	Neurology	Faculty.Professor.Associate	M.D.	Johannes Gutenberg University
Drexler, Scott Patrick	Ophthalmology	Faculty.Professor.Visiting Assistant	O.D.	Pennsylvania College of Optometry
Drickman, Johanna, Lynn	Pediatrics	Faculty.Professor.Assistant	M.D.	Chicago Medical School
Du, Qiang	Surgery	Faculty.Professor.Research Assistant	M.D.	Harbin Medical University
Du, Shoucheng	Microbiology and Molecular Genetics	Faculty.Professor.Visiting Research Assistant	Ph.D.	Technion-Israel Inst of Tech
Du, Yiqin	Ophthalmology	Faculty.Professor.Associate	M.D.	Xuzhou Medical College
Duensing, Anette, Ute	Pathology	Faculty.Professor.Assistant	M.D.	University of Hannover
Duerr, Richard, H	Medicine	Faculty.Professor.Professor	M.D.	University of Minnesota Med School
Duker, Georgia, K	Cell Biology	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Dum, Richard, Paul	Neurobiology	Faculty.Professor.Research Associate	Ph.D.	University of Washington
Duncan, Andrew Wayne	Pathology	Faculty.Professor.Assistant	Ph.D.	Duke University
Dunmire, Susan, M	Emergency Medicine	Faculty.Professor.Professor	M.D.	University of Pittsburgh SOM
Dunn, Michael, Andrew	Medicine	Faculty.Professor.Professor	M.D.	Northwestern University
Dutta, Partha	Medicine	Faculty.Professor.Assistant	Ph.D.	University of Wisconsin-Madison
Duvvuri, Umamaheswar	Otolaryngology	Faculty.Professor.Assistant	M.D.	University of Pennsylvania
Dziki, Jenna Lynn	Surgery	Faculty.Professor.Research Assistant	Ph.D.	University of Pittsburgh
Eagon, Patricia, K	Medicine	Faculty.Professor.Associate	Ph.D.	University of Pittsburgh
Edinger, Jason, McElveen	Physical Medicine & Rehabilitation	Faculty.Professor.Assistant	D.O.	Ohio University
Edwards, Robert, Page	OB-Gyn & Reproductive Science	Faculty.Professor.Professor	M.D.	University of Pittsburgh SOM
Edwards, Wilson, Barry	Radiology	Faculty.Professor.Assistant	Ph.D.	Washington University
Eibling, David, E	Otolaryngology	Faculty.Professor.Professor	M.D.	Ohio State University College of Medicine
Eichman, Adelaide, L	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Pittsburgh

Eid, Raymond	Surgery	Faculty.Professor.Assistant	M.D.	American University of Beirut
Eisele, Yvonne S	Medicine	Faculty.Professor.Assistant	Ph.D.	International Max Planck Research School
Eisses, John F	Pediatrics	Faculty.Professor.Assistant	M.D.	Oregon Health Sciences University
Ejaz, Asim	Plastic Surgery	Faculty.Instructor.Research	Ph.D.	Medical University Innsbruck
El Gharbawie, Omar A.	Neurobiology	Faculty.Professor.Assistant	Ph.D.	University of Lethbridge
El Hag, Mohamed I	Pathology	Faculty.Professor.Assistant	M.D.	University of Medical Sciences and Technology
El-Gharbawy, Areeg Hassan	Pediatrics	Faculty.Professor.Assistant	M.B.Ch.B.	Cairo University
Elishaev, Esther	Pathology	Faculty.Professor.Associate	M.D.	University of Debrecen
Eller, Andrew, W	Ophthalmology	Faculty.Professor.Professor	M.D.	Hahnemann University SOM
Ellery, Kate Marie	Pediatrics	Faculty.Professor.Assistant	D.O.	Arizona College of Osteopathic Medicine
Ellis, Chad Andrew	Pathology	Faculty.Professor.UCR Visiting Associate	Ph.D.	University of Illinois School of Medicine
Elmer, Jonathan P B	Emergency Medicine	Faculty.Professor.Assistant	M.D.	Mount Sinai
Elnicki, David, Michael	Medicine	Faculty.Professor.Professor	M.D.	University of Pittsburgh School of Medicine
Emerick, Trent D	Anesthesiology	Faculty.Professor.Assistant	M.D.	Georgetown Univ
Emert-Sedlak, Lori, Ann	Microbiology and Molecular Genetics	Faculty.Professor.Research Assistant	Ph.D.	Univeristy of Pittsburgh
Emery, Stephen, Paul	OB-Gyn & Reproductive Science	Faculty.Professor.Associate	M.D.	University of Alabama
Emlet, David R.	Critical Care Medicine	Faculty.Professor.Research Assistant	Ph.D.	Thomas Jefferson University
Engh, Johnathan, A	Neurological Surgery	Faculty.Professor.Associate	M.D.	University of Virginia
English, Joseph, Cornelius, III	Dermatology	Faculty.Professor.Professor	M.D.	Pennsylvania State University
Enwright, John, F, III	Psychiatry	Faculty.Instructor.Instructor	Ph.D.	University of Virginia
Epperly, Michael, W	Radiation Oncology	Faculty.Professor.Professor	Ph.D.	West Virginia University
Erbay, Sami Hurol	Radiology	Faculty.Professor.Visiting Associate	M.D.	University of Ankara
Erdos, Geza	Dermatology	Faculty.Professor.Research Assistant	Ph.D.	University of Budapest
Escajeda, Jeremiah Thomas	Emergency Medicine	Faculty.Professor.Assistant	M.D.	Pennsylvania State University
Escobar, Oscar	Pediatrics	Faculty.Professor.Associate	M.D.	Universidad del Valle Cali

Escolar, Maria Luisa	Pediatrics	Faculty.Professor.Associate	M.D.	Escuela Colombiana de Medicina
Eslami, Mohammad H.	Surgery	Faculty.Professor.Visiting	M.D.	Harvard Medical School
Eslami, Pegeen W.	Pediatrics	Faculty.Professor.Visiting Associate	M.D.	Harvard Medical School
Esni, Farzad	Surgery	Faculty.Professor.Associate	Ph.D.	Umea University
Esper, Stephen, Andrew	Anesthesiology	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Espinoza, David Roberto	Orthopaedic Surgery	Faculty.Professor.Assistant	M.D.	University of Texas Medical School at Houston
Ezaru, Catalin, Silviu	Anesthesiology	Faculty.Professor.Assistant	M.D.	Carol Davila Univesity
Ezzelarab, Mohamed, Borhami	Surgery	Faculty.Professor.Research Associate	M.B.B.S.	Alexandria University
Faber, Christopher, Neal	Medicine	Faculty.Professor.Associate	M.D.	University of Pittsburgh SOM
Facco, Francesca Lucia	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	Georgetown University
Fadakar, Paul K	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Connecticut
Faeder, James, R	Computational and Systems Biology	Faculty.Professor.Associate	Ph.D.	University of Colorado
Faeder, Morgan	Psychiatry	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Fajt, Merritt, Lynn	Medicine	Faculty.Professor.Assistant	M.D.	Temple University
Falo, Louis, D, Jr	Dermatology	Faculty.Professor.Professor	M.D.	Harvard Medical School
Fan, Jie	Surgery	Faculty.Professor.Professor	M.D.	Shanghai Second Medical University
Farah, Rafic Jean	Medicine	Faculty.Instructor.Research	M.D.	St. Joseph University
Farkas, Amy Hamilton	Medicine	Faculty.Instructor.Visiting	M.D.	University of Pittsburgh
Farr, Russell, M	Psychiatry	Faculty.Professor.Assistant	M.D.	University of Chicago Pritzker School of Med
Fasanella, Kenneth, Edward	Medicine	Faculty.Professor.Assistant	M.D.	University of Virginia
Faust, Alison Jazwinski	Medicine	Faculty.Professor.Assistant	M.D.	Jefferson Medical College
Fazzari, Marco	Pharmacology and Chemical Biology	Faculty.Professor.Research Assistant	Ph.D.	Universita degli studi di Palermo
Fecek, Ronald J. Jr.,	Dermatology	Faculty.Instructor.Research	Ph.D.	West Virginia University
Fedorchak, Morgan, Virginia	Ophthalmology	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Feghali, Maisa Nabil	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	American University of Beirut
Feingold, Brian, D	Pediatrics	Faculty.Professor.Associate	M.D.	University of Pittsburgh

Feng, Ning	Medicine	Faculty.Professor.Assistant	M.D.	Huazhong University of Science and Technology
Feranchak, Andrew	Pediatrics	Faculty.Professor.Visiting	M.D.	University of Pittsburgh School of Medicine
Ferguson, Grace Pang-Fried	OB-Gyn & Reproductive Science	Faculty.Instructor.Visiting	M.D.	Jefferson Medical College
Ferguson, Robert John	Medicine	Faculty.Professor.Assistant	Ph.D.	Nova Southeastern University
Fernandez, Luis De Jesus	Pediatrics	Faculty.Professor.Assistant	M.D.	Pontificia Universidad Catolica Madre y Maestra
Fernandez-Miranda, Juan, Carlos	Neurological Surgery	Faculty.Professor.Associate	M.D.	Complutense University
Fernstrom, John, D	Psychiatry	Faculty.Professor.Professor	Ph.D.	Massachusetts Institute of Technology
Ferrarelli, Fabio	Psychiatry	Faculty.Professor.Assistant	M.D.	Catholic University of Sacred Hearth
Ferris, Laura, Korb	Dermatology	Faculty.Professor.Associate	M.D.	University of Maryland
Ferris, Robert, Louis	Otolaryngology	Faculty.Professor.Professor	Ph.D.	Johns Hopkins University
Ferson, Peter, F	Cardiothoracic Surgery	Faculty.Professor.Professor	M.D.	University of Pittsburgh SOM
Fertig, Alexis, Marianna	Psychiatry	Faculty.Professor.Associate	M.D.	Tulane University
Field, Jessica Bon	Medicine	Faculty.Professor.Assistant	M.D.	Jefferson Medical College
Finder, Jonathan, D	Pediatrics	Faculty.Professor.Professor	M.D.	Albany Medical College
Fine, Jeffrey, Louis	Pathology	Faculty.Professor.Associate	M.D.	Ohio State University
Fine, Michael, J	Medicine	Faculty.Professor.Professor	M.D.	Hahnemann University SOM
Fink, Ericka, L	Critical Care Medicine	Faculty.Professor.Associate	M.D.	Jefferson Medical College
Finkel, Toren	Medicine	Faculty.Professor.Professor	M.D.	Harvard Medical School
Finn, Olivera, J	Immunology	Faculty.Professor.Distinguished	Ph.D.	Stanford University
Fischer, Gary, S	Medicine	Faculty.Professor.Professor	M.D.	Harvard Medical School
Fish, Kenneth, N	Psychiatry	Faculty.Professor.Associate	Ph.D.	Oregon Health and Science University
Fish, Larry, John	Surgery	Faculty.Professor.Research Assistant	Ph.D.	University of California
Fisher, Bernard	Surgery	Faculty.Professor.Distinguished Public Service	M.D.	University of Pittsburgh SOM
Fisher, Lee Erik Bartholomew	Physical Medicine & Rehabilitation	Faculty.Professor.Assistant	M.D.	Case Western Reserve University
Fitz, Charles, R	Radiology	Faculty.Professor.Professor	M.D.	University of Michigan Med School

Fitzpatrick, Meghan, E	Medicine	Faculty.Instructor.Instructor	M.D.	Temple University
Fleischer, Allison E.	Pediatrics	Faculty.Professor.Assistant	M.D.	Drexel University
Flickinger, John, C	Radiation Oncology	Faculty.Professor.Professor	M.D.	University of Chicago Pritzker SOM
Flint, Amanda, C	Pediatrics	Faculty.Professor.Assistant	M.D.	Albany Medical College
Flores, Luis Enrique	Psychiatry	Faculty.Instructor.Visiting	Ph.D.	University of Illinois
Flynn, Joanne, L	Microbiology and Molecular Genetics	Faculty.Professor.Professor	Ph.D.	University of California
Fnu, Shikhar	Computational and Systems Biology	Faculty.Professor.Research Assistant	Ph.D.	University of Arizona
Fogle, Keri Jean	Pharmacology and Chemical Biology	Faculty.Instructor.Research	Ph.D.	Columbia University
Follansbee, William, P	Medicine	Faculty.Professor.Professor	M.D.	University of Pennsylvania SOM
Fong-Isariyawongse, Joanna Suet	Neurology	Faculty.Professor.Assistant	M.D.	The Ohio State University
Forbes, Erika, Elaine	Psychiatry	Faculty.Professor.Professor	Ph.D.	University of Pittsburgh
Ford, Marijn Gerard Johannes	Cell Biology	Faculty.Professor.Assistant	Ph.D.	MRC Laboratory of Molecular Biology
Ford, Natalia Vladimirovna	Cell Biology	Faculty.Professor.Research Assistant	Ph.D.	University of California-Davis
Forman, Daniel Edward	Medicine	Faculty.Professor.Professor	M.D.	George Washington University
Forman, Steven, D	Psychiatry	Faculty.Professor.Assistant	M.D.	Mount Sinai School of Medicine
Forno, Erick	Pediatrics	Faculty.Professor.Assistant	M.D.	Universidad Cayetano Heredia
Forsythe, Raquel, M	Surgery	Faculty.Professor.Assistant	M.D.	State University of New York
Forte, Patrick, John	Anesthesiology	Faculty.Professor.Associate	M.D.	West Virginia University School of Medicine
Fourcade, Julien, Jean-Jacques	Medicine	Faculty.Professor.Research Assistant	Pharm.D.	Toulouse University
Fournier, Jay, Curtis	Psychiatry	Faculty.Professor.Assistant	Ph.D.	University of Pennsylvania
Fowler, Jeffrey Adam	Medicine	Faculty.Professor.Assistant	D.O.	Lake Erie College of Osteopathy
Fowler, John Roy, Jr.	Orthopaedic Surgery	Faculty.Professor.Assistant	M.D.	Temple University
Fox, Andrea, R	Family Medicine	Faculty.Professor.Associate	M.D.	Boston University SOM
Fox, Ira, Jacob	Surgery	Faculty.Professor.Professor	M.D.	Columbia University
Frahm, Krystle A	Medicine	Faculty.Instructor.Instructor	Ph.D.	Colorado State University
Francipane, Maria Giovanna	Pathology	Faculty.Professor.Research Assistant	Ph.D.	University of Palermo

Francis, Lanie, Kasdan	Medicine	Faculty.Instructor.Research	M.D.	University of Pittsburgh
Franzen, Peter, Lloyd	Psychiatry	Faculty.Professor.Assistant	Ph.D.	University of Arizona
Freed, Robert J.	Radiology	Faculty.Professor.Assistant	M.D.	Pennsylvania State University COM
Freeman, Bruce, A	Pharmacology and Chemical Biology	Faculty.Professor.Distinguished	Ph.D.	University of California
French, Jonathan E.	Orthopaedic Surgery	Faculty.Professor.Assistant	Ph.D.	Widener University
Freyberg, Zachary Z.	Psychiatry	Faculty.Professor.Assistant	M.D.,Ph.D.	Albert Einstein College of Medicine
Friberg, Thomas, R	Ophthalmology	Faculty.Professor.Professor	M.D.	University of Minnesota Med School
Fried, Linda, Faith	Medicine	Faculty.Professor.Professor	M.D.	Mount Sinai School of Medicine
Friedlander, Robert Max	Neurological Surgery	Faculty.Professor.Professor	M.D.	Harvard Medical School
Friedman, Peter, Andrew	Pharmacology and Chemical Biology	Faculty.Professor.Professor	Ph.D.	State University of New York
Friehling, Erika, Dawn	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Virginia
Frisch, Adam N.	Emergency Medicine	Faculty.Professor.Assistant	M.D.	Albany Medical College
Frizzell, Raymond, A	Pediatrics	Faculty.Professor.Professor	Ph.D.	University of Pittsburgh SOM
Froehlich, Rosemary J	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	State University of New York Upstate Medical University
Fromkin, Janet, Beth	Pediatrics	Faculty.Instructor.Research	M.D.	George Washington University
Frye, Roy, Alan	Pathology	Faculty.Professor.Associate	M.D.	University of Michigan Med School
Fu, Freddie, H	Orthopaedic Surgery	Faculty.Professor.Distinguished Service	M.D.	University of Pittsburgh SOM
Fuhrman, Carl, R	Radiology	Faculty.Professor.Professor	M.D.	University of Pittsburgh SOM
Fuhrman, Dana Young	Critical Care Medicine	Faculty.Professor.Assistant	D.O.	Philadelphia College of Osteopathic Medicine
Fukuda, Mitsuhiro	Radiology	Faculty.Professor.Assistant	Ph.D.	Osaka University
Funderburgh, James, L	Ophthalmology	Faculty.Professor.Professor	Ph.D.	University of Wisconsin
Furey, William, F	Pharmacology and Chemical Biology	Faculty.Professor.Professor	Ph.D.	Rutgers University
Furlan, Alessandro	Radiology	Faculty.Professor.Assistant	M.D.	University of Udine
Furman, Joseph, M	Otolaryngology	Faculty.Professor.Professor	M.D.	University of Pennsylvania SOM
Furtado, Andre Dietz	Radiology	Faculty.Professor.Assistant	M.D.	Universidade Federal do Rio Grand do Su
Fuschiotti, Patrizia	Medicine	Faculty.Professor.Assistant	Ph.D.	State University of Perugia

Gaesser, Jenna M	Pediatrics	Faculty.Professor.Assistant	M.D.	State University of New York
Gaffen, Sarah, L	Medicine	Faculty.Professor.Professor	Ph.D.	University of California-Berkeley
Gaines, Barbara, A	Surgery	Faculty.Professor.Professor	M.D.	University of Virginia School of Medicine
Galang, Gary, Noel Floro	Physical Medicine & Rehabilitation	Faculty.Professor.Assistant	M.D.	University of the Philippines
Galbiati, Daniela	Pharmacology and Chemical Biology	Faculty.Professor.Research Assistant	Ph.D.	Statal University of Milan
Galbiati, Ferruccio	Pharmacology and Chemical Biology	Faculty.Professor.Professor	Ph.D.	University of Milan
Galson, Deborah, Lynn	Medicine	Faculty.Professor.Associate	Ph.D.	Brandeis University
Gambotto, Andrea, A	Surgery	Faculty.Professor.Associate	M.D.	University of Bari
Ganapathiraju, Madhavi, Kumari	Biomedical Informatics	Faculty.Professor.Associate	Ph.D.	Carnegie Mellon University
Gandley, Robin, Elizabeth	OB-Gyn & Reproductive Science	Faculty.Professor.Visiting Research Assistant	Ph.D.	University of Maryland
Gandotra, Gaurav	Psychiatry	Faculty.Professor.Assistant	M.B.B.S.	Government Medical College
Ganesh, Swaytha	Medicine	Faculty.Professor.Assistant	M.B.B.S.	
Gangopadhyay, Nupur, Nikkan	Surgery	Faculty.Professor.Research Assistant	Ph.D.	Indian Veterinary Research Institute
Ganguli, Mary	Psychiatry	Faculty.Professor.Professor	M.B.B.S.	Christian Medical College
Gannon, Jessica Michelle	Psychiatry	Faculty.Professor.Assistant	M.D.	University of Kansas
Ganott, Marie, Adele	Radiology	Faculty.Professor.Associate	M.D.	State University of New York
Ganoza, Armando Javier	Surgery	Faculty.Professor.Assistant	M.D.	Universidad Nacional Mayor de San Marcos
Gao, Shou-Jiang	Microbiology and Molecular Genetics	Faculty.Professor.Visiting	Ph.D.	University of Bordeaux II
Gao, Wentao	Surgery	Faculty.Professor.Research Assistant	M.D.	Norman Bethune University of Medical Sciences
Gao, Yanhua	Pediatrics	Faculty.Professor.Research Assistant	M.D.	Hebei Medical University
Gao, Yanqin	Neurology	Faculty.Professor.Visiting Research Associate		
Garcia, Angela, M	Physical Medicine & Rehabilitation	Faculty.Professor.Assistant	M.D.	Wayne State University
Gardner, Kathy, Lou	Neurology	Faculty.Professor.Assistant	M.D.	University of Utah

Gardner, Paul, A	Neurological Surgery	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Garibaldi, Luigi, R	Pediatrics	Faculty.Professor.Professor	M.D.	University of Genova
Garrison, Jessica L.	Pediatrics	Faculty.Professor.Assistant	M.D.	Albert Einstein College
Gartner Schmidt, Jacqueline, Leslie	Otolaryngology	Faculty.Professor.Professor	Ph.D.	University of Maryland
Gaunt, Robert, A	Physical Medicine & Rehabilitation	Faculty.Professor.Assistant	Ph.D.	University of Alberta
Gayed, Bishoy A	Urology	Faculty.Professor.Assistant	M.D.	University of Missouri
Gedekoh, Robert, H	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	University of Pittsburgh School of Medicine
Gellad, Walid, Fouad	Medicine	Faculty.Professor.Associate	M.D.	Univeresity of Maryland
Geller, David, A	Surgery	Faculty.Professor.Professor	M.D.	Northwestern University Medical School
Gelzinis, Theresa, A	Anesthesiology	Faculty.Professor.Associate	M.D.	Brown University School of Medicine
Gerlach, Jorg, Christian	Surgery	Faculty.Professor.Professor	M.D.	Free University of Berlin
Germain, Anne	Psychiatry	Faculty.Professor.Associate	Ph.D.	University of Montreal
Gerszten, Peter, C	Neurological Surgery	Faculty.Professor.Professor	M.D.	Johns Hopkins University School of Medicine
Ghaloul Gonzalez, Lina	Pediatrics	Faculty.Professor.Research Assistant	M.D.	University of Aleppo
Ghazi, Arjuman	Pediatrics	Faculty.Professor.Assistant	Ph.D.	Tata Institute
Ghosh, Samit	Medicine	Faculty.Professor.Research Assistant	Ph.D.	Jadavpur University
Ghuman, Avniel Singh	Neurological Surgery	Faculty.Professor.Associate	Ph.D.	Harvard University
Gibbs, Hunter M.	Psychiatry	Faculty.Professor.Assistant	M.D.	UAMS
Gibson, Kevin, F	Medicine	Faculty.Professor.Professor	M.D.	UMDNJ Robert Wood Johnson Med School
Gibson, Sarah, E	Pathology	Faculty.Professor.Associate	M.D.	Duke University
Gideon Devanesan, Hannah Priyadarshini	Microbiology and Molecular Genetics	Faculty.Instructor.Research	Ph.D.	University of Cape Town
Gierl, Brian T.	Anesthesiology	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Gilbert, James, R	Plastic Surgery	Faculty.Professor.Research Assistant	Ph.D.	University of California
Gildengers, Ariel, G	Psychiatry	Faculty.Professor.Associate	M.D.	New Jersey Medical School
Gillespie, Amanda, I	Otolaryngology	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh

Gillman, Grant, Shale	Otolaryngology	Faculty.Professor.Associate	M.D.	University of Manitoba
Gimbel, Alison, Morris	Medicine	Faculty.Professor.Professor	M.D.	Duke University
Gimbel, Michael, Lawrence	Plastic Surgery	Faculty.Professor.Assistant	M.D.	Duke University
Gingras, Sebastien	Immunology	Faculty.Professor.Research Assistant	Ph.D.	Universite Laval
Girard, Timothy D.	Critical Care Medicine	Faculty.Professor.Visiting Associate	M.D.	University of Texas
Gittes, Elissa, B	Pediatrics	Faculty.Professor.Assistant	M.D.	Harvard Medical School
Gittes, George, K	Surgery	Faculty.Professor.Professor	M.D.	Harvard Medical School
Givelber, Rachel, Joy	Medicine	Faculty.Professor.Assistant	M.D.	Columbia College of Physicians and Surg
Gladwin, Mark, Thomas	Medicine	Faculty.Professor.Distinguished	M.D.	University of Miami
Glance, Jody Brown	Psychiatry	Faculty.Professor.Assistant	M.D.	Case Western Reserve University
Glausier, Jill, Renee	Psychiatry	Faculty.Professor.Assistant	Ph.D.	Emory University
Gleason, Thomas, G	Cardiothoracic Surgery	Faculty.Professor.Professor	M.D.	Rush Medical College
Glick, Ronald, M	Psychiatry	Faculty.Professor.Associate	M.D.	University of Illinois
Glorioso, Joseph, C, III	Microbiology and Molecular Genetics	Faculty.Professor.Professor	Ph.D.	Louisiana State University
Goetzman, Eric, S	Pediatrics	Faculty.Professor.Associate	Ph.D.	University of Alabama-Birmingham
Goins, William, F	Microbiology and Molecular Genetics	Faculty.Professor.Research Assistant	Ph.D.	University of Iowa
Goitz, Robert	Orthopaedic Surgery	Faculty.Professor.Professor	M.D.	Johns Hopkins University School of Medicine
Gold, Michael, S	Neurobiology	Faculty.Professor.Professor	Ph.D.	University of California, L.A.
Goldstein, Jesse A.	Plastic Surgery	Faculty.Professor.Assistant	M.D.	University of Pennsylvania
Goldstein, Leslie, Alan	Pathology	Faculty.Instructor.Research	Ph.D.	New York University School of Medicine
Goldstein, Tina, R	Psychiatry	Faculty.Professor.Associate	Ph.D.	University of Colorado
Golla, Saraswathi	Radiology	Faculty.Professor.Associate	M.D.	Guntur Medical College
Golla, Suman	Otolaryngology	Faculty.Professor.Associate	M.D.	University of Maryland School of Medicine
Gomez Danies, Hernando	Critical Care Medicine	Faculty.Professor.Assistant	M.D.	Universidad Nacional de Colombia
Gomez, Delphine Anne Henriette	Medicine	Faculty.Professor.Assistant	Ph.D.	University Paris 7
Goncharova, Elena A.	Medicine	Faculty.Professor.Associate	Ph.D.	Russian Academy of Sciences

Gong, Zhenwei	Pediatrics	Faculty.Professor.Research Assistant	Ph.D.	Chinese Academy of Sciences
Gonzaga, Alda, Maria R	Medicine	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Gonzalez Burgos, Guillermo, Ricardo	Psychiatry	Faculty.Professor.Associate	Ph.D.	University of Buenos Aires
Gonzalez, Stephanie, Marie	Emergency Medicine	Faculty.Professor.Assistant	M.D.	Wayne State University
Good, Chester, B	Medicine	Faculty.Professor.Professor	M.D.	George Washington Univ SOM & Health Sci
Goodman, Mark, Alvin	Orthopaedic Surgery	Faculty.Professor.Visiting Associate	M.D.	SUNY
Gopalakrishnan, Vanathi	Biomedical Informatics	Faculty.Professor.Associate	Ph.D.	University of Pittsburgh
Gopalan, Priya Raja	Psychiatry	Faculty.Professor.Assistant	M.D.	University of Virginia
Gorske, Tad	Physical Medicine & Rehabilitation	Faculty.Professor.Assistant	Ph.D.	West Virginia University
Gosman, Gabriella, Gray	OB-Gyn & Reproductive Science	Faculty.Professor.Professor	M.D.	Yale University School of Medicine
Gottardi, Riccardo Luca	Orthopaedic Surgery	Faculty.Professor.Research Assistant	Ph.D.	University of Genova
Gottschalk, Rachel A	Immunology	Faculty.Professor.Assistant	Ph.D.	Weill Cornell Graduate School of Medical Sciences
Gough, Albert H.	Computational and Systems Biology	Faculty.Professor.Research Associate	Ph.D.	Carnegie Mellon University
Gozansky, Elliott K.	Radiology	Faculty.Professor.Assistant	M.D.	University of Michigan
Graham, Steven, Hunt	Neurology	Faculty.Professor.Professor	M.D.	University of Texas Medical School
Grandi, Paola	Neurological Surgery	Faculty.Professor.Assistant	Ph.D.	University of Ferrara
Grau, Thomas C.	Medicine	Faculty.Professor.Associate	M.D.	Rutgers University
Greco, Carol, M	Psychiatry	Faculty.Professor.Associate	Ph.D.	University of Virginia
Green, Michael, D	Pediatrics	Faculty.Professor.Professor	M.D.	University of Illinois College of Medicine
Greenamyre, John, Timothy	Neurology	Faculty.Professor.Professor	M.D.	University of Michigan
Greenberg, Tsafir	Psychiatry	Faculty.Instructor.Research	Ph.D.	Stony Brook University
Greenberger, Joel, S	Radiation Oncology	Faculty.Professor.Professor	M.D.	Harvard Medical School
Greene, Stephanie	Neurological Surgery	Faculty.Professor.Associate	M.D.	Albany Medical College
Greenspan, Susan, Lynn	Medicine	Faculty.Professor.Professor	M.D.	Harvard Medical School
Greer, Julia, Butler	Medicine	Faculty.Professor.Research Assistant	M.D.	Mt Sinai Medical School
Gregory, Alyssa, D	Medicine	Faculty.Professor.Research Assistant	Ph.D.	Washington University

Griffin, Darcy, Michelle	Neurobiology	Faculty.Professor.Research Assistant	Ph.D.	University of Kansas
Gronenborn, Angela, M	Structural Biology	Faculty.Professor.Distinguished	Ph.D.	University of Cologne
Gross, Bradley	Neurological Surgery	Faculty.Professor.Assistant	M.D.	Northwestern University
Gross, Jeffrey M.	Ophthalmology	Faculty.Professor.Professor	Ph.D.	Duke University
Grudziak, Jan, S	Orthopaedic Surgery	Faculty.Professor.Assistant	M.D.	Academy of Medicine
Gruen, Gary, S	Orthopaedic Surgery	Faculty.Professor.Professor	M.D.	Temple University SOM
Grunwaldt, Lorelei, J	Plastic Surgery	Faculty.Professor.Associate	M.D.	Upstate Medical University
Guido, Richard, S	OB-Gyn & Reproductive Science	Faculty.Professor.Professor	M.D.	University of Rochester SOM & Dentistry
Gulati, Vijay, Kumar	Medicine	Faculty.Professor.Assistant	M.D.	Tufts University
Gumus, Serter	Radiology	Faculty.Professor.Assistant	M.D.	Marmara University
Gunn, Scott, R	Critical Care Medicine	Faculty.Professor.Professor	M.D.	University of Minnesota
Guo, Zong, Sheng	Surgery	Faculty.Professor.Assistant	Ph.D.	Harvard University
Gurkar, Aditi Uday	Medicine	Faculty.Professor.Assistant	Ph.D.	Boston University School of Medicine
Gurtunca, Nursen	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Ege
Gusenoff, Jeffrey, A	Plastic Surgery	Faculty.Professor.Associate	M.D.	Johns Hopkins University
Gushchin, Ghennady, Vasiljevich	Psychiatry	Faculty.Professor.Assistant	M.D.	First Leningrad Medical Institute
Gutstein, Howard Bruce	Anesthesiology	Faculty.Professor.Professor	M.D.	Johns Hopkins University
Guyette, Francis, X, III	Emergency Medicine	Faculty.Professor.Associate	M.D.	Tulane University
Guyette, Maria, Koenig	Emergency Medicine	Faculty.Professor.Assistant	M.D.	Albany Medical College
Guzman Lepe, Jorge	Pathology	Faculty.Instructor.Research	M.D.	University of Guadalajara
Haarer, Kelly, A	Radiology	Faculty.Professor.Assistant	M.D.	University of Maryland School of Medicine
Haas, Gretchen, L	Psychiatry	Faculty.Professor.Associate	Ph.D.	Wayne State University
Habib-Bein, Nadia, Fouad	Pathology	Faculty.Professor.Assistant	M.B.B.Ch.	Cairo University
Hachisuka, Junichi	Neurobiology	Faculty.Professor.Research Assistant	M.D.	Nagoya University School of Medicine
Hafeman, Danella Marie	Psychiatry	Faculty.Professor.Assistant	M.D.	Columbia Coll Phys & Surg
Hager, Eric Samuel	Surgery	Faculty.Professor.Assistant	M.D.	Jefferson Medical College

Hahm, Eun-Ryeong	Pharmacology and Chemical Biology	Faculty.Instructor.Research	Ph.D.	Seoul National University
Hakim, Christiane, Mary	Radiology	Faculty.Professor.Professor	M.D.	Northeastern Ohio University College of Medicine
Hall, Bonnie, Reinhart	Microbiology and Molecular Genetics	Faculty.Instructor.Research	Ph.D.	University of Pittsburgh
Hall, Daniel, E	Surgery	Faculty.Professor.Associate	M.D.	Yale School of Medicine
Hall, Martha, H	Psychiatry	Faculty.Professor.Professor	Ph.D.	University of Pittsburgh
Hall-Burton, Denise, Michelle	Anesthesiology	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Halvas, Elias, Konstantine	Medicine	Faculty.Professor.Research Assistant	Ph.D.	West Virginia University
Hamad, Giselle, G	Surgery	Faculty.Professor.Professor	M.D.	Johns Hopkins University School of Medicine
Hamda, Hossam Khamis	Radiology	Faculty.Professor.Assistant	M.D.	Alexandria University
Hamel, Sara, Christine	Pediatrics	Faculty.Professor.Associate	M.D.	Northwestern University Med School
Hamilton, David Kojo	Neurological Surgery	Faculty.Professor.Associate	M.D.	University of Virginia
Hamilton, Melinda, Fiedor	Critical Care Medicine	Faculty.Professor.Associate	M.D.	Creighton University
Hamilton, Ronald, Lee	Pathology	Faculty.Professor.Associate	M.D.	University of Nebraska
Hamm, Megan E	Medicine	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Hammer, Maxim, Daniel	Neurology	Faculty.Professor.Associate	M.D.	Albany Medical College
Hammond, Gerald Raymond Vere	Cell Biology	Faculty.Professor.Assistant	Ph.D.	University College London
Han, Bing	Pathology	Faculty.Instructor.Research	M.D.	Xi'an Jiaotong University
Han, Jie	Pathology	Faculty.Professor.Research Assistant	M.B.B.S.	An Hui Medical University
Han, Yueh-Ying	Pediatrics	Faculty.Professor.Research Assistant	Ph.D.	University of Pittsburgh
Hand, Timothy Wesley	Pediatrics	Faculty.Professor.Assistant	Ph.D.	Yale University
Handen, Benjamin, L	Psychiatry	Faculty.Professor.Professor	Ph.D.	University of Massachusetts
Handler, Steven, M	Medicine	Faculty.Professor.Associate	M.D.	University of Medicine and Dentistry
Hanlon, Joseph, T	Medicine	Faculty.Professor.Professor	Pharm.D.	University of North Carolina
Hanmer, Janel Zelsnack	Medicine	Faculty.Professor.Assistant	M.D.	University of Wisconsin
Hannibal, Kristin, Mary	Pediatrics	Faculty.Professor.Associate	M.D.	University of Cincinnati College of Medicine
Hariharan, Jaishree	Medicine	Faculty.Professor.Professor	M.D.	University of Bombay

Hariharan, Sundaram	Medicine	Faculty.Professor.Professor	M.D.	University of Bombay
Harinstein, Matthew E.	Medicine	Faculty.Professor.Assistant	M.D.	Loyola University
Harrington, Amanda, L	Physical Medicine & Rehabilitation	Faculty.Professor.Assistant	M.D.	University of Miami
Harris, John A	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	University of North Carolina
Harris, Tyler H.	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Virginia
Harrison, Lee, H	Medicine	Faculty.Professor.Professor	M.D.	Emory University School of Medicine
Hartman, Douglas, J	Pathology	Faculty.Professor.Associate	M.D.	University of Cincinnati
Harvey, Joan	Medicine	Faculty.Professor.Associate	M.D.	Johns Hopkins University SOM
Hasler, Brant, P	Psychiatry	Faculty.Professor.Assistant	Ph.D.	University of Arizona
Hasley, Peggy, B	Medicine	Faculty.Professor.Professor	M.D.	University of Pittsburgh SOM
Hasley, Stephen, K	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Hassan, Shuja	Medicine	Faculty.Professor.Assistant	M.B.B.S.	King Edward Medical College
Hastings, Teresa, G	Neurology	Faculty.Professor.Associate	Ph.D.	Medical College of Ohio
Hathaway, Bridget, C	Otolaryngology	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Haupt, Alicia, Lynn	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Hausmann, Leslie, R M	Medicine	Faculty.Professor.Associate	Ph.D.	University of Pittsburgh
Hawse, William, F	Immunology	Faculty.Professor.Research Assistant	Ph.D.	Johns Hopkins University
Hecht Baldauff, Natalie Marie	Pediatrics	Faculty.Professor.Assistant	D.O.	Lake Erie College of Osteopathic Medicine
Hegde, Shilpa Vadiraj	Radiology	Faculty.Professor.Assistant	M.B.B.S.	Mysore Medical College
Heist, Brian	Medicine	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Helkowski, Wendy, Marie	Physical Medicine & Rehabilitation	Faculty.Professor.Associate	M.D.	Jefferson Medical College
Heller, Matthew, T	Radiology	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Helm, Eric Robert	Physical Medicine & Rehabilitation	Faculty.Professor.Assistant	M.D.	University of Toledo
Henderson, Maryanne, Julie	Physical Medicine & Rehabilitation	Faculty.Professor.Assistant	D.O.	Philadelphia College of Osteopathic Medicine
Hendricks, Robert, Lee	Ophthalmology	Faculty.Professor.Professor	Ph.D.	University of Illinois

Henry, Luke Clayton	Neurological Surgery	Faculty.Professor.Assistant	Ph.D.	University of Montreal
Herlich, Andrew	Anesthesiology	Faculty.Professor.Professor	M.D.	Ross University SOM
Herman, Jim G.	Medicine	Faculty.Professor.Professor	M.D.	Johns Hopkins University
Heron, Dwight, E	Radiation Oncology	Faculty.Professor.Professor	M.D.	University of Rochester School of Med and Dent
Herradura III, Armando Sarmiento	Radiology	Faculty.Professor.Assistant	M.D.	University of Virginia
Herrle, Scott, R	Medicine	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Hetherington, Hoby	Radiology	Faculty.Professor.Visiting	Ph.D.	Yale University
Hewett, Elizabeth Kennedy	Pediatrics	Faculty.Professor.Assistant	M.D.	Dartmouth Medical School
Heyman, Rock, A	Neurology	Faculty.Professor.Associate	M.D.	Ohio State University SOM
Hickey, Robert, William, Jr	Pediatrics	Faculty.Professor.Professor	M.D.	Thomas Jefferson University College of Med
Hill, Shirley, Y	Psychiatry	Faculty.Professor.Professor	Ph.D.	Washington University
Hillery, Cheryl A.	Pediatrics	Faculty.Professor.Visiting	M.D.	Duke University
Hillier, Sharon, L	OB-Gyn & Reproductive Science	Faculty.Professor.Professor	Ph.D.	Washington State University
Hilmi, Ibtesam, Abbass	Anesthesiology	Faculty.Professor.Professor	M.B.Ch.B.	University of Baghdad
Himes, Katherine, Park	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	Harvard Medical School
Hinck, Andrew P.	Structural Biology	Faculty.Professor.Professor	Ph.D.	University of Wisconsin-Madison
Hipwell, Alison, Enid	Psychiatry	Faculty.Professor.Professor	Ph.D.	University of London
Hirsch, Barry, E	Otolaryngology	Faculty.Professor.Professor	M.D.	University of Pennsylvania SOM
Hitchens, Thomas Kevin	Neurobiology	Faculty.Professor.Research Associate	Ph.D.	University of Virginia
Ho, Jacqueline	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Western Ontario
Ho, Jonhan	Dermatology	Faculty.Professor.Assistant	M.D.	Northeastern Ohio University
Ho, Ken, Sujin	Medicine	Faculty.Professor.Assistant	M.D.	University of Maryland
Ho, Suchun G.	Physical Medicine & Rehabilitation	Faculty.Professor.Assistant	M.D.	Northern Ohio Medical University
Hoberman, Alejandro	Pediatrics	Faculty.Professor.Professor	M.D.	National University of Buenos Aires
Hobson, Candace Elizabeth	Otolaryngology	Faculty.Professor.Assistant	M.D.	University of Texas School of Medicine
Hochheiser, Harry, Stewart	Biomedical Informatics	Faculty.Professor.Associate	Ph.D.	University of Maryland

Hoffman, Donna, S	Neurobiology	Faculty.Professor.Research Associate	Ph.D.	University of Washington
Hoffman, Eric, Konrad	Neurology	Faculty.Professor.Research Assistant	Ph.D.	Rensselaer Polytechnic Institute
Hoffman, Erika, L	Medicine	Faculty.Professor.Associate	M.D.	Hahnemann University
Hoffman, Rosemary, Ann	Surgery	Faculty.Professor.Research Associate	Ph.D.	University of Pittsburgh
Hofkosh, Dena	Pediatrics	Faculty.Professor.Professor	M.D.	New York University School of Medicine
Hogan, MaCalus Vinson	Orthopaedic Surgery	Faculty.Professor.Assistant	M.D.	Howard University of Medicine
Hogg, Melissa Ellen	Surgery	Faculty.Professor.Assistant	M.D.	Northwestern University
Holder, Diane, Patricia	Psychiatry	Faculty.Professor.Assistant	M.S.W.	Columbia University
Holder-Murray, Jennifer Marie	Surgery	Faculty.Professor.Assistant	M.D.	University of Nevada
Holtzman, Matthew	Surgery	Faculty.Professor.Assistant	M.D.	State University of New York
Holzinger, Elmer, John	Medicine	Faculty.Professor.Professor	M.D.	University of Pittsburgh
Homa, Fred, L	Microbiology and Molecular Genetics	Faculty.Professor.Associate	Ph.D.	University of Illinois
Homanics, Gregg, E	Anesthesiology	Faculty.Professor.Professor	Ph.D.	North Carolina State Univ
Homayoun, Houman	Neurology	Faculty.Professor.Assistant	M.D.	Tehran University
Hong, Chang Sook	Pathology	Faculty.Professor.Research Assistant	Ph.D.	University of Wisconsin
Hong, Yang	Cell Biology	Faculty.Professor.Associate	Ph.D.	Dartmouth College
Hooks, Bryan M.	Neurobiology	Faculty.Professor.Assistant	Ph.D.	Harvard Medical School
Horn, Charles, C	Medicine	Faculty.Professor.Associate	Ph.D.	Kansas State University
Horn, John, Paul	Neurobiology	Faculty.Professor.Professor	Ph.D.	University of Miami
Horton, John, A, III	Physical Medicine & Rehabilitation	Faculty.Professor.Assistant	M.D.	University of Washington School of Medicine
Horton, Leslie Elizabeth	Psychiatry	Faculty.Professor.Assistant	Ph.D.	University of North Carolina
Horvat, Christopher Michael	Critical Care Medicine	Faculty.Professor.Assistant	M.D.	University of North Carolina SoM
Hotchkiss, John, Robert, Jr.	Critical Care Medicine	Faculty.Professor.Associate	M.D.	University of Chicago
Houshmand, Golbahar	Radiology	Faculty.Professor.Assistant	M.D.	Tehran University
Houtrow, Amy J.	Physical Medicine & Rehabilitation	Faculty.Professor.Associate	M.D.	Michigan State University
Howland, Robert, H	Psychiatry	Faculty.Professor.Associate	M.D.	University of Minnesota Med School
Hoyos, Catalina	Pediatrics	Faculty.Professor.Assistant	M.D.	SUNY

Hrebinko, Ronald, L, Jr	Urology	Faculty.Professor.Professor	M.D.	University of Pittsburgh School of Medicine
Hsieh, Margaret	Emergency Medicine	Faculty.Professor.Associate	M.D.	University of Medicine and Dentistry of NJ
Hu, Baoli	Neurological Surgery	Faculty.Professor.Assistant	Ph.D.	Wuhan University
Hu, Dong	Pathology	Faculty.Professor.Research Assistant	Ph.D.	Chinese Academy of Medical Sciences
Hu, Jie	OB-Gyn & Reproductive Science	Faculty.Professor.Associate	M.D.	Nanjing Tiedao College
Hu, Jing	Pharmacology and Chemical Biology	Faculty.Professor.Visiting Associate	M.D.	Third Military Medical University
Hu, Xiaoming	Neurology	Faculty.Professor.Assistant	M.D.	Beijing Medical University
Huang, David, Tom	Critical Care Medicine	Faculty.Professor.Associate	M.D.	New York Medical College
Huang, Guofeng	Radiology	Faculty.Instructor.Research	Ph.D.	Chinese Academy of Medical Sciences
Huang, Hai	Surgery	Faculty.Professor.Research Assistant	M.D.	Universitat Duisburg-Essen
Huang, Xin	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Huang, Yanhua	Psychiatry	Faculty.Professor.Associate	Ph.D.	Johns Hopkins University
Huang, Yi	Pharmacology and Chemical Biology	Faculty.Professor.Assistant	M.D.	Nanjing Medical University
Hubel, Carl, Andrew	OB-Gyn & Reproductive Science	Faculty.Professor.Associate	Ph.D.	University of Vermont College of Medicine
Hudak, Robert	Psychiatry	Faculty.Professor.Associate	M.D.	Northeastern Ohio Univ College of Med
Hudson, Mark, Edward	Anesthesiology	Faculty.Professor.Professor	M.D.	Jefferson Medical College
Huen, Arthur, Chicheng	Dermatology	Faculty.Instructor.Instructor	M.D.	Northwestern University
Huet, Alexis Gabriel Edouard	Structural Biology	Faculty.Professor.Research Assistant	Ph.D.	Universite Paris 7
Hughan, Kara, S	Pediatrics	Faculty.Professor.Assistant	M.D.	Wright State University
Hughes, Christopher B.	Surgery	Faculty.Professor.Associate	M.D.	University of Tennessee
Hughes, Marion, Alicia	Radiology	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Hughes, Nolan, P	Psychiatry	Faculty.Professor.Assistant	M.D.	Thomas Jefferson Medical School
Hughey, Rebecca, P	Medicine	Faculty.Professor.Professor	Ph.D.	University of Pittsburgh
Hukriede, Neil, A	Developmental Biology	Faculty.Professor.Associate	Ph.D.	University of Rochester

Humar, Abhinav	Surgery	Faculty.Professor.Professor	M.D.	University of Ottawa
Huppert, Theodore, J	Radiology	Faculty.Professor.Associate	Ph.D.	Harvard University
Huq, Mohammed, Saiful	Radiation Oncology	Faculty.Professor.Professor	Ph.D.	College of William and Mary
Husain, Sohail	Pediatrics	Faculty.Professor.Associate	M.D.	Tufts University
Hussey, George S.	Surgery	Faculty.Professor.Research Assistant	Ph.D.	Cleveland State University
Hwang, Hun-Way	Pathology	Faculty.Professor.Assistant	M.D.	National Taiwan University College of Medicine
Hwang, Yong Gil	Medicine	Faculty.Professor.Assistant	M.D.	University of Ulsan
Ibinson, James, William	Anesthesiology	Faculty.Professor.Assistant	M.D.	The Ohio State University
Ikeda, Youko	Medicine	Faculty.Professor.Assistant	Ph.D.	University College London
Ikonomovic, Milos, Dragan	Neurology	Faculty.Professor.Associate	M.D.	University of Nis School of Medicine
Ilina, Tatiana, Valeryevna	Structural Biology	Faculty.Instructor.Research	Ph.D.	State Research Center of Virology & Biotech
Im, Annie, Pearl	Medicine	Faculty.Professor.Assistant	M.D.	SUNY
Imming, Christina, Mackell	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Cincinnati
Iouchmanov, Victor	Radiology	Faculty.Professor.Assistant	Ph.D.	Moscow Institute of Physics & Tech
Isenberg, Jeffrey, S	Medicine	Faculty.Professor.Associate	M.D.	Tulane University
Ishima, Rieko	Structural Biology	Faculty.Professor.Associate	Ph.D.	Kyoto University
Ismail, Hebatullah M.	Pediatrics	Faculty.Professor.Assistant	M.B.B.Ch.	University of Cairo
Jabbour, Noel	Otolaryngology	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Jackman, Stephen, V	Urology	Faculty.Professor.Professor	M.D.	Yale University
Jackson, Edwin, K	Pharmacology and Chemical Biology	Faculty.Professor.Professor	Ph.D.	University of Texas Southwestern Med School
Jackson, Laura E	Pediatrics	Faculty.Professor.Assistant	M.D.	Pennsylvania State University
Jackson, Travis, C	Critical Care Medicine	Faculty.Professor.Research Assistant	Ph.D.	University of Florida
Jacob, Rolf, G	Psychiatry	Faculty.Professor.Professor	M.D.	Karolinska Institute
Jacob, Tija Carey	Pharmacology and Chemical Biology	Faculty.Professor.Assistant	Ph.D.	University of California, Berkley
Jacobs, Bruce, L	Urology	Faculty.Professor.Visiting Assistant	M.D.	Vanderbilt University
Jacobs, Jana Lynn	Medicine	Faculty.Instructor.Research	Ph.D.	University of Pittsburgh
Jacobson, Sansea, L	Psychiatry	Faculty.Professor.Assistant	M.D.	University of Pittsburg

Jadhav, Ashutosh Prabhakar	Neurology	Faculty.Professor.Assistant	M.D.	Harvard Medical School
Jaffe, Ronald	Pathology	Faculty.Professor.Professor	M.B.B.Ch.	University of Witwatersrand
Jaffe, Thomas, Michael	Urology	Faculty.Professor.Assistant	M.D.	Case Western Reserve University
Jain, Sandeep, K	Medicine	Faculty.Professor.Associate	M.D.	Northwestern University
Jalbrzikowski, Maria Elizabeth	Psychiatry	Faculty.Professor.Assistant	Ph.D.	University of California
James, Alaina Janelle	Dermatology	Faculty.Professor.Assistant	M.D.	Baylor College of Medicine
Jane, Esther, Paulina	Neurological Surgery	Faculty.Professor.Research Assistant	Ph.D.	The Madurai Kamaraj Univ
Janicki, Adam	Emergency Medicine	Faculty.Professor.Assistant	M.D.	Tufts University SOM
Jankowitz, Brian, T	Neurological Surgery	Faculty.Professor.Assistant	M.D.	Temple University
Jankowitz, Rachel, Catherine	Medicine	Faculty.Professor.Assistant	M.D.	Temple University
Jean Alphonse, Frederic Gaetan	Pharmacology and Chemical Biology	Faculty.Instructor.Research	Ph.D.	University of Montpellier
Jedrych, Jaroslaw Jakub	Dermatology	Faculty.Instructor.Instructor	M.D.	Medical University of Warsaw
Jelev, Dontcho V	Medicine	Faculty.Professor.Visiting Research Associate	Ph.D.	Bulgarian Academy of Sciences
Jenkins, Frank, John	Pathology	Faculty.Professor.Associate	Ph.D.	Pennsylvania State Univ SOM
Jennings, Constance Ann	Medicine	Faculty.Professor.Visiting Associate	M.D.	Mayo Medical School
Jennings, J, Richard	Psychiatry	Faculty.Professor.Professor	Ph.D.	University of California
Jeyabalan, Arundhathi	OB-Gyn & Reproductive Science	Faculty.Professor.Associate	M.D.	University of Michigan
Jha, Ruchira Menka	Critical Care Medicine	Faculty.Professor.Assistant	M.D.	Harvard Medical School
Jhamb, Manisha	Medicine	Faculty.Professor.Assistant	M.B.B.S.	Maulana Azad Medical College
Jhanji, Vishal	Ophthalmology	Faculty.Professor.Visiting	M.D.	All India Institute of Medical Sciences
Jiang, Xia	Biomedical Informatics	Faculty.Professor.Associate	Ph.D.	University of Pittsburgh
Jiang, Yu	Pharmacology and Chemical Biology	Faculty.Professor.Associate	Ph.D.	Yale University
Jin, Tao	Radiology	Faculty.Professor.Research Assistant	Ph.D.	Kent State University
John, Ivy	Pathology	Faculty.Professor.Assistant	M.B.B.S.	Kasturba Medical College
Johnson, Bruce, Allen	Medicine	Faculty.Professor.Assistant	M.D.	Ohio State University
Johnson, Jennifer A.	Pediatrics	Faculty.Professor.Assistant	D.O.	Chicago College of Osteopathic Medicine

Johnson, Jonas, T	Otolaryngology	Faculty.Professor.Distinguished Service	M.D.	SUNY
Johnson, Ronald, R	Surgery	Faculty.Professor.Associate	M.D.	University of Pittsburgh SOM
Johnston, James, R	Medicine	Faculty.Professor.Professor	M.D.	University of Pittsburgh SOM
Jonassaint, Charles Richard	Medicine	Faculty.Professor.Assistant	Ph.D.	Duke University
Jonassaint, Naudia Lauder	Medicine	Faculty.Professor.Assistant	M.D.	Yale School of Medicine
Jones, Mirosława, W	Pathology	Faculty.Professor.Professor	M.D.	The Medical Academy of Lodz
Jones, Neil, P	Psychiatry	Faculty.Professor.Assistant	Ph.D.	Duke University
Joubert, Kyla D.	Cardiothoracic Surgery	Faculty.Instructor.Research	M.D.	Louisiana State University
Jovin, Tudor, Gheorghe	Neurology	Faculty.Professor.Professor	M.D.	Heinrich Heine University
Joyce, Emily L	Pediatrics	Faculty.Professor.Assistant	M.D.	Case Western Reserve University
Joyce, Judith, Marie	Radiology	Faculty.Professor.Associate	M.D.	University of Texas
Jurczak, Michael J.	Medicine	Faculty.Professor.Assistant	Ph.D.	University of Chicago
Kader, Muhamuda	Medicine	Faculty.Instructor.Research	Ph.D.	National Institute of Mental Health & Neuroscienc
Kahn, Charles, Edward	Psychiatry	Faculty.Professor.Assistant	M.D.	Unviersity of Pittsburgh
Kahn, Jeremy M.	Critical Care Medicine	Faculty.Professor.Professor	M.D.	University of Virginia
Kaldas, Hoda, Kamel Halim	Medicine	Faculty.Professor.Associate	M.B.B.Ch.	Cairo University
Kalpathi, Ramasubramanian	Pediatrics	Faculty.Professor.Visiting Associate	M.B.B.S.	Thanjavur Medical College
Kameneva, Marina, Vitaly	Surgery	Faculty.Professor.Research	Ph.D.	Moscow University
Kaminski, Robert, J	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	University of Pittsburgh School of Medicine
Kammula, Udai Shankar	Surgery	Faculty.Professor.Visiting Associate	M.D.	University of Maryland SoM
Kanai, Anthony, J	Medicine	Faculty.Professor.Professor	Ph.D.	University of Pittsburgh School of Medicine
Kanal, Emanuel	Radiology	Faculty.Professor.Professor	M.D.	University of Pittsburgh SOM
Kancharla, Krishna	Medicine	Faculty.Professor.Assistant	M.D.	Osmania Medical College
Kandler, Karl	Neurobiology	Faculty.Professor.Professor	Ph.D.	University of Tuebingen
Kane, Lawrence, Patrick	Immunology	Faculty.Professor.Professor	Ph.D.	University of California
Kang, Rui	Surgery	Faculty.Professor.Research Assistant	M.D.	Jilin University
Kanias, Tamir	Medicine	Faculty.Professor.Assistant	Ph.D.	University of Alberta

Kaniecki, Robert, G	Neurology	Faculty.Professor.Assistant	M.D.	Washington University School of Medicine
Kano, Hideyuki	Neurological Surgery	Faculty.Professor.Research Associate	M.D.	Shiga University
Kanter, Adam, Scott	Neurological Surgery	Faculty.Professor.Associate	M.D.	University of Vermont
Kapetanaki, Maria	Medicine	Faculty.Professor.Research Assistant	Ph.D.	University of Crete
Kaplan, Daniel H.	Dermatology	Faculty.Professor.Professor	M.D.	Washington University
Kapoor, Wishwa, N	Medicine	Faculty.Professor.Distinguished Service	M.D.	Washington University SOM
Kar, Erica, D	Radiology	Faculty.Professor.Assistant	M.D.	Temple University
Karnup, Sergei	Pharmacology and Chemical Biology	Faculty.Instructor.Visiting Research	M.D.	Russian Academy of Science
Karp, Jordan, Friedman	Psychiatry	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Karunamurthy, Arivarasan	Dermatology	Faculty.Professor.Assistant	M.B.B.S.	M.G.R. Medical University Madras Medical College
Kase, Daisuke	Neurobiology	Faculty.Instructor.Research	Ph.D.	University for Advanced Studies
Kashlan, Ossama, B	Medicine	Faculty.Professor.Assistant	Ph.D.	University of Pennsylvania
Kass, Daniel J.	Medicine	Faculty.Professor.Associate	M.D.	New York University
Kato, Gregory James	Medicine	Faculty.Professor.Professor	M.D.	George Washington University
Katz, William, E	Medicine	Faculty.Professor.Associate	M.D.	Ohio State University
Kaufman, Brett Anthony	Medicine	Faculty.Professor.Associate	Ph.D.	University of Texas Southwestern
Kaufmann, Robert, Alexander	Orthopaedic Surgery	Faculty.Professor.Associate	M.D.	Temple University
Kavalieratos, Dionysios	Medicine	Faculty.Professor.Assistant	Ph.D.	University of North Carolina
Kaynar, Ata, Murat	Critical Care Medicine	Faculty.Professor.Associate	M.D.	University of Istanbul
Kegel, Nathan E.	Orthopaedic Surgery	Faculty.Professor.Assistant	Ph.D.	Duquesne University
Keljo, David, J	Pediatrics	Faculty.Professor.Professor	M.D.	University of Pennsylvania
Kelley, Joseph, L, III	OB-Gyn & Reproductive Science	Faculty.Professor.Professor	M.D.	St. Louis University SOM
Kellum, John, A, Jr	Critical Care Medicine	Faculty.Professor.Professor	M.D.	Medical College of Ohio
Kensler, Thomas, Wells	Pharmacology and Chemical Biology	Faculty.Professor.Professor	Ph.D.	Massachusetts Institute of Technology
Kentor, Michael, Leon	Anesthesiology	Faculty.Professor.Associate	M.D.	University of Pittsburgh School of Medicine
Kershaw, Erin, Elizabeth	Medicine	Faculty.Professor.Associate	M.D.	Weill Cornell Medical College

Kettel, Jessica, Candelora	Psychiatry	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Khalid, Asif	Medicine	Faculty.Professor.Associate	M.B.B.S.	Aga Khan University
Khan, Saleem, A	Microbiology and Molecular Genetics	Faculty.Professor.Professor	Ph.D.	India Institute of Science
Khan, Zahida	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Khanna, Ajai	Surgery	Faculty.Professor.Visiting	M.D.	University of Allahabad
Khoo, Nicholas, Kah Hock	Pharmacology and Chemical Biology	Faculty.Professor.Research Assistant	Ph.D.	University of Iowa
Kietz, Daniel, A	Pediatrics	Faculty.Professor.Professor	M.D.	University Hospital Frankfurt
Kiger, James Robert	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Kilic, Arman	Cardiothoracic Surgery	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Kim, Kang	Medicine	Faculty.Professor.Associate	Ph.D.	Pennsylvania State University
Kim, Sandra C	Pediatrics	Faculty.Professor.Associate	M.D.	University of Michigan
Kim, Seung, W	Otolaryngology	Faculty.Professor.Associate	M.D.	State University of New York
Kim, Tae	Radiology	Faculty.Professor.Assistant	Ph.D.	University of Minnesota
Kim, Youngwoo	Radiology	Faculty.Instructor.Research	Ph.D.	Seoul National University
Kim-Campbell, Nahmah Anabella	Critical Care Medicine	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Kinchington, Paul, Robert	Ophthalmology	Faculty.Professor.Professor	Ph.D.	University of Leeds
King, Linda, Ann	Medicine	Faculty.Professor.Assistant	M.D.	Northwestern University Medical School
Kinnane, Janet, Mary	Pediatrics	Faculty.Professor.Assistant	M.D.	Harvard Medical School
Kirkwood, John, M	Medicine	Faculty.Professor.Professor	M.D.	Yale University SOM
Kiss, Joseph, E	Medicine	Faculty.Professor.Professor	M.D.	Georgetown University SOM
Kitamura, Gene	Radiology	Faculty.Professor.Assistant	M.D.	Loma Linda University
Kitsios, Georgios	Medicine	Faculty.Professor.Assistant	M.D.	Aristotle University of Thessaloniki
Kitsko, Dennis, J	Otolaryngology	Faculty.Professor.Associate	D.O.	Lake Erie College
Klatt, Brian, A	Orthopaedic Surgery	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Kleyman, Thomas, Ralph	Medicine	Faculty.Professor.Professor	M.D.	Washington University School of Medicine
Klimstra, William, Brown	Immunology	Faculty.Professor.Associate	Ph.D.	University of North Carolina

Kline, Anthony, Eloy	Physical Medicine & Rehabilitation	Faculty.Professor.Professor	Ph.D.	University of Colorado
Kloesz, Jennifer, L	Pediatrics	Faculty.Professor.Associate	M.D.	Ohio State University
Klose, Markus Kristian	Pharmacology and Chemical Biology	Faculty.Instructor.Research	Ph.D.	Queen's University
Klunk, William, E	Psychiatry	Faculty.Professor.Distinguished	M.D.	Washington University SOM
Kmiec, Julie, A	Psychiatry	Faculty.Professor.Assistant	D.O.	Western University of Health Sciences
Knepper, Laurie Elizabeth	Neurology	Faculty.Professor.Associate	M.D.	University of Pittsburgh SOM
Ko, Sungjin	Pathology	Faculty.Instructor.Research	D.V.M.	Chonbuk National University
Koch, Ellen Lynn	Dermatology	Faculty.Professor.Assistant	M.D.	The Ohio State University
Kochanek, Patrick	Critical Care Medicine	Faculty.Professor.Professor	M.D.	University of Chicago Pritzker SOM
Kocyildirim, Ergin	Cardiothoracic Surgery	Faculty.Professor.Visiting Research Assistant	M.D.	Ankara University
Koerber, H, Richard	Neurobiology	Faculty.Professor.Professor	Ph.D.	West Virginia University
Koes, David	Computational and Systems Biology	Faculty.Professor.Assistant	Ph.D.	Carnegie Mellon University
Kofler, Julia, K	Pathology	Faculty.Professor.Associate	M.D.	University of Vienna
Kohanbash, Gary	Neurological Surgery	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Kohli, Amar R.	Medicine	Faculty.Professor.Assistant	M.D.	Drexel University
Kokai, Lauren, E	Plastic Surgery	Faculty.Professor.Research Assistant	Ph.D.	University of Pittsburg
Kokkinos, Vasileios	Neurological Surgery	Faculty.Instructor.Research	Ph.D.	University of Patras
Kolarcik, Christi, Lynn	Neurobiology	Faculty.Instructor.Research	Ph.D.	University of Pittsburgh
Kolko, David, J	Psychiatry	Faculty.Professor.Professor	Ph.D.	Georgia State University
Komlosi, Peter	Radiology	Faculty.Professor.Assistant	M.D.	Semelweis University
Konig, Gerhardt	Anesthesiology	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Konnikova, Yelizaveta	Pediatrics	Faculty.Professor.Assistant	M.D.	Tufts University
Kontos, Anthony	Orthopaedic Surgery	Faculty.Professor.Associate	Ph.D.	Michigan State University
Kormos, Robert, L	Cardiothoracic Surgery	Faculty.Professor.Professor	M.D.	University of Western Ontario Faculty of Med
Korytkowski, Mary	Medicine	Faculty.Professor.Professor	M.D.	University of North Carolina SOM
Kostka, Dennis	Developmental Biology	Faculty.Professor.Assistant	Ph.D.	Free University

Kotlarczyk, Mary P	Medicine	Faculty.Professor.Research Assistant	Ph.D.	Duquesne University
Kovacs, Maria	Psychiatry	Faculty.Professor.Distinguished	Ph.D.	University of Pennsylvania
Kowalski, Regis, P	Ophthalmology	Faculty.Professor.Research	M.S.	University of Pittsburgh
Kraemer, Kevin, Lawrence	Medicine	Faculty.Professor.Professor	M.D.	University of California
Krajewski, Colleen, M	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Krans, Elizabeth, E	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	University of Mississippi
Kreit, John, W	Medicine	Faculty.Professor.Professor	M.D.	Duke University SOM
Kreutzer, Jacqueline	Pediatrics	Faculty.Professor.Professor	M.D.	University of Buenos Aires`
Krishnamurti, Tamar Priya	Medicine	Faculty.Professor.Assistant	Ph.D.	Carnegie Mellon University
Kristo, David, A.	Medicine	Faculty.Professor.Associate	M.D.	Southern Illinois University
Krivinko, Dennis, M	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Kroboth, Frank, J	Medicine	Faculty.Professor.Professor	M.D.	SUNY
Krohner, Robert, G	Anesthesiology	Faculty.Professor.Associate	D.O.	University of Osteopathic Medicine & Hlth Sci
Kuan, Shihfan	Pathology	Faculty.Professor.Associate	M.D.	National Taiwan University
Kuhn, Bernhard	Pediatrics	Faculty.Professor.Associate	M.D.	Freie Universitat
Kulich, Scott, M	Pathology	Faculty.Professor.Associate	M.D.	Medical College of Wisconsin
Kullmann, Florenta, Aura	Medicine	Faculty.Professor.Research Assistant	Ph.D.	University of Pittsburgh
Kullmann, Paul, Hans Michael	Neurobiology	Faculty.Professor.Visiting Research Assistant	Ph.D.	University of Tuebingen
Kumar, Ajay	Cardiothoracic Surgery	Faculty.Professor.Research Assistant	Ph.D.	Maharishi Dayanand University
Kurland, Geoffrey	Pediatrics	Faculty.Professor.Professor	M.D.	Stanford University SOM
Kuwajima, Takaaki	Ophthalmology	Faculty.Professor.Research Assistant	Ph.D.	Osaka University
Kuzmishin, Janet, Harrison	Medicine	Faculty.Professor.Assistant	M.D.	University of Pennsylvania
Kwak, Eun, Jeong	Medicine	Faculty.Professor.Associate	M.D.C.M.	McGill University
Kwiatkowski, Adam Vincent	Cell Biology	Faculty.Professor.Assistant	Ph.D.	MIT
Lace, Brian R.	Cardiothoracic Surgery	Faculty.Instructor.Instructor	M.D.	Temple University
Lacomis, David	Neurology	Faculty.Professor.Professor	M.D.	Pennsylvania State Univ College of Med

Lacomis, Joan, M	Radiology	Faculty.Professor.Professor	M.D.	Pennsylvania State Univ College of Med
Ladouceur, Cecile, Desneiges	Psychiatry	Faculty.Professor.Associate	Ph.D.	Universite du Quebec a Montreal
LaFramboise, William, A	Pathology	Faculty.Professor.Associate	Ph.D.	University of Pittsburgh
Lafyatis, Robert Alan	Medicine	Faculty.Professor.Professor	M.D.	University of Cincinnati
Lagasse, Eric	Pathology	Faculty.Professor.Associate	Ph.D.	University of Basel
Lai, Yen Chun	Medicine	Faculty.Professor.Research Assistant	Ph.D.	National Defense Medical Center
Lajos, Paul S	Surgery	Faculty.Professor.Visiting Associate	M.D.	Tulane University
Lakdawala, Seema S.	Microbiology and Molecular Genetics	Faculty.Professor.Assistant	Ph.D.	University of California San Diego
Lakkis, Fadi, G	Surgery	Faculty.Professor.Professor	M.D.	American University
Lamb, Jason Jay	Cardiothoracic Surgery	Faculty.Professor.Assistant	M.D.	University of Virginia
Lamberty, Phillip, E	Medicine	Faculty.Professor.Assistant	M.D.	University of Pennsylvania
Lambore, Sanjay	Pediatrics	Faculty.Professor.Associate	M.B.B.S.	Medical College
Lamitina, Samuel Todd	Pediatrics	Faculty.Professor.Associate	Ph.D.	Emory University
Lan, Li	Microbiology and Molecular Genetics	Faculty.Professor.Associate	M.D.	Tohoku University
Lancaster, Jack Reynolds, Jr.	Pharmacology and Chemical Biology	Faculty.Professor.Visiting	Ph.D.	University of Tennessee College of Medicine
Lance, Audrey A.	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	George Washington University
Lance-Jones, Cynthia	Neurobiology	Faculty.Professor.Associate	Ph.D.	University of Massachusetts
Landau, Michael, Sivan	Pathology	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Landreneau, Rodney, Jerome	Cardiothoracic Surgery	Faculty.Professor.Visiting	M.D.	Louisiana State Univ SOM
Landsittel, Douglas, P	Biomedical Informatics	Faculty.Professor.Professor	Ph.D.	University of Pittsburgh
Lareau, Susan, M	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	University of Virginia
Larkin, Allyson S.	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Larkin, Jacob, C	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Larregina, Adriana, Teresita	Dermatology	Faculty.Professor.Professor	M.D.	University of LaPlata
Lathrop, Kira, L	Ophthalmology	Faculty.Professor.Assistant	M.S.	University of Illinois

Lawrence, Karen Gildea	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Connecticut Health Center
Laymon, Charles, M	Radiology	Faculty.Professor.Research Assistant	Ph.D.	University of Pennsylvania
Le Sage, Valerie M.	Microbiology and Molecular Genetics	Faculty.Professor.Research Assistant	Ph.D.	McGill University
Leader, Joseph, K, III	Radiology	Faculty.Professor.Research Assistant	Ph.D.	University of Pittsburgh
Lee, Adrian Vincent	Pharmacology and Chemical Biology	Faculty.Professor.Professor	Ph.D.	University of Surrey
Lee, Ashley	Medicine	Faculty.Professor.Assistant	M.D.	Loyola University School of Medicine
Lee, Burton Woo	Medicine	Faculty.Professor.Visiting	M.D.	Harvard Medical School
Lee, Grace, Jung	Dermatology	Faculty.Professor.Assistant	M.D.	Boston University
Lee, James Jinhak	Medicine	Faculty.Professor.Associate	M.D.	Seoul National University
Lee, Janet, Sojung	Medicine	Faculty.Professor.Professor	M.D.	Georgetown University
Lee, Jenifer, E	Medicine	Faculty.Professor.Professor	M.D.	Boston University SOM
Lee, Jeong Kyung	Medicine	Faculty.Professor.Assistant	Ph.D.	University of Tokyo
Lee, John	Orthopaedic Surgery	Faculty.Professor.Professor	M.D.	Yale Medical School
Lee, Joon, Sup	Medicine	Faculty.Professor.Associate	M.D.	Duke University SOM
Lee, Ju Hun	Radiology	Faculty.Instructor.Research	Ph.D.	The University of Texas at Austin
Lee, Kenneth, K W	Surgery	Faculty.Professor.Professor	M.D.	University of Chicago Pritzker SOM
Lee, Nara	Microbiology and Molecular Genetics	Faculty.Professor.Assistant	Ph.D.	University of Heidelberg
Lee, Robin E C	Computational and Systems Biology	Faculty.Professor.Assistant	Ph.D.	University of Ottawa
Lee, Stella	Otolaryngology	Faculty.Professor.Assistant	M.D.	Chicago Medical School
Lee, Yong, Jun	Surgery	Faculty.Professor.Professor	Ph.D.	University of Illinois
Leers, Steven, A	Surgery	Faculty.Professor.Associate	M.D.	University of Massachusetts
Leibowitz, Brian, J	Pathology	Faculty.Instructor.Research	Ph.D.	Rutgers University
Lemon, Lara Louise	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	Pharm.D.	University of Pittsburgh
Leronni, Daniela	Neurological Surgery	Faculty.Instructor.Research	Ph.D.	University Aldo Moro
Lesniak, Bryson Patrick	Orthopaedic Surgery	Faculty.Professor.Associate	M.D.	University of Cincinnati
Leuba, Sanford, H	Cell Biology	Faculty.Professor.Associate	Ph.D.	University of Oregon

Levenson, Jessica C.	Psychiatry	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Levin, William, I	Medicine	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Levine, Michele	Psychiatry	Faculty.Professor.Associate	Ph.D.	University of Pittsburgh
Levinthal, David, J	Medicine	Faculty.Professor.Assistant	M.D.	University of Pittsburgh School of Medicine
Levitan, Edwin, S	Pharmacology and Chemical Biology	Faculty.Professor.Professor	Ph.D.	Brandeis University
Levy, Ryan, M	Cardiothoracic Surgery	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Lewis, David, A	Psychiatry	Faculty.Professor.Distinguished	M.D.	Ohio State University College of Medicine
Leyva, William H.	Dermatology	Faculty.Professor.Assistant	M.D.	Loma Linda University
Lezon, Timothy, R	Computational and Systems Biology	Faculty.Professor.Assistant	Ph.D.	Pennsylvania State University
Li, Feng	Orthopaedic Surgery	Faculty.Professor.Research Assistant	M.D.	Anhui Medical University
Li, Gang	Medicine	Faculty.Professor.Assistant	Ph.D.	Brown University
Li, Hongshuai	Orthopaedic Surgery	Faculty.Professor.Assistant	M.D.	Shandong Medical University
Li, Jihong	Microbiology and Molecular Genetics	Faculty.Instructor.Research	Ph.D.	Chinese Academy of Tropical Agricultural Sciences
Li, Qin	Pediatrics	Faculty.Professor.Research Assistant	M.D.	Medical College of Wuhan University
Li, Wei	Medicine	Faculty.Professor.Assistant	Ph.D.	Fudan University
Li, Yang	Cell Biology	Faculty.Instructor.Research	Ph.D.	Chinese Academy of Sciences
Liang, Kelly, Victoria	Medicine	Faculty.Professor.Assistant	M.D.	Thomas Jefferson University
Liang, Kimberly, Penny	Medicine	Faculty.Professor.Assistant	M.D.	Thomas Jefferson University
Liang, Rui	OB-Gyn & Reproductive Science	Faculty.Professor.Visiting Research Assistant	M.D.	Xi'an Medical University
Libman De Gordon, Ingrid, M	Pediatrics	Faculty.Professor.Associate	M.D.	Rosario Medical School
Lichter-Konecki, Uta	Pediatrics	Faculty.Professor.Professor	M.D.	Ruprecht-Karls-University
Lieberman, Frank, Scott	Neurology	Faculty.Professor.Professor	M.D.	University of Chicago
Lieberman, Rhett, Howard	Pediatrics	Faculty.Professor.Associate	M.D.	Temple University
Liebschutz, Jane Margaret	Medicine	Faculty.Professor.Visiting	M.D.	Harvard Medical School
Lienesch, Douglas, William	Medicine	Faculty.Professor.Associate	M.D.	University of Maryland

Lillien, Laura, Ellen	Neurobiology	Faculty.Professor.Associate	Ph.D.	University of Wisconsin
Lim, Katherine Grace D	Anesthesiology	Faculty.Professor.Assistant	M.D.	University of Missouri-Kansas City
Liman, Agnes, K	Pathology	Faculty.Professor.Assistant	M.D.	University of Indonesia Medical School
Lin Tsung, Eva	Surgery	Faculty.Professor.Visiting Research Assistant	Ph.D.	Columbia University
Lin, Albert	Orthopaedic Surgery	Faculty.Professor.Assistant	M.D.	Harvard Medical School
Lin, Bo	Developmental Biology	Faculty.Instructor.Research	Ph.D.	Chinese Academy of Sciences
Lin, Chyongchiou, Jeng	Family Medicine	Faculty.Professor.Associate	Ph.D.	Vanderbilt University
Lin, Hang	Orthopaedic Surgery	Faculty.Professor.Research Assistant	Ph.D.	Chinese Academy of Sciences
Lin, Jiuann Huey	Critical Care Medicine	Faculty.Professor.Assistant	M.D.	National Taiwan University
Lin, Philana, L	Pediatrics	Faculty.Professor.Associate	M.D.	Northeastern Ohio Universities
Lincoln, Danforth, Nelson	Family Medicine	Faculty.Professor.Assistant	M.D.	SUNY
Lindblad, Douglas, Scott	Pediatrics	Faculty.Professor.Assistant	M.D.	Baylor College
Lindell, Kathleen, Oare	Medicine	Faculty.Professor.Research Assistant	Ph.D.	University of Pittsburgh
Lindhlem, Oliver, James	Psychiatry	Faculty.Professor.Associate	Ph.D.	University of Delaware
Linkov, Faina	OB-Gyn & Reproductive Science	Faculty.Professor.Associate	Ph.D.	University of Pittsburgh
Lipski, Witold J	Neurological Surgery	Faculty.Instructor.Research	Ph.D.	University of Pittsburgh
Littleton, Eliza, Beth	Surgery	Faculty.Professor.UCR Visiting Research Associate	Ph.D.	Carnegie Mellon University
Liu, Betty, Yuan Yeuan	Physical Medicine & Rehabilitation	Faculty.Professor.Associate	M.D.	New York Medical College
Liu, Bing	Computational and Systems Biology	Faculty.Professor.Research Assistant	Ph.D.	National University of Singapore
Liu, Hao	Neurology	Faculty.Professor.Research Assistant	Ph.D.	Nanjing University
Liu, Jie	Medicine	Faculty.Professor.Visiting Research Associate	Ph.D.	Beijing Institute of Radiation Medicine
Liu, Ruya	Medicine	Faculty.Instructor.Research	M.D.	Beihua University
Liu, Shihui	Medicine	Faculty.Professor.UCR Visiting Associate	M.D.	Beijing Medical University
Liu, Yang	Medicine	Faculty.Professor.Associate	Ph.D.	Northwestern University
Liu, Yen-Chun	Pathology	Faculty.Professor.Assistant	M.D.	National Taiwan University College of Medicine

Liu, Youhua	Pathology	Faculty.Professor.Professor	Ph.D.	Peking Union Medical College
Liu, Yuan	Medicine	Faculty.Professor.Research Assistant	M.D.	Henan University of Science and Technology
Liu, Zuqiang	Surgery	Faculty.Professor.Research Assistant	Ph.D.	Tsinghua University
Lo, Cecilia, Wen Ya	Developmental Biology	Faculty.Professor.Distinguished	Ph.D.	Rockefeller University
Locker, Joseph D.	Pathology	Faculty.Professor.Professor	M.D.	University of Chicago
Loewen, Nils Axel	Ophthalmology	Faculty.Professor.Associate	M.D.	Albert-Ludwigs-University
Logan, Ryan, Wellington	Psychiatry	Faculty.Professor.Assistant	Ph.D.	University of Maine
Lokshin, Anna	Medicine	Faculty.Professor.Professor	Ph.D.	University of Leningrad
Lopez, Natasha	Pediatrics	Faculty.Professor.Assistant	M.D.	University of South Dakota
Lopez, Oscar, L	Neurology	Faculty.Professor.Professor	M.D.	National University of La Plata SOM
Lopez, Roberto, Carlos	Surgery	Faculty.Professor.Assistant	M.D.	University of Monterrey
Lopresti, Brian, J	Radiology	Faculty.Professor.Research Assistant	B.S.	University of Pittsburgh
Losee, Joseph, E	Plastic Surgery	Faculty.Professor.Professor	M.D.	University of Rochester
Lotze, Michael, T	Surgery	Faculty.Professor.Professor	M.D.	Northwestern University Medical School
Loughran, Patricia, Anne	Surgery	Faculty.Instructor.Research	Ph.D.	University of Texas
Love, Bianca	Pediatrics	Faculty.Professor.Assistant	D.O.	West Virginia School of Osteopathic Medicine
Low, Carissa, Ann	Medicine	Faculty.Professor.Assistant	Ph.D.	University of California
Lozito, Thomas, P	Orthopaedic Surgery	Faculty.Professor.Assistant	Ph.D.	University of Cambridge
Lu, Amy, H	Radiology	Faculty.Professor.Assistant	M.D.	Columbia University
Lu, Binfeng	Immunology	Faculty.Professor.Associate	Ph.D.	Columbia University
Lu, Songjian	Biomedical Informatics	Faculty.Professor.Assistant	Ph.D.	Texas A&M University
Lu, Xinghua	Biomedical Informatics	Faculty.Professor.Professor	M.D.	Shandong Medical University
Lubetsky, Martin, J	Psychiatry	Faculty.Professor.Professor	M.D.	Wayne State University SOM
Lucas, Peter Clayton	Pathology	Faculty.Professor.Associate	M.D.	Vanderbilt University
Lucas, Sunder, Sims	Pediatrics	Faculty.Professor.Assistant	Ph.D.	Monash University
Lueders, Daniel Ryan	Physical Medicine & Rehabilitation	Faculty.Professor.Assistant	M.D.	University of Missouri
Luketich, James, D	Cardiothoracic Surgery	Faculty.Professor.Professor	M.D.	Medical College of Pennsylvania

Luna, Beatriz	Psychiatry	Faculty.Professor.Professor	Ph.D.	University of Pittsburgh
Lundblad, Wynne R.	Psychiatry	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Lunoe, Maren M.	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Cincinnati
Lunsford, L. Dade	Neurological Surgery	Faculty.Professor.Distinguished	M.D.	Columbia University College of Phys & Surgeons
Luo, Jianhua	Pathology	Faculty.Professor.Professor	M.D.	Guangzhou Medical Institute
Lyakhov, Ilya G.	Medicine	Faculty.Professor.Visiting Research Associate	Ph.D.	Lomonosov Moscow State University
Lynch, Michael, James	Emergency Medicine	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Ma, Changqing	Pathology	Faculty.Professor.Assistant	B.M.	Beijing Medical University
Ma, Dongzhu	Orthopaedic Surgery	Faculty.Professor.Research Assistant	M.D.	Anhui Medical University
Ma, Hongqiang	Medicine	Faculty.Professor.Research Assistant	Ph.D.	Huazhong University of Science and Technology
Ma, Jihong	Pathology	Faculty.Professor.Research Assistant	M.D.	Jiamusi Medical College
Macatangay, Bernard Jonas, Calingasan	Medicine	Faculty.Professor.Assistant	M.D.	University of the Philippines
MacDonald, Matthew Luke	Psychiatry	Faculty.Professor.Assistant	Ph.D.	University of Pennsylvania
Madan, Suneeta	Pediatrics	Faculty.Professor.Associate	M.B.B.S.	University of Delhi
Madigan, Michael, Charles	Surgery	Faculty.Professor.Assistant	M.D.	Vanderbilt University SOM
Magnani, Jared William	Medicine	Faculty.Professor.Associate	M.D.	Stanford University
Maguire, Raymond	Otolaryngology	Faculty.Professor.Assistant	D.O.	Philadelphia College of Ost Med
Mahmood, Burhanuddin	Pediatrics	Faculty.Professor.Associate	M.B.B.S.	Aga Khan University Medical College
Mahoney, John, F	Emergency Medicine	Faculty.Professor.Professor	M.D.	University of Pittsburgh School of Medicine
Mai, Phuong Loan-Ha	OB-Gyn & Reproductive Science	Faculty.Professor.Visiting Associate	M.D.	University of Texas
Maier, John Stewart	Family Medicine	Faculty.Professor.Visiting Assistant	M.D.	University of Illinois at Urbana-Champaign
Maier, Robin, Marie	Family Medicine	Faculty.Professor.Assistant	M.D.	University of Illinois
Makaroun, Michel, S	Surgery	Faculty.Professor.Professor	M.D.	American University of Beirut
Makaroun, Sami P.	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	University of Pittsburgh

Malek, Marcus M.	Surgery	Faculty.Professor.Assistant	M.D.	UMDNJ-Robert Wood Johnson Medical School
Malinow, Ana Maria	Pediatrics	Faculty.Professor.Associate	M.D.	Case Western Reserve University
Mallampalli, Rama, K	Medicine	Faculty.Professor.Professor	M.D.	University of Wisconsin
Mammen, Oommen, Kandathil	Psychiatry	Faculty.Professor.Assistant	M.D.	Kasturba Medical College
Mamonova, Tatyana, B	Pharmacology and Chemical Biology	Faculty.Instructor.Research	Ph.D.	Kazakh National Academy of Science
Mandel, Ellen, May	Otolaryngology	Faculty.Professor.Associate	M.D.	University of Pittsburgh SOM
Manders, Ernest, Kelvin	Plastic Surgery	Faculty.Professor.Professor	M.D.	Harvard Medical School
Manelis, Anna	Psychiatry	Faculty.Professor.Assistant	Ph.D.	Rutgers University
Mangiola, Massimo	Pathology	Faculty.Professor.Assistant	Ph.D.	University of Genoa
Mangione, Michael, Paul	Anesthesiology	Faculty.Professor.Associate	M.D.	University of Pittsburgh SOM
Mann, Mellissa Rae Wigle	OB-Gyn & Reproductive Science	Faculty.Professor.Visiting Associate	Ph.D.	University of Toronto
Manni, Michelle L.	Pediatrics	Faculty.Professor.Research Assistant	Ph.D.	University of Pittsburgh
Manning, Janet Rose	Medicine	Faculty.Professor.Research Assistant	Ph.D.	University of Cincinnati
Manole, Mioara, Daciana	Pediatrics	Faculty.Professor.Associate	M.D.	Universitatea de Medicina Iuliu Hatiegan
Mansour, Hader, Abdelaziz	Psychiatry	Faculty.Professor.Assistant	M.B.B.Ch.	Mansoura University
Mansuria, Suketu, M	OB-Gyn & Reproductive Science	Faculty.Professor.Associate	M.D.	University of Miami School of Medicine
Maranchie, Jodi, Kathleen	Urology	Faculty.Professor.Associate	M.D.	Northwestern University
Marcus, Marsha	Psychiatry	Faculty.Professor.Professor	Ph.D.	University of Pittsburgh
Mares, Aaron V.	Orthopaedic Surgery	Faculty.Professor.Assistant	M.D.	Temple University
Marin, Jennifer R.	Pediatrics	Faculty.Professor.Associate	M.D.	University of Miami
Marra, Kacey, Gribbin	Plastic Surgery	Faculty.Professor.Associate	Ph.D.	University of Pittsburgh
Marroquin, Oscar	Medicine	Faculty.Professor.Associate	M.D.	Universidad Francisco Marroquin
Mars, Wendy, Michelle	Pathology	Faculty.Professor.Associate	Ph.D.	University of Texas
Marsh, Jane, Whitman	Medicine	Faculty.Professor.Research Associate	Ph.D.	Dartmouth College
Marshal, Michael, Paul	Psychiatry	Faculty.Professor.Associate	Ph.D.	Arizona State University
Marshall, Christopher William	Microbiology and Molecular Genetics	Faculty.Professor.Research Assistant	Ph.D.	Medical University of South Carolina

Martel, Joseph N.	Ophthalmology	Faculty.Professor.Assistant	M.D.	University of Nevada SOM
Martin, Christopher, S	Psychiatry	Faculty.Professor.Associate	Ph.D.	Indiana University
Martin, Judith, M	Pediatrics	Faculty.Professor.Professor	M.D.	Mount Sinai School of Medicine
Martin-Gill, Christian	Emergency Medicine	Faculty.Professor.Assistant	M.D.	University of Virginia
Mason, Neal, S	Radiology	Faculty.Professor.Research Associate	Ph.D.	Vanderbilt University
Massart, Mylynda B	Family Medicine	Faculty.Professor.Assistant	M.D.	Oregon Health & Sciences University
Mathers, Alicia, R	Dermatology	Faculty.Professor.Assistant	Ph.D.	West Virginia University
Mathier, Michael, Arthur	Medicine	Faculty.Professor.Professor	M.D.	Columbia University College of Physicians and Surgeons
Mathis, Chester, A	Radiology	Faculty.Professor.Distinguished	Ph.D.	University of California
Matthews, Karen, A	Psychiatry	Faculty.Professor.Distinguished	Ph.D.	University of Texas
Maurer, Scott H.	Pediatrics	Faculty.Professor.Associate	M.D.	Oregon Health & Science University
Mayanil, Tushita	Psychiatry	Faculty.Professor.Assistant	M.D.	King Edward Memorial Hospital and Seth G.S. Medical College
Mayle, Wendy, Fellows	Neurological Surgery	Faculty.Professor.Research Assistant	Ph.D.	University of Pittsburgh
Mayowski, Colleen A.	Medicine	Faculty.Instructor.Instructor	Ed.D.	University of Pittsburgh
Mazariegos, George, V	Surgery	Faculty.Professor.Professor	M.D.	Northwestern University Med School
Mazefsky, Carla, Ann	Psychiatry	Faculty.Professor.Associate	Ph.D.	Virginia Commonwealth University
McAllister, Linda M.	Pediatrics	Faculty.Professor.Associate	M.D.	Vanderbilt University
McAninch, Brett, Liana	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
McAuliffe, Priscilla F.	Surgery	Faculty.Professor.Assistant	M.D.	Cornell University
Mccaffrey, Francis, Michael	Pediatrics	Faculty.Professor.Associate	M.D.	Pennsylvania State University
McCall, Andrew Alexander	Otolaryngology	Faculty.Professor.Assistant	M.D.	University of California
McCarran, William, J	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Massachusetts
McCausland, Julie, B	Emergency Medicine	Faculty.Professor.Associate	M.D.	Hahnemann University Medical School
McClane, Bruce, A	Microbiology and Molecular Genetics	Faculty.Professor.Professor	Ph.D.	Pennsylvania State University
McClung, Colleen A.	Psychiatry	Faculty.Professor.Professor	Ph.D.	University of Virginia
McCormick, Andrew, A	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
McCoy, Kelly, L	Surgery	Faculty.Professor.Associate	M.D.	Hahnemann University

McDermott, Cristin Clerc	Psychiatry	Faculty.Professor.Assistant	M.D.	University of Connecticut
McDyer, John Francis	Medicine	Faculty.Professor.Associate	M.D.	Thomas Jefferson Medical College
McElroy, Anita Katherine	Pediatrics	Faculty.Professor.Assistant	M.D.	George Washington University
McElwain, Mari, Ann	Otolaryngology	Faculty.Professor.Assistant	M.D.	Medical College of Ohio
McEnaney, Ryan M.	Surgery	Faculty.Professor.Assistant	M.D.	St. Louis University
McGeachy, Mandy Jane	Medicine	Faculty.Professor.Assistant	Ph.D.	University of Edinburgh
McGee, James, Barry	Medicine	Faculty.Professor.Associate	M.D.	Louisiana State University
McGonigle, John, Joseph	Psychiatry	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
McGough, Richard, L, III	Orthopaedic Surgery	Faculty.Professor.Associate	M.D.	University of Pittsburgh
McGowan, Ian, Michael	Medicine	Faculty.Professor.Professor	M.D.	Liverpool University Medical School
McGrath, Kevin, M	Medicine	Faculty.Professor.Professor	M.D.	Jefferson Medical College
McHugh, Stephen M.	Anesthesiology	Faculty.Professor.Assistant	M.D.	University of Michigan
McIntire, Sara, C	Pediatrics	Faculty.Professor.Professor	M.D.	University of California SOM
McIntyre-Seltman, Kathleen	OB-Gyn & Reproductive Science	Faculty.Professor.Professor	M.D.	Medical College of Pennsylvania
McIvor, William, Raymond	Anesthesiology	Faculty.Professor.Professor	M.D.	University of Wisconsin School of Medicine
McKiernan, Patrick James	Pediatrics	Faculty.Professor.Professor	M.B.Ch.B.	Queen's University
McKinney, Brandon C	Psychiatry	Faculty.Professor.Assistant	M.D.	University of Michigan
McLane, Melissa L.	Orthopaedic Surgery	Faculty.Professor.Assistant	D.O.	University of New England
McMahon, Deborah, D	Medicine	Faculty.Professor.Professor	M.D.	Temple University SOM
McNamara, Dennis, M	Medicine	Faculty.Professor.Professor	M.D.	Harvard Medical School
McNeil, Melissa, Ann	Medicine	Faculty.Professor.Professor	M.D.	University of Pittsburgh SOM
McTiernan, Charles, F	Medicine	Faculty.Professor.Research Associate	Ph.D.	Case Western Reserve Univ
McTigue, Kathleen, Mary	Medicine	Faculty.Professor.Associate	M.D.	University of Connecticut
McVerry, Bryan, J	Medicine	Faculty.Professor.Associate	M.D.	Georgetown University
Medich, David Stanley	Surgery	Faculty.Professor.Visiting Associate	M.D.	The Ohio State University
Medsinge, Avinash	Radiology	Faculty.Professor.Assistant	M.D.	Government Medical College
Mehta, Rajil Bipin	Medicine	Faculty.Professor.Assistant	M.B.B.S.	Seth G.S. Medical College
Melhem, Nadine	Psychiatry	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh

Mellors, John, W	Medicine	Faculty.Professor.Professor	M.D.	Dartmouth Med School
Mendelson, Stephen, A	Orthopaedic Surgery	Faculty.Professor.Assistant	M.D.	University of Chicago
Mendizabal, Brenda	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Illinois College of Medicine
Menegazzi, James, J	Emergency Medicine	Faculty.Professor.Professor	Ph.D.	University of Pittsburgh
Meng, Li	Anesthesiology	Faculty.Professor.Associate	M.D.	Harbin Medical University
Menke, Marie Nam	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	Virginia Commonwealth University
Merlin, Jessica Sarah	Medicine	Faculty.Professor.Visiting Associate	M.D.	University of Pennsylvania
Merriam, Sarah Brennan	Medicine	Faculty.Instructor.Visiting	M.D.	University of Pittsburgh
Metes, Diana, Maria	Surgery	Faculty.Professor.Professor	M.D.	Institute of Medicine & Pharmacy
Methe, Barbara	Medicine	Faculty.Professor.Visiting	Ph.D.	Rensselaer Polytechnic Inst
Metro, David, George Jr	Anesthesiology	Faculty.Professor.Professor	M.D.	University of Pittsburgh School of Medicine
Mettenburg, Joseph M.	Radiology	Faculty.Professor.Assistant	M.D.	University of Virginia
Meyer, Mark, W	Family Medicine	Faculty.Professor.Assistant	M.D.	University of South Dakota
Meyn, Leslie Ann	OB-Gyn & Reproductive Science	Faculty.Professor.Research Assistant	Ph.D.	University of Pittsburgh
Michaels, Marian, G	Pediatrics	Faculty.Professor.Professor	M.D.	University of Pennsylvania SOM
Michalopoulos, George	Pathology	Faculty.Professor.Distinguished	M.D.	Athens University Med School
Middleton, Donald, B	Family Medicine	Faculty.Professor.Professor	M.D.	University of Rochester School of Medicine
Mieczkowski, Alexandra E. C.	Medicine	Faculty.Professor.Assistant	M.D.	Vanderbilt University
Miedel, Mark, T	Computational and Systems Biology	Faculty.Professor.Research Assistant	Ph.D.	University of Pittsburgh
Milcarek, Christine	Immunology	Faculty.Professor.Professor	Ph.D.	Johns Hopkins University
Milgrom, Olga	Psychiatry	Faculty.Professor.Assistant	M.D.	University of Pittsburgh SoM
Miljkovic, Natasa, Dusan	Physical Medicine & Rehabilitation	Faculty.Professor.Assistant	M.D.	University of Novi Sad
Miller, Anthony F.	Radiology	Faculty.Professor.Assistant	M.D.	Drexel University College of Medicine
Miller, Benjamin, G	Pediatrics	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Miller, Dane Eliot	Radiology	Faculty.Professor.Assistant	M.D.	Wayne State University

Miller, Derek M	Otolaryngology	Faculty.Instructor.Research	Ph.D.	Northwestern University
Miller, Elizabeth	Pediatrics	Faculty.Professor.Professor	M.D.	Harvard Medical School
Miller, Susan, A	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Pittsburgh SOM
Minervini, Marta	Pathology	Faculty.Professor.Assistant	M.D.	University of Bari
Minhas, Davneet	Radiology	Faculty.Instructor.Research	Ph.D.	Carnegie Mellon University
Minshew, Nancy, J	Psychiatry	Faculty.Professor.Professor	M.D.	Washington University SOM
Mishra, Sanjay, Kumar	Pediatrics	Faculty.Professor.Research Assistant	Ph.D.	Bhagalpur University
Mitchell, Ellen, Browne	Ophthalmology	Faculty.Professor.Assistant	M.D.	Drexel University College of Medicine
Mitchell, Stephanie Lane	Pathology	Faculty.Professor.Assistant	Ph.D.	Tufts University
Miyashita, Yosuke	Pediatrics	Faculty.Professor.Assistant	M.D.	Washington University
Moalli, Pamela, A	OB-Gyn & Reproductive Science	Faculty.Professor.Professor	M.D.,Ph.D.	Northwestern University
Mockus, Linas	Critical Care Medicine	Faculty.Professor.Assistant	M.D.	Kaunas Medical University
Modo, Michel M.	Radiology	Faculty.Professor.Professor	Ph.D.	King's College
Modugno, Francesmary	OB-Gyn & Reproductive Science	Faculty.Professor.Visiting Associate	Ph.D.	Carnegie Mellon University
Moghadam-Kia, Siamak	Medicine	Faculty.Professor.Assistant	M.D.	Tehran University of Medical Sciences
Mohan, Deepika	Critical Care Medicine	Faculty.Professor.Associate	M.D.	Emory University
Mohib, Kanishka	Surgery	Faculty.Instructor.Research	Ph.D.	University of Ottawa
Mohsen, Al-Walid, A	Pediatrics	Faculty.Professor.Research Associate	Ph.D.	Auburn University
Molina, Brooke, S	Psychiatry	Faculty.Professor.Professor	Ph.D.	Arizona State University
Molinari, Michele	Surgery	Faculty.Professor.Visiting Associate	M.D.	University of Milan School of Medicine
Mollen, Kevin, P	Surgery	Faculty.Professor.Assistant	M.D.	University of Buffalo
Moloney, Gele B	Orthopaedic Surgery	Faculty.Professor.Assistant	M.D.	SUNY
Molyneaux, Bradley J.	Neurology	Faculty.Professor.Assistant	M.D.	Harvard University
Monaco, Edward, A, III	Neurological Surgery	Faculty.Professor.Assistant	M.D.	Columbia University
Monaco, Sara, E	Pathology	Faculty.Professor.Associate	M.D.	Columbia University
Monaghan, Sara, Antoinette	Pathology	Faculty.Professor.Associate	M.D.	Mayo Medical School

Monahan, Amanda A M	Anesthesiology	Faculty.Professor.Visiting Associate	M.D.	University of Wisconsin School of Medicine and Public Health
Moncla, Bernard, John	OB-Gyn & Reproductive Science	Faculty.Professor.Research Associate	Ph.D.	Washington State University
Monga, Satdarshan, Pal Singh	Pathology	Faculty.Professor.Professor	M.B.B.S.	Punjab University
Montagnese, Jesse J.	Radiology	Faculty.Professor.Assistant	D.O.	Lake Erie College of Osteopathic Medicine
Montalbetti, Nicolas	Medicine	Faculty.Instructor.Research	Ph.D.	University of Buenos Aires
Montano, Gerald Tariao	Pediatrics	Faculty.Professor.Assistant	D.O.	Kansas City University of Medicine and Biosciences
Montoya, Mario, Ignacio	Anesthesiology	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Moon, Chan-Hong	Radiology	Faculty.Professor.Research Assistant	Ph.D.	Korean Advanced Institute
Moore, Jason, E	Critical Care Medicine	Faculty.Professor.Associate	M.D.	UMDNJ
Moore, Patrick, S	Microbiology and Molecular Genetics	Faculty.Professor.Distinguished	M.D.	University of Utah
Moore, Sheila Grace	Radiology	Faculty.Professor.Visiting	M.D.	University of California
Moossy, John, J	Neurological Surgery	Faculty.Professor.Professor	M.D.	Tulane University SOM
Mora, Ana Lucia	Medicine	Faculty.Professor.Associate	M.D.	Universidad Nacional de Colombia
Morel, Penelope, A	Immunology	Faculty.Professor.Professor	M.D.	University of Geneva
Moreland, Larry, W	Medicine	Faculty.Professor.Professor	M.D.	West Virginia University
Morell, Evonne Michelle	Pediatrics	Faculty.Professor.Assistant	D.O.	West Virginia University
Morell, Victor, Onofre	Cardiothoracic Surgery	Faculty.Professor.Professor	M.D.	Ponce School of Medicine
Morelli, Adrian, Eduardo	Surgery	Faculty.Professor.Professor	M.D.	University of Buenos Aires
Morgan, Judith, Kirstin	Psychiatry	Faculty.Professor.Assistant	Ph.D.	University of Delaware
Moritz, Michael, Laredo	Pediatrics	Faculty.Professor.Professor	M.D.	University of Chicago
Morowitz, Michael Jason	Surgery	Faculty.Professor.Associate	M.D.	Duke University
Morrell, Matthew, Ricks	Medicine	Faculty.Professor.Associate	M.D.	University of California at LA
Morycz, Richard, K	Psychiatry	Faculty.Professor.Associate	Ph.D.	University of Pittsburgh
Moschenross, Darcy M	Psychiatry	Faculty.Professor.Assistant	M.D.	University of Connecticut
Moses-Kolko, Eydie, Leyat	Psychiatry	Faculty.Professor.Associate	M.D.	University of Maryland
Mosesso, Vincent, N, Jr	Emergency Medicine	Faculty.Professor.Professor	M.D.	University of Pittsburgh SOM

Moss, Deborah, R	Pediatrics	Faculty.Professor.Associate	M.D.	Northwestern University Med School
Mouillet, Jean Francois, Marie	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	Ph.D.	University of Burgundy
Moulik, Mousumi	Pediatrics	Faculty.Professor.Assistant	M.D.	All India Institute of Medical Sciences
Mountz, James, Michael	Radiology	Faculty.Professor.Professor	M.D.	Case Western Reserve
Mukherjee, Amitava	Pediatrics	Faculty.Instructor.Research	Ph.D.	Jadavpur University
Muldoon, Matthew	Medicine	Faculty.Professor.Professor	M.D.	University of Illinois College of Medicine
Muluk, Visala, Sarmishta	Medicine	Faculty.Professor.Assistant	M.B.B.S.	Guntur Medical College
Mulukutla, Suresh, Raghu	Medicine	Faculty.Professor.Associate	M.D.	Cornell University
Mulvey, Edward, P	Psychiatry	Faculty.Professor.Professor	Ph.D.	University of Virginia
Munin, Michael, C	Physical Medicine & Rehabilitation	Faculty.Professor.Professor	M.D.	Jefferson Medical College
Muniz Pujalt, Gysella Begonia	Pediatrics	Faculty.Professor.Assistant	M.D.	Universidad de San Martin de Porres
Murdoch, Geoffrey, Howard	Pathology	Faculty.Professor.Associate	M.D.	University of California
Murray, Holt, Nicholas	Critical Care Medicine	Faculty.Professor.Assistant	M.D.	The Ohio State University
Murray, Peter, D	Psychiatry	Faculty.Professor.Assistant	M.D.	University of Minnesota School of Medicine
Murray, Sandra, A	Cell Biology	Faculty.Professor.Professor	Ph.D.	University of Iowa
Murugan, Raghavan	Critical Care Medicine	Faculty.Professor.Associate	M.B.B.S.	Stanley Medical College
Musahl, Volker	Orthopaedic Surgery	Faculty.Professor.Visiting	M.D.	Albert-Ludwigs University
Muthukrishnan, Ashok	Radiology	Faculty.Professor.Associate	M.B.B.S.	Tamilnad Medical University
Muzumdar, Hiren Vidyadhar	Pediatrics	Faculty.Professor.Associate	M.B.B.S.	University of Mumbai
Muzumdar, Radhika H.	Pediatrics	Faculty.Professor.Associate	M.B.B.S.	University of Chennai
Myerburg, Michael, M	Medicine	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Nace, David, A	Medicine	Faculty.Professor.Associate	M.D.	Temple University
Nadkarni, Neelesh Kishore	Medicine	Faculty.Professor.Assistant	M.D.	Karnatak University
Najjar, Yana George	Medicine	Faculty.Professor.Assistant	M.D.	American University of Beirut
Nakajima, Satoshi	Microbiology and Molecular Genetics	Faculty.Professor.Assistant	Ph.D.	Tohoku University
Nalesnik, Michael, A	Pathology	Faculty.Professor.Professor	M.D.	Rutgers Medical School

Namas, Rami, Ahmd	Surgery	Faculty.Professor.Research Assistant	M.B.B.Ch.	Al-Fateh University
Narendran, Rajesh	Radiology	Faculty.Professor.Visiting	M.B.B.S.	Stanley Medical College
Nash, Kenneth, C	Psychiatry	Faculty.Professor.Professor	M.D.	University of Louisville SOM
Nathaniel, Vernon Ian	Psychiatry	Faculty.Professor.Assistant	M.D.	University of Florida
Navid, Forozan	Cardiothoracic Surgery	Faculty.Professor.Assistant	M.D.	University of Virginia
Navolotskaia, Olga	Pathology	Faculty.Professor.Assistant	M.D.	Arhangel'sk Medical Institute
Nayak, Tapas Ranjan	Medicine	Faculty.Instructor.Research	Ph.D.	National University of Singapore
Neal, Matthew, D	Surgery	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Nejak-Bowen, Kari, Nichole	Pathology	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Nelson, Joel, B	Urology	Faculty.Professor.Professor	M.D.	Northwestern Univ Medical School
Neumann, Carola A.	Pharmacology and Chemical Biology	Faculty.Professor.Associate	M.D.	Ludwig-Maximilian University
Neville, Desiree Noel Wagner	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Virginia
Newsome, Joseph, Timothy	Pathology	Faculty.Professor.Research Associate	D.V.M.	Ohio State University
Ngan, Ka-Kei	Radiology	Faculty.Professor.Assistant	M.D.	Brown University
Nguyen, Christina R.	Pediatrics	Faculty.Professor.Assistant	M.D.	Northeastern Ohio University
Nguyen, Khoa Nhu	Anesthesiology	Faculty.Professor.Assistant	M.D.	New York Medical College
Nguyen, Lan Giao T.	Pediatrics	Faculty.Professor.Assistant	M.D.	Unviersity of Texas Southwestern
Nguyen, Minh, Hong Thi	Medicine	Faculty.Professor.Professor	M.D.	Temple University
Nguyen, Nghi Co	Radiology	Faculty.Professor.Assistant	M.D.	University of Tuebingen
Nguyen, Vu, Tu	Plastic Surgery	Faculty.Professor.Assistant	M.D.	University of Nebraska
Nicholls, Robert, David	Pediatrics	Faculty.Professor.Visiting	D.Phil.	University of Oxford
Nickerson, Kevin M.	Immunology	Faculty.Professor.Research Assistant	Ph.D.	University of Michigan
Nicotra, Matthew, L	Surgery	Faculty.Professor.Assistant	Ph.D.	Yale University
Nightingale, Barbara S.	Family Medicine	Faculty.Professor.Assistant	M.D.	Drexel University College of Medicine
Nikiforov, Yuri, Efimovich	Pathology	Faculty.Professor.Professor	M.D.	Minsk Medical Institute
Nikiforova, Marina, N	Pathology	Faculty.Professor.Professor	M.D.	Minsk Medical Institute
Nimgaonkar, Vishwajit	Psychiatry	Faculty.Professor.Professor	M.B.B.S.	University of Madras
Nimick, Theresa, L.	Pathology	Faculty.Professor.Professor	Ph.D.	Columbia University

Nine, Jeffrey S.	Pathology	Faculty.Professor.Professor	M.D.	Northeastern Ohio University
Niranjan, Ajay	Neurological Surgery	Faculty.Professor.Professor	M.B.B.S.	Lucknow University
Nischal, Kanwal K.	Ophthalmology	Faculty.Professor.Professor	M.D.	University of London
Nishikawa, Robert Mark	Radiology	Faculty.Professor.Professor	Ph.D.	University of Toronto
Noaiseh, Ghaith	Medicine	Faculty.Professor.Assistant	M.D.	Tishreen University
Noda, Kentaro	Cardiothoracic Surgery	Faculty.Professor.Research Assistant	Ph.D.	Kitasato University
Noll, Robert, B	Pediatrics	Faculty.Professor.Professor	Ph.D.	Michigan State University
Norman, Marie K.	Medicine	Faculty.Professor.Associate	Ph.D.	University of Pittsburgh
Nouraie, Seyed Mehdi	Medicine	Faculty.Professor.Associate	M.D.	Tehran University of Medical Sciences
Novelli, Enrico, Maria	Medicine	Faculty.Professor.Associate	M.D.	Universita degli Studi di Milano
Novelli, Paula, Marie	Radiology	Faculty.Professor.Visiting Associate	M.D.	Gerogetown University
Nowalk, Andrew, John	Pediatrics	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Nowalk, Mary, Patricia	Family Medicine	Faculty.Professor.Professor	Ph.D.	University of Pittsburgh
Nyunoya, Toru	Medicine	Faculty.Professor.Associate	M.D.	University of Tokushima School of Medicine
Obagi, Suzan	Dermatology	Faculty.Professor.Associate	M.D.	University of Pittsburgh School of Medicine
Obayashi, Machiko	Neurobiology	Faculty.Professor.Research Assistant	Ph.D.	University of Tokyo
Oberbarnscheidt, Martin, Heinrich	Surgery	Faculty.Professor.Research Assistant	M.D.	Free University Berlin
Ocak, Iclal	Radiology	Faculty.Professor.Assistant	M.D.	Haccettepe University
Oddis, Chester, V	Medicine	Faculty.Professor.Professor	M.D.	Pennsylvania State Univ College of Med
O'Doherty, Robert, Martin	Medicine	Faculty.Professor.Professor	Ph.D.	Vanderbilt University
O'Donnell, Brigid Moran	Pediatrics	Faculty.Professor.Assistant	M.D.	Temple University SOM
O'Donnell, Christopher, P	Medicine	Faculty.Professor.Professor	Ph.D.	Cambridge University
Oertel, Michael	Pathology	Faculty.Professor.Assistant	Ph.D.	University of Leipzig
Oesterreich, Steffi	Pharmacology and Chemical Biology	Faculty.Professor.Professor	Ph.D.	Humboldt University
Ofori-Acquah, Solomon Fiifi	Medicine	Faculty.Professor.Associate	Ph.D.	University of London
Ogren, Eric, A	Neurology	Faculty.Professor.Assistant	M.D.	University of Nebraska Medical Center

Ohori, N, Paul	Pathology	Faculty.Professor.Professor	M.D.	Medical College of Virginia
O'Keefe, Elizabeth, A	Medicine	Faculty.Professor.Associate	M.B.B.Ch.	Oxford University
O'Keefe, Stephen, J	Medicine	Faculty.Professor.Visiting	M.D.	London University
Okonkwo, David, O	Neurological Surgery	Faculty.Professor.Professor	M.D.	Virginia Commonwealth University
Okubo, Masashi	Emergency Medicine	Faculty.Instructor.Instructor	B.M.	Osaka City University
Olafiranye, Oladipupo	Medicine	Faculty.Professor.Assistant	M.B.Ch.B.	Obafemi Awolowo University
Olawaiye, Alexander, B	OB-Gyn & Reproductive Science	Faculty.Professor.Associate	M.D.	University of Ibadan
Olgun, Zeynep Deniz	Orthopaedic Surgery	Faculty.Professor.Assistant	M.D.	Hacettepe University Medical School
Oltvai, Zoltan, Nagy	Pathology	Faculty.Professor.Associate	M.D.	Semmelweis Medical University
Oluoch, Julia, Klara	Neurobiology	Faculty.Instructor.Visiting Research	M.Sc.	University of Nairobi
O'Malley, Michael, Joseph Spezia	Orthopaedic Surgery	Faculty.Professor.Assistant	M.D.	Temple University
Ondecko Ligda, Kristin Marie	Anesthesiology	Faculty.Professor.Assistant	M.D.	Virginia Commonwealth University
Onishi, Kentaro	Physical Medicine & Rehabilitation	Faculty.Professor.Assistant	D.O.	Western University of Health Sciences
Oppenheimer, Caroline W.	Psychiatry	Faculty.Professor.Assistant	Ph.D.	University of Denver
Oravitz, Todd, M	Anesthesiology	Faculty.Professor.Associate	M.D.	University of Pittsburgh School of Medicine
Orebaugh, Steven, L	Anesthesiology	Faculty.Professor.Professor	M.D.	Temple University SOM
Orenstein, David, M	Pediatrics	Faculty.Professor.Professor	M.D.	Case Western Reserve Univ SOM
Oriss, Timothy, B	Medicine	Faculty.Professor.Research Associate	Ph.D.	University of Pittsburgh
Ormond, Ellen, Meredith	Medicine	Faculty.Professor.Assistant	Ph.D.	Duquesne University
Orons, Philip, D	Radiology	Faculty.Professor.Professor	D.O.	Philadelphia College of Osteopathic Med
Orr, Brian Christopher	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	University of Tennessee Health Science Center
Ortiz, Damara Nicole	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Medicine and Dentistry
Orwig, Kyle, E	OB-Gyn & Reproductive Science	Faculty.Professor.Professor	Ph.D.	Oregon State University
O'Sullivan, Roderick, Joseph,	Pharmacology and Chemical Biology	Faculty.Professor.Assistant	Ph.D.	Institute of Molecular Pathology

Ou, Zach Zhishuo	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	Shandong Medical University
Oury, Tim, David	Pathology	Faculty.Professor.Professor	M.D.	Duke University
Ouyang, Yingshi	OB-Gyn & Reproductive Science	Faculty.Professor.Research Assistant	Ph.D.	Institute of Biophysics Chinese Academy
Owusu-Ansah, Amma Twumwa	Medicine	Faculty.Professor.Assistant	M.B.Ch.B.	University of Ghana
Owusu-Ansah, Sylvia	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Chicago Pritzker School of Medicine
Ozolek, John, A	Pathology	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Pacella, Charissa, Babe	Emergency Medicine	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Pacella, John, J	Medicine	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Pacella, Maria Lynn	Emergency Medicine	Faculty.Professor.Research Assistant	Ph.D.	Kent State University
Pagano, Patrick, Joseph	Pharmacology and Chemical Biology	Faculty.Professor.Professor	Ph.D.	New York Medical College
Pai, Reetesh Kochikar	Pathology	Faculty.Professor.Associate	M.D.	University of New Mexico
Painter, Thomas, D	Medicine	Faculty.Professor.Professor	M.D.	University of Texas Southwestern Med School
Palevsky, Paul, M	Medicine	Faculty.Professor.Professor	M.D.	Northwestern University Med School
Palladino, Michael, John	Pharmacology and Chemical Biology	Faculty.Professor.Professor	Ph.D.	University of Connecticut
Palmer, Octavia, Gregora Melvina	Pathology	Faculty.Professor.Associate	Ph.D.	Medical University of S. Carolina
Pan, Jullie W.	Neurology	Faculty.Professor.Professor	M.D.	Yale University
Pan, Lisa, Ann	Psychiatry	Faculty.Professor.Assistant	M.D.	Dartmouth Medical School
Pan, Raymond, J S	Psychiatry	Faculty.Professor.Assistant	M.D.	Univeristy of Connecticut
Pandey, Udai Bhan	Pediatrics	Faculty.Professor.Associate	Ph.D.	Sanjay Gandhi Postgraduate Institute of
Panigrahy, Ashok	Radiology	Faculty.Professor.Visiting	M.D.	Boston University
Panko, Laura, Michelle	Pediatrics	Faculty.Professor.Assistant	M.D.	Medical College of Ohio
Pantanowitz, Liron	Pathology	Faculty.Professor.Professor	M.B.B.Ch.	University of Witwatersrand
Papachristou, Georgios, Ioannis	Medicine	Faculty.Professor.Professor	M.D.	University of Patras
Paranjpe, Shirish, Govind	Pathology	Faculty.Professor.Research Associate	Ph.D.	University of Pune

Parikh, Urvi, M	Medicine	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Paris, Paul, M	Emergency Medicine	Faculty.Professor.Professor	M.D.	University of Pittsburgh SOM
Park, James K.	Radiology	Faculty.Professor.Assistant	M.D.,Ph.D.	State University of New York
Park, Seo Young	Medicine	Faculty.Professor.Associate	Ph.D.	University of North Carolina
Parness, Jerome	Anesthesiology	Faculty.Professor.Professor	M.D.	Albert Einstein College of Medicine
Parviainen-Yang, Eeva Liisa Kristiina	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	University of Alabama
Pascal, Laura, Ellen	Urology	Faculty.Professor.Visiting Research Assistant	Ph.D.	University of Illinois
Pasculle, A, William	Pathology	Faculty.Professor.Associate	Sc.D.	University of Pittsburgh
Patel, Rita, Maganbhai	Anesthesiology	Faculty.Professor.Professor	M.D.	American University of the Caribbean
Patel, Sanjay R.	Medicine	Faculty.Professor.Professor	M.D.	Harvard Medical School
Patel, Sureshchandra, A	Pathology	Faculty.Professor.Assistant	M.B.B.S.	South Gujarat University
Patrick, James Lambert	Radiology	Faculty.Professor.Assistant	M.D.	The University of Toledo
Patterson, Christina Marie	Pediatrics	Faculty.Professor.Assistant	M.D.	American University of the Caribbean
Patterson, Paul, D	Emergency Medicine	Faculty.Professor.Research Assistant	Ph.D.	University of South Carolina
Patton, Timothy, J, Jr	Dermatology	Faculty.Professor.Assistant	D.O.	Lake Erie College of Osteopathic Med
Pecina Iturbe, Marta	Psychiatry	Faculty.Professor.Assistant	M.D.	University of Navarra
Pedersen, Sarah, L	Psychiatry	Faculty.Professor.Assistant	Ph.D.	University of Missouri
Pedersen, William Robert Munk	Radiology	Faculty.Professor.Assistant	M.D.	Creighton University
Peel, Robert, L	Pathology	Faculty.Professor.Associate	M.D.	University of Pittsburgh SOM
Peitzman, Andrew, B	Surgery	Faculty.Professor.Distinguished	M.D.	University of Pittsburgh SOM
Pennathur, Arjun	Cardiothoracic Surgery	Faculty.Professor.Associate	M.B.B.S.	Tirunelveli Medical College
Perera, KPG, Subashan	Medicine	Faculty.Professor.Professor	Ph.D.	Kansas State University
Perez, Gina Marie	Psychiatry	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Perkins, Kenneth, A	Psychiatry	Faculty.Professor.Professor	Ph.D.	University of Iowa
Perlman, Susan, B	Psychiatry	Faculty.Professor.Associate	Ph.D.	Duke University
Perry, Lina, Patel	Pathology	Faculty.Professor.Assistant	M.D.	Northeastern Ohio Univ College of Med

Peters, Ann	OB-Gyn & Reproductive Science	Faculty.Instructor.Visiting	M.D.	University of Virginia School of Medicine
Peters, David, Gerard	OB-Gyn & Reproductive Science	Faculty.Professor.Associate	Ph.D.	University of Liverpool
Peters, Kathryn, W	Pediatrics	Faculty.Professor.Research Assistant	Ph.D.	George Washington Univ
Peterson, Alanna C	Emergency Medicine	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Peterson, Ryan	Psychiatry	Faculty.Professor.Assistant	M.D.	University of Minnesota Medical School
Petrov, Andrej, Aleksandar	Medicine	Faculty.Professor.Associate	M.D.	University of Belgrade
Pettigrew, Chenits, Jr	Medicine	Faculty.Instructor.Instructor	Ph.D.	Pepperdine University
Phillippi, Julie, Anne	Cardiothoracic Surgery	Faculty.Professor.Assistant	Ph.D.	Carnegie Mellon University
Phillips, Mary Louise	Psychiatry	Faculty.Professor.Professor	M.B.B.Ch.	Cambridge University
Phrampus, Erin, Doherty	Pediatrics	Faculty.Professor.Associate	M.D.	Eastern Virginia Medical School
Phrampus, Paul, E	Emergency Medicine	Faculty.Professor.Professor	M.D.	Eastern Virginia Medical School
Phua, Yu Leng	Pediatrics	Faculty.Instructor.Research		
Picard, Nathalie	Neurobiology	Faculty.Professor.Research Assistant	Ph.D.	University of Montreal
Picarsic, Jennifer, Lee	Pathology	Faculty.Professor.Assistant	M.D.	Univeristy of Pittsburgh
Pierri, Joseph, Nicholas	Psychiatry	Faculty.Professor.Assistant	M.D.	University of Chicago
Piganelli, Jon, D	Surgery	Faculty.Professor.Associate	Ph.D.	Oregon State University
Pihlblad, Matthew S.	Ophthalmology	Faculty.Professor.Visiting Assistant	M.D.	West Virginia University
Pilewski, Joseph, M	Medicine	Faculty.Professor.Associate	M.D.	University of Rochester School of Medicine
Pilkonis, Paul, A	Psychiatry	Faculty.Professor.Professor	Ph.D.	Stanford University
Pingpank, James, F, Jr	Surgery	Faculty.Professor.Visiting Associate	M.D.	George Washington University
Pinilla Macua, Itziar	Cell Biology	Faculty.Instructor.Research	Ph.D.	University of Barcelona
Pinsky, Michael, R	Critical Care Medicine	Faculty.Professor.Professor	M.D.	McGill University Faculty of Medicine
Pinter, Joshua D.	Radiology	Faculty.Professor.Assistant	M.D.	Upstate Medical University
Pipeling, Matthew Robert	Medicine	Faculty.Professor.Assistant	M.D.	Johns Hopkins University
Piraino, Beth, M	Medicine	Faculty.Professor.Professor	M.D.	Medical College of Pennsylvania
Pitetti, Raymond	Pediatrics	Faculty.Professor.Associate	M.D.	Temple Medical School
Pizon, Anthony, F	Emergency Medicine	Faculty.Professor.Associate	M.D.	Medical College of Ohio

Planinsic, Raymond, M	Anesthesiology	Faculty.Professor.Professor	M.D.	Mount Sinai SOM
Ploof, Dianna, L	Pediatrics	Faculty.Professor.Research Assistant	Ed.D.	University of Massachusetts
Poe, Jerrod, A	Microbiology and Molecular Genetics	Faculty.Professor.Research Assistant	Ph.D.	University of Pittsburgh
Poe, Michele D.	Pediatrics	Faculty.Professor.Research Associate	Ph.D.	Case Western Reserve University
Pogacnik, Javier Salgado	Surgery	Faculty.Professor.Assistant	M.D.	Universidad Nacional de Cordoba
Poholek, Amanda Catherine	Pediatrics	Faculty.Professor.Assistant	Ph.D.	Yale University
Polak, Catherine Anna	Pediatrics	Faculty.Professor.Assistant	M.D.	West Virginia University
Polat, Julia Kisin	Ophthalmology	Faculty.Professor.Visiting Assistant	M.D.	Boston University
Pollack, Ian, F	Neurological Surgery	Faculty.Professor.Distinguished	M.D.	Johns Hopkins University SOM
Pollock, Gary, F	Emergency Medicine	Faculty.Professor.Assistant	M.D.	University of Virginia
Popescu, Iulia-Dana	Medicine	Faculty.Professor.Research Assistant	Ph.D.	University of Bucharest
Poplawsky, Alexander, J	Radiology	Faculty.Instructor.Research	Ph.D.	Emory University
Poropatich, Ronald Kurt	Medicine	Faculty.Professor.Professor	M.D.	Hahnemann University
Posluszny, Donna, M	Medicine	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Potoka, Douglas, A	Surgery	Faculty.Professor.Associate	M.D.	Johns Hopkins University
Powers, Robert, W, Jr	OB-Gyn & Reproductive Science	Faculty.Professor.Associate	Ph.D.	University of Cincinnati
Prasad, Konasale, Munirajendra	Psychiatry	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Prasadan, Krishna	Surgery	Faculty.Professor.Research Assistant	Ph.D.	Sardar Patel University
Preisner, Ruth, Marie	Medicine	Faculty.Professor.Associate	M.D.	University of Pennsylvania
Premkumar, Daniel, Raja	Neurological Surgery	Faculty.Professor.Research Assistant	Ph.D.	Madurai Kamaraj University
Price, Rebecca Byrne	Psychiatry	Faculty.Professor.Assistant	Ph.D.	Rutgers University
Prochownik, Edward, V	Pediatrics	Faculty.Professor.Professor	M.D.	University of Chicago
Przybysz, Mary Elizabeth	Critical Care Medicine	Faculty.Professor.Assistant	M.D.	West Virginia University
Pu, Jiantao	Radiology	Faculty.Professor.Associate	Ph.D.	Peking University
Puccio, Ava, M	Neurological Surgery	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Pugliano Mauro, Melissa Angela	Dermatology	Faculty.Professor.Assistant	M.D.	Drexel University
Puig, Stephanie	Anesthesiology	Faculty.Professor.Research Assistant	Ph.D.	University of Paris Descartes

Pulaski, Hanna	OB-Gyn & Reproductive Science	Faculty.Professor.Research Assistant	Ph.D.	University of Pittsburgh
Puskar, Alicia H.	Orthopaedic Surgery	Faculty.Professor.Assistant	Ph.D.	Indiana University of PA
Puttarajappa, Chethan Maduvinakodi	Medicine	Faculty.Professor.Assistant	M.B.B.S.	Rajiv Gandhi University
Puwanant, Araya	Neurology	Faculty.Professor.Assistant	M.D.	Prince of Songkla University
Puyana, Juan, C	Surgery	Faculty.Professor.Professor	M.D.	Javeriana University
Qian, Wei	Pharmacology and Chemical Biology	Faculty.Instructor.Research	Ph.D.	Osaka City University
Qin, Shulin	Medicine	Faculty.Professor.Research Assistant	M.D.	Sun Yat-Sen University
Qu, Lirong	Pathology	Faculty.Professor.Associate	M.D.	Tangshan Medical College
Qu, Zhaoxia	Microbiology and Molecular Genetics	Faculty.Professor.Research Assistant	Ph.D.	Rutgers State University of New Jersey
Quinlan, Joseph, J	Anesthesiology	Faculty.Professor.Professor	M.D.	University of Pennsylvania
Rabinovitz, Hanna	Pathology	Faculty.Professor.Professor	Ph.D.	Weizman Institute of Science
Rabinovitz, Mordechai	Medicine	Faculty.Professor.Professor	M.D.	Tel-Aviv University Sackler SOM
Rachakonda, Vikrant Prabhu	Medicine	Faculty.Professor.Assistant	M.D.	University of Pittsburgh School of Medicine
Radomski, Marek A.	Emergency Medicine	Faculty.Professor.Assistant	D.O.	Lake Erie College of Osteo Med
Radomski, Thomas R.	Medicine	Faculty.Professor.Assistant	M.D.	Pennsylvania State University SOM
Radovic-Stakic, Ana	Pediatrics	Faculty.Professor.Assistant	M.D.	Case Western Reserve University
Raeman, Reben	Pathology	Faculty.Professor.Assistant	Ph.D.	University of Georgia
Raghunathan, Krishnan	Pediatrics	Faculty.Professor.Research Assistant	Ph.D.	University of Michigan
Ragni, Margaret, Victoria	Medicine	Faculty.Professor.Professor	M.D.	University of Pittsburgh SOM
Rajakumar, Kumaravel	Pediatrics	Faculty.Professor.Associate	M.B.B.S.	University of Madras Medical College
Rajasekaran, Vijayalaksmi	Neurology	Faculty.Professor.Assistant	M.D.	Stanley Medical College
Rakfal, Susan, M	Radiation Oncology	Faculty.Professor.Assistant	M.D.	University of Medicine and Dentistry of New Jersey
Raman, Sripriya	Pediatrics	Faculty.Professor.Visiting Associate	M.D.	Government Kilpauk Medical College
Ramanathan, Ramesh, Chandran	Surgery	Faculty.Professor.Assistant	M.B.B.S.	Madras Medical College
Ramani, Ravi, Neelakantan	Medicine	Faculty.Professor.Assistant	M.B.B.S.	Armed Forces Medical College

Ramaswami, Balathiripura	Surgery	Faculty.Instructor.Research	Ph.D.	University of Madras
Ramesh, Makum, L	Medicine	Faculty.Professor.Assistant	M.D.	University of Bagalore
Ramlogan, Sandhya R.	Pediatrics	Faculty.Professor.Assistant	M.B.Ch.B.	University of Leeds
Ramos Da Silva, Suzane	Microbiology and Molecular Genetics	Faculty.Instructor.Research	Ph.D.	Sao Paulo State University
Rana, Sangeeta	Medicine	Faculty.Professor.Assistant	M.D.	Delhi University
Randhawa, Parmjeet, Singh	Pathology	Faculty.Professor.Professor	M.D.	All India Institute of Medicine
Ranganathan, Sarangarajan	Pathology	Faculty.Professor.Professor	M.B.B.S.	Topiwala National Medical College
Rangaswamy, Balasubramanya	Radiology	Faculty.Professor.Assistant	M.B.B.S.	Bangalore Medical College
Rao, Kanchan, H	Medicine	Faculty.Professor.Associate	M.B.B.S.	University of Pune
Rao, R. Harsha	Medicine	Faculty.Professor.Professor	M.D.	Armed Forces Medical College
Rao, Uma, N M	Pathology	Faculty.Professor.Professor	M.B.B.S.	Mysore University
Rapkin, Louis Benjamin	Pediatrics	Faculty.Professor.Visiting Associate	M.D.	University of Alabama @ Birmingham
Rastogi, Priya	Medicine	Faculty.Professor.Associate	M.D.	Wright State University
Rath, Tanya, Jaitley	Radiology	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Rathfon, Grace, Y	Radiology	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Ray, Anuradha	Medicine	Faculty.Professor.Professor	Ph.D.	Calcutta University
Ray, Evan Cross	Medicine	Faculty.Professor.Assistant	M.D.	University of Pennsylvania
Ray, Kristin Nielson	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Pennsylvania
Ray, Prabir	Medicine	Faculty.Professor.Professor	Ph.D.	Calcutta University
Reddy, Neha Bandaru	Cardiothoracic Surgery	Faculty.Professor.Assistant	M.D.	University of Cincinnati College of Medicine
Reddy, P, Sudhakar	Medicine	Faculty.Professor.Professor	M.B.B.S.	Gandhi Medical College
Reddy, Raju Cheruku	Medicine	Faculty.Professor.Visiting Associate	M.D.	University of Tennessee
Redner, Robert, L	Medicine	Faculty.Professor.Professor	M.D.	Harvard Medical School
Reed, Douglas, S	Immunology	Faculty.Professor.Associate	Ph.D.	UT Southwest Medical Center
Reis, Evelyn, C	Pediatrics	Faculty.Professor.Associate	M.D.	Harvard Medical School
Reis, Steven, E	Medicine	Faculty.Professor.Distinguished Service	M.D.	Harvard Medical School
Reitschuler Cross, Eva Barbara	Medicine	Faculty.Professor.Assistant	M.D.	Medical University of Vienna

Ren, Baoguo	Pathology	Faculty.Instructor.Research	M.D.	West China University of Medical Science
Resnick, Neil, Martin	Medicine	Faculty.Professor.Professor	M.D.	Stanford University Medical School
Reyes-Mugica, Miguel	Pathology	Faculty.Professor.Professor	M.D.	National Autonomous Univ of Mexico
Rhinehart, Erin Lynn	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	University of Pittsburgh SoM
Richardson, Anthony Robert	Microbiology and Molecular Genetics	Faculty.Professor.Visiting Associate	Ph.D.	Emory University
Richardson, Gale, A	Psychiatry	Faculty.Professor.Associate	Ph.D.	West Virginia University
Richardson, Robert M.	Neurological Surgery	Faculty.Professor.Associate	M.D.	Medical College of Virginia
Richardson, Ward, M	Surgery	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Riley, Melissa, Marie	Pediatrics	Faculty.Professor.Assistant	M.D.	Northeastern Ohio University
Rinaldo, Charles, R, Jr	Pathology	Faculty.Professor.Professor	Ph.D.	University of Utah
Rindos, Noah Benjamin	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	George Washington Unibversity
Risbano, Michael G.	Medicine	Faculty.Professor.Assistant	M.D.	Boston University
Ritchey, A, Kim	Pediatrics	Faculty.Professor.Professor	M.D.	University of Cincinnati Medical College
Rittenberger, Jon, Charles	Emergency Medicine	Faculty.Professor.Associate	M.D.	Unviersity of Pittsburgh
Ritter Jones, Marsha	Anesthesiology	Faculty.Professor.Assistant	M.D.	Feinberg School of Medicine
Rivera Lebron, Belinda N.	Medicine	Faculty.Professor.Assistant	M.D.	Universidad Central del Caribe
Roberts, James, M	OB-Gyn & Reproductive Science	Faculty.Professor.Professor	M.D.	University of Michigan Med School
Robertson, Linda Barry	Medicine	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Robinson, Keven, M	Medicine	Faculty.Professor.Assistant	M.D.	Thomas Jefferson University
Rocha, Emily Mangano	Neurology	Faculty.Professor.Research Assistant	Ph.D.	Carleton University
Rocha, Marcelo	Neurology	Faculty.Professor.Assistant	M.D.	Rutgers Robert Wood Johnson Medical School
Rodosky, Mara, Horwitz	Medicine	Faculty.Professor.Associate	M.D.	Columbia University College of Physicians and Surgeons
Rodosky, Mark, W	Orthopaedic Surgery	Faculty.Professor.Assistant	M.D.	Mount Sinai School of Medicine
Rodriguez, Eric, G	Medicine	Faculty.Professor.Associate	M.D.	George Washington Univ SOM & Health Sci

Rofey, Dana, L	Psychiatry	Faculty.Professor.Associate	Ph.D.	University of Cincinnati
Rogal, Shari, S	Surgery	Faculty.Professor.Assistant	M.D.	Yale University
Rogers, Matthew Brian	Surgery	Faculty.Professor.Research Assistant	Ph.D.	University of British Columbia
Rojas, Mauricio	Medicine	Faculty.Professor.Associate	M.D.	Universidad Nacional de Colombia
Rollman, Bruce, Lawrence	Medicine	Faculty.Professor.Professor	M.D.	Jefferson Medical College
Roman, Anna, Marie	Pathology	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Romeo, Ryan, Christopher	Anesthesiology	Faculty.Professor.Associate	M.D.	Pennsylvania State Univ College of Med
Romero, Guillermo, G	Pharmacology and Chemical Biology	Faculty.Professor.Associate	Ph.D.	University of Virginia
Rometo, Allison Baker	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Virginia
Rondon Berrios, Helbert	Medicine	Faculty.Professor.Associate	M.D.	Universidad Nacional Mayor de San Marcos
Roppolo, James	Pharmacology and Chemical Biology	Faculty.Professor.Research Assistant	Ph.D.	University of Michigan
Rose, Jason J	Medicine	Faculty.Professor.Assistant	M.D.	Wayne State University SoM
Rosen, Johanna, R	Pediatrics	Faculty.Professor.Assistant	M.D.	Virginia Commonwealth University
Rosengart, Matthew, R	Surgery	Faculty.Professor.Professor	M.D.	University of Alabama
Rosenkranz, Margalit, Elana	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Rosenstock, Jason, B	Psychiatry	Faculty.Professor.Associate	M.D.	Brown University
Rosland, Ann-Marie	Medicine	Faculty.Professor.Visiting Associate	M.D.	Washington University Medical School
Ross, Sarah Elizabeth	Neurobiology	Faculty.Professor.Associate	Ph.D.	University of Western Ontario
Rosser, Franziska Joyce	Pediatrics	Faculty.Professor.Assistant	M.D.	University of South Alabama College of Medicine
Rossi, Ethan A.	Ophthalmology	Faculty.Professor.Assistant	Ph.D.	University of California
Rossi, Michelle, I	Medicine	Faculty.Professor.Assistant	M.D.	Mount Sinai SOM
Roth, Loren, H	Psychiatry	Faculty.Professor.Distinguished Service	M.D.	Harvard Medical School
Roth, Ronald, N	Emergency Medicine	Faculty.Professor.Professor	M.D.	University of Pittsburgh SOM
Rothenberger, Scott D.	Medicine	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Rothfus, William, Edward	Radiology	Faculty.Professor.Professor	M.D.	University of Rochester School of Medicine
Rothstein, David, Mark	Surgery	Faculty.Professor.Professor	M.D.	University of Pennsylvania

Rowland, Jennifer L.	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	Temple University
Roy, Somak	Pathology	Faculty.Professor.Assistant	M.B.B.S.	Seth G.S. Medical College
Rozel, John, S	Psychiatry	Faculty.Professor.Associate	M.D.	Brown University
Rubin, Fred, Howard	Medicine	Faculty.Professor.Professor	M.D.	Pennsylvania State University
Rubin, Joseph, Peter	Plastic Surgery	Faculty.Professor.Professor	M.D.	Tufts University
Rubin, Joshua, T	Surgery	Faculty.Professor.Professor	M.D.	George Washington Univ SOM & Health Sci
Rubin, Sarah	Critical Care Medicine	Faculty.Professor.Assistant	M.D.	The Chicago Medical School
Rubio, Maria, Eulalia	Neurobiology	Faculty.Professor.Associate	Ph.D.	University Alicante Inst Neuroscience
Rudolph, Jeffrey, A	Pediatrics	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Rusilko, Paul John	Urology	Faculty.Professor.Visiting Assistant	D.O.	Lake Erie College of Osteopathic Medicine
Russo, Linda, Marie	Pediatrics	Faculty.Professor.Assistant	M.D.	Creighton University
Ryan, Neal, David	Psychiatry	Faculty.Professor.Professor	M.D.	Yale University SOM
Saba, Samir, Fawzi	Medicine	Faculty.Professor.Associate	M.D.	American University of Beirut
Sachdev, Ulka	Surgery	Faculty.Professor.Associate	M.D.	Mt. Sinai School of Medicine
Sadagopan, Srivatsun	Neurobiology	Faculty.Professor.Assistant	Ph.D.	Johns Hopkins University
Sadovsky, Yoel	OB-Gyn & Reproductive Science	Faculty.Professor.Distinguished	M.D.	Hebrew University
Safier, Robert, A	Pediatrics	Faculty.Professor.Associate	M.D.	Tel Aviv University
Sagan, Elizabeth, R	Urology	Faculty.Professor.Visiting Assistant	M.D.	University of Pittsburgh
Sah, Mukesh	Psychiatry	Faculty.Professor.Assistant	M.B.B.S.	University of Delhi
Sahel, Jose Alain	Ophthalmology	Faculty.Professor.Professor	M.D.	Paris University medical School
Sahoo, Sanghamitra	Pharmacology and Chemical Biology	Faculty.Instructor.Research	Ph.D.	Kolkata & Utkal University
Sainathan, Sandeep	Cardiothoracic Surgery	Faculty.Professor.Assistant	M.D.	Bangalore Medical College
Sakai, Tetsuro	Anesthesiology	Faculty.Professor.Professor	M.D.	Kyoto University
Sakamoto, Sara, Beth	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Sakolsky, Dara, Jennifer	Psychiatry	Faculty.Professor.Assistant	M.D.	Temple University
Sakr, Mark	Orthopaedic Surgery	Faculty.Professor.Assistant	D.O.	Midwestern University

Saladino, Richard, Anthony	Pediatrics	Faculty.Professor.Professor	M.D.	University of Missouri School of Medicine
Salama, Guy	Medicine	Faculty.Professor.Professor	Ph.D.	University of Pennsylvania
Salcido, David, D	Emergency Medicine	Faculty.Professor.Research Assistant	M.P.H.	University of Pittsburgh
Salisbury, Dean Francis	Psychiatry	Faculty.Professor.Professor	Ph.D.	SUNY
Saller, Devereux Nathaniel Jr.	OB-Gyn & Reproductive Science	Faculty.Professor.Professor	M.D.	Jefferson Medical College
Saloman, Jami L	Neurobiology	Faculty.Professor.Research Assistant	Ph.D.	University of Maryland
Sanchez De Toledo, Joan	Critical Care Medicine	Faculty.Professor.Assistant	M.D.	Universitat Autònoma de Barcelona
Sanchez, Pablo Geraldo	Cardiothoracic Surgery	Faculty.Professor.Visiting Associate	M.D.	Universidad Nacional de Córdoba
Sanfilippo, Joseph, Salvatore	OB-Gyn & Reproductive Science	Faculty.Professor.Professor	M.D.	Chicago Medical School
Sappington, Penny, L	Critical Care Medicine	Faculty.Professor.Assistant	M.D.	Pennsylvania State University College of Med
Sarkar, Saumendra, Narayan	Microbiology and Molecular Genetics	Faculty.Professor.Associate	Ph.D.	Indian Institute of Science
Sarkaria, Inderpal, S	Cardiothoracic Surgery	Faculty.Professor.Assistant	M.D.	University of Medicine and Dentistry of New Jersey
Sarpal, Deepak K.	Psychiatry	Faculty.Professor.Assistant	M.D.	St. George's University School of Medicine
Sawyer, Kelly N.	Emergency Medicine	Faculty.Professor.Assistant	M.D.	Vanderbilt University
Sayd Mohammed, Manush	Developmental Biology	Faculty.Instructor.Research	Ph.D.	Central Institute of Fisheries
Scandrett, Karen E. Glasser	Medicine	Faculty.Professor.Assistant	M.D.	University of Chicago
Scanga, Charles, A	Microbiology and Molecular Genetics	Faculty.Professor.Research Associate	Ph.D.	University of Pittsburgh School of Medicine
Schaffner, Erin, K	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Toledo
Schaitkin, Barry, Michael	Otolaryngology	Faculty.Professor.Professor	M.D.	Pennsylvania State University College of Med
Schatten, Gerald, Phillip	OB-Gyn & Reproductive Science	Faculty.Professor.Professor	Ph.D.	University of California
Schelbert, Erik	Medicine	Faculty.Professor.Assistant	M.D.	Northwestern University
Schell, Jane O.	Medicine	Faculty.Professor.Assistant	M.D.	University of Alabama
Schenker, Yael	Medicine	Faculty.Professor.Associate	M.D.	University of California
Scheunemann, Leslie P.	Medicine	Faculty.Professor.Assistant	M.D.	University of North Carolina

Schindler, John, T	Medicine	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Schirda, Claudiu, Valerian	Radiology	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Schlesinger, Abigail, Boden	Psychiatry	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Schmelzer, Eva	Surgery	Faculty.Professor.Research Associate	Ph.D.	Technical University of Branschweig
Schmidhofer, Mark	Medicine	Faculty.Professor.Professor	M.D.	Medical College of Wisconsin
Schmidt, Christopher Charles	Orthopaedic Surgery	Faculty.Professor.Research Assistant	M.D.	University of Wisconsin Medical School
Schmidt, Martin, C	Microbiology and Molecular Genetics	Faculty.Professor.Professor	Ph.D.	University of California
Schmithorst, Vincent Jerome	Radiology	Faculty.Professor.Associate	Ph.D.	University of Cincinnati
Schmitz, John C.	Medicine	Faculty.Professor.Research Associate	Ph.D.	Medical University of South Carolina
Schneck, Francis, X Jr	Urology	Faculty.Professor.Associate	M.D.	Georgetown University
Schoedel, Karen, Elizabeth	Pathology	Faculty.Professor.Professor	M.D.	Medical College of Virginia
Schoen, Robert, E	Medicine	Faculty.Professor.Professor	M.D.	Columbia University College of Phys & Surgeons
Scholz, Stefan	Surgery	Faculty.Professor.Assistant	M.D.	Philipps-University
Schopfer, Francisco, Jose	Pharmacology and Chemical Biology	Faculty.Professor.Research Associate	Ph.D.	University of Buenos Aires
Schott, Christopher K.	Critical Care Medicine	Faculty.Professor.Assistant	M.D.	SUNY
Schraut, Wolfgang, H	Surgery	Faculty.Professor.Professor	M.D.	Ludwig-Maximilians Univ
Schreiber, Justin W.	Psychiatry	Faculty.Professor.Assistant	D.O.	Touro College of Osteopathic Medicine
Schuchert, Matthew, J	Cardiothoracic Surgery	Faculty.Professor.Associate	M.D.	Johns Hopkins University
Schumann, John, Bernard	Neurobiology	Faculty.Professor.Associate	Ph.D.	Rutgers University
Schurdak, Mark E.	Computational and Systems Biology	Faculty.Professor.Research Associate	Ph.D.	Baylor College of Medicine
Schwartz, Andrew, B	Neurobiology	Faculty.Professor.Distinguished	Ph.D.	University of Minnesota
Schwartz, Marc, Brian	Medicine	Faculty.Professor.Assistant	M.D.	University of Pennsylvania
Schwarz, Samuel, D	Radiology	Faculty.Professor.Assistant	M.D.	University of Maryland
Sciortino, Christopher Michael	Cardiothoracic Surgery	Faculty.Professor.Assistant	M.D.	Case Western Reserve University
Sciurba, Frank, C	Medicine	Faculty.Professor.Visiting	M.D.	University of Chicago Pritzker SOM
Scott, Iain	Medicine	Faculty.Professor.Assistant	Ph.D.	University of St. Andrews

Scott, Lori N.	Psychiatry	Faculty.Professor.Assistant	Ph.D.	Pennsylvania State University
Scott, Melanie, Jane	Surgery	Faculty.Professor.Associate	M.B.B.Ch.	University of Liverpool
Scruggs, Katherine Lynn	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	Virginia Commonwealth University
Seal, Rebecca Pauline	Neurobiology	Faculty.Professor.Associate	Ph.D.	Oregon Health and Science University
Seaman, Craig Daniel	Medicine	Faculty.Professor.Assistant	M.D.	Marshall Univeristy
Sechrist, III, Jacob W	Radiology	Faculty.Professor.Assistant	M.D.	Drexel University College of Medicine
Seery, Thomas	Pediatrics	Faculty.Professor.Assistant	M.D.	The Pennsylvania State University
Seethala, Raja, Ram	Pathology	Faculty.Professor.Professor	M.D.	Thomas Jefferson Medical College
Sehgal, Alison Rager	Medicine	Faculty.Instructor.Research	M.D.	Duke University
Sekula, Raymond F. Jr	Neurological Surgery	Faculty.Professor.Associate	M.D.	Georgetown University
Semaan, Roy W.	Medicine	Faculty.Professor.Assistant	M.D.	Virginia Commonwealth University School of Medicine
Semins, Michelle, J	Urology	Faculty.Professor.Visiting Assistant	M.D.	University of Pittsburgh
Sen, Malabika	Medicine	Faculty.Professor.Research Assistant	Ph.D.	Calcutta University
Sen, Nilkantha	Neurological Surgery	Faculty.Professor.Visiting Associate	Ph.D.	Indian Institute of Chemical Biology
Sen, Tanusree	Neurological Surgery	Faculty.Professor.Research Assistant	Ph.D.	University of Calcutta
Senathirajah, Yalini	Biomedical Informatics	Faculty.Professor.Visiting Associate	Ph.D.	Columbia University
Seney, Marianne Louise	Psychiatry	Faculty.Professor.Assistant	Ph.D.	University of Massachusetts
Sensenig, Elizabeth Miriam	Pediatrics	Faculty.Professor.Assistant	M.D.	Pennsylvania State University
Sette, Paola	Pathology	Faculty.Instructor.Research	Ph.D.	University of Padova
Sevilla, Wednesday Marie A.	Pediatrics	Faculty.Professor.Assistant	M.D.	University of the Philippines
Seymour, Christopher W.	Critical Care Medicine	Faculty.Professor.Associate	M.D.	University of Pennsylvania
Seynaeve, Brittani Kellin Ninness	Pediatrics	Faculty.Professor.Assistant	M.D.	West Virginia University School of Medicine
Shah, Amisha, Jignesh	Radiology	Faculty.Professor.Assistant	M.B.B.S.	B.J. Medical College
Shah, Faraaz Ali	Medicine	Faculty.Professor.Assistant	M.D.	Icahn School of Medicine
Shah, Nirav, Arvind	Medicine	Faculty.Professor.Associate	M.D.	State University of New York
Shah, Sapana, J	Pediatrics	Faculty.Professor.Assistant	M.D.	Thomas Jefferson University

Shah, Syed Mahmood	Ophthalmology	Faculty.Professor.Visiting Associate	M.D.	The Aga Khan University Medical College
Shaikh, Nader	Pediatrics	Faculty.Professor.Associate	M.D.	Temple University Medical School
Shaikh, Obaid, Shakil	Medicine	Faculty.Professor.Professor	M.B.B.S.	Dow Medical College
Shair, Kathy Ho Yen	Microbiology and Molecular Genetics	Faculty.Professor.Assistant	Ph.D.	University of Cambridge
Shalaby, Alaaeldin, Abdelgalil	Medicine	Faculty.Professor.Associate	M.B.B.Ch.	Ain Shams University
Shalom-Barak, Tali	OB-Gyn & Reproductive Science	Faculty.Professor.Research Assistant	D.V.M.	Koret School of Veterinary Medicine
Shanks, Robert, Michael Queen	Ophthalmology	Faculty.Professor.Associate	Ph.D.	Tufts University
Shapiro, Richard, A	Surgery	Faculty.Instructor.Research	B.S.	University of Pittsburgh
Shapiro, Steven, David	Medicine	Faculty.Professor.Distinguished	M.D.	University of Chicago
Sharma, Anupama	Pathology	Faculty.Professor.Associate	M.B.B.S.	Maulana Azad Medical College
Shellmer, Diana, Alexandra	Surgery	Faculty.Professor.Associate	Ph.D.	George Washington University
Shelton, Levi	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Oklahoma
Shen, Hongmei	Surgery	Faculty.Professor.Research Associate	Ph.D.	Second Military Medical University
Shenai, Neeta	Psychiatry	Faculty.Professor.Assistant	M.D.	Saint Louis University
Shende, Manisha, R	Cardiothoracic Surgery	Faculty.Professor.Assistant	M.B.B.S.	Lokmanya Tilak Municipal Medical College
Sheng, Shaohu	Medicine	Faculty.Professor.Research Associate	M.D.	Binzhou Medical College
Sheng, Yi	OB-Gyn & Reproductive Science	Faculty.Professor.Research Assistant	Ph.D.	Shanghai Second Medical University
Shestak, Kenneth, C	Plastic Surgery	Faculty.Professor.Professor	M.D.	Tufts University SOM
Sheth, Heena, Shobhan	Medicine	Faculty.Professor.Research Assistant	M.D.	Bombay University
Shi, Haibin	Microbiology and Molecular Genetics	Faculty.Professor.Research Assistant	Ph.D.	Nankai University
Shi, Shujie	Medicine	Faculty.Professor.Assistant	Ph.D.	University of Rochester
Shi, Xiao, Hua	OB-Gyn & Reproductive Science	Faculty.Instructor.Research	M.D.	Suchow University
Shi, Yejie	Neurology	Faculty.Professor.Research Assistant	M.D.	Peking University
Shi, Yi	Cell Biology	Faculty.Professor.Assistant	Ph.D.	Baylor College of Medicine
Shields, Ryan, K	Medicine	Faculty.Professor.Associate	Pharm.D.	Ferris State University

Shin, Donghun	Developmental Biology	Faculty.Professor.Associate	Ph.D.	California Institute of Technology
Shinde, Dilip, Digambar	Radiology	Faculty.Professor.Assistant	M.B.B.S.	Seth G.S. Medical College
Shiva, Sruti, Sajjan	Pharmacology and Chemical Biology	Faculty.Professor.Associate	Ph.D.	University of Alabama
Shlomchik, Mark Jay	Immunology	Faculty.Professor.Professor	M.D.	University of Pennsylvania
Shlomchik, Warren David	Medicine	Faculty.Professor.Professor	M.D.	University of Pennsylvania
Sholosh, Biatta	Radiology	Faculty.Professor.Assistant	M.D.	SUNY
Shope, Timothy R.	Pediatrics	Faculty.Professor.Professor	M.D.	Michigan State University
Shrestha, Ruchi	Radiology	Faculty.Professor.Assistant	M.B.B.S.	CCS University
Shrivastava, Indira, Harigovind	Computational and Systems Biology	Faculty.Professor.Research Assistant	Ph.D.	University of Pune
Shu, Sherry, Teh Yen	Microbiology and Molecular Genetics	Faculty.Professor.Research Assistant	D.V.M.	National Taiwan University
Shuda, Masahiro	Microbiology and Molecular Genetics	Faculty.Professor.Assistant	Ph.D.	Tokyo Medical & Dental School
Shurin, Galina, V	Pathology	Faculty.Professor.Research Assistant	Ph.D.	Moscow Research Institute
Shurin, Michael, R	Pathology	Faculty.Professor.Professor	M.D.	Moscow State Medical Institute
Shuster, Justin	Psychiatry	Faculty.Professor.Assistant	M.D.	St. George's University School of Medicine
Shutter, Lori Anne	Critical Care Medicine	Faculty.Professor.Professor	M.D.	Emory University
Siebold, Leah, Michelle	Pediatrics	Faculty.Professor.Assistant	M.D.	SUNY
Siedsma, Matthew Paul	Critical Care Medicine	Faculty.Professor.Assistant	M.D.	University of Illinois
Siegle, Greg, Jeremy	Psychiatry	Faculty.Professor.Associate	Ph.D.	San Diego State University
Sigal, Ian Alejandro	Ophthalmology	Faculty.Professor.Assistant	Ph.D.	University of Toronto
Silva, Laurie Anne	Pediatrics	Faculty.Professor.Research Assistant	Ph.D.	Harvard University
Silveira, Fernanda, Pinho	Medicine	Faculty.Professor.Associate	M.D.	Federal University of Rio de Janeiro
Silverstein, Jonathan	Biomedical Informatics	Faculty.Professor.Visiting	M.D.	Washington University
Simerly, Calvin, Randall	OB-Gyn & Reproductive Science	Faculty.Professor.Research Associate	Ph.D.	University of Wisconsin, Madison
Simhan, Hyagriv, Nara	OB-Gyn & Reproductive Science	Faculty.Professor.Professor	M.D.	Boston University
Siminerio, Linda, M	Medicine	Faculty.Professor.Professor	Ph.D.	Pennsylvania State Univ
Simmons, Richard, L	Surgery	Faculty.Professor.Distinguished Service	M.D.	Boston University SOM

Simmons, William	Anesthesiology	Faculty.Professor.Associate	M.D.	Mayo Medical School
Simon, Dennis W.	Critical Care Medicine	Faculty.Professor.Assistant	M.D.	SUNY
Simon, Marc, Alan	Medicine	Faculty.Professor.Associate	M.D.	University of Maryland
Simons, Jeffrey, Philip	Otolaryngology	Faculty.Professor.Professor	M.D.	Washington University
Sindhi, Rakesh, Kumar	Surgery	Faculty.Professor.Professor	M.D.	Armed Forces Medical College
Singh, Jagjit	Pathology	Faculty.Professor.Assistant	M.B.B.S.	Guru Gobind Singh Medical College
Singh, Michael J.	Surgery	Faculty.Professor.Associate	M.D.	SUNY
Singh, Nina	Medicine	Faculty.Professor.Professor	M.D.	Government Medical College
Singh, Shivendra, V	Pharmacology and Chemical Biology	Faculty.Professor.Professor	Ph.D.	Banaras Hindu University
Singhi, Aatur Dilip	Pathology	Faculty.Professor.Assistant	M.D.	Case Western Reserve University
Sinha, Amit	Physical Medicine & Rehabilitation	Faculty.Professor.Assistant	M.D.	Virginia Commonwealth University
Sinha, Debasish	Ophthalmology	Faculty.Professor.Visiting	Ph.D.	Jadavpur University
Sinha, Ghanshyam P	Anesthesiology	Faculty.Professor.Research Assistant	Ph.D.	University of Puerto Rico
Sisk, Thomas, M	Orthopaedic Surgery	Faculty.Professor.Assistant	M.D.	Thomas Jefferson University
Siska, Peter, Allen	Orthopaedic Surgery	Faculty.Professor.Associate	M.D.	University of Cincinnati
Sitwat, Bilal	Pediatrics	Faculty.Professor.Assistant	M.D.	Dow Medical College
Sivak, Erica, Lauren	Anesthesiology	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Six, Cheryl K.	Surgery	Faculty.Professor.Assistant	D.O.	Lake Erie College of Osteo Med
Slivka, Adam	Medicine	Faculty.Professor.Professor	M.D.	Mount Sinai School of Medicine
Sluis-Cremer, Nicolas, Paul	Medicine	Faculty.Professor.Professor	Ph.D.	University of Witwatersrand
Smagula, Stephen Fearn	Psychiatry	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Smith, Anson, J	Medicine	Faculty.Professor.Associate	M.D.	University of California
Smith, Kenneth, J	Medicine	Faculty.Professor.Professor	M.D.	Jefferson Medical College
Smith, Libby, Jo	Otolaryngology	Faculty.Professor.Associate	O.D.	University of Health Sciences
Smith, Matthew, Adam	Ophthalmology	Faculty.Professor.Associate	Ph.D.	New York University
Smith, Roy, E	Medicine	Faculty.Professor.Professor	M.D.	Ohio State University
Smithgall, Thomas, E	Microbiology and Molecular Genetics	Faculty.Professor.Department Chair	Ph.D.	University of Pennsylvania School of Med
Snitz, Beth, E	Neurology	Faculty.Professor.Associate	Ph.D.	University of Minnesota

Snyderman, Carl, H	Otolaryngology	Faculty.Professor.Professor	M.D.	University of Chicago Pritzker SOM
So, Juhoon	Developmental Biology	Faculty.Instructor.Research	Ph.D.	Chungnam National University
Sobehart, Robert J.	Emergency Medicine	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Soehner, Adriane M.	Psychiatry	Faculty.Professor.Assistant	Ph.D.	University of California
Sogawa, Yoshimi	Pediatrics	Faculty.Professor.Associate	M.D.	Niigata University
Solai, Lalithkumar	Psychiatry	Faculty.Professor.Associate	M.B.B.S.	Kilpauk Medical College
Solari, Mario, Giulio	Plastic Surgery	Faculty.Professor.Assistant	M.D.	Tufts University
Soliman, Doreen, Emile	Anesthesiology	Faculty.Professor.Associate	M.B.B.Ch.	Cairo University School of Medicine
Soltys, Kyle, A	Surgery	Faculty.Professor.Associate	M.D.	Boston University
Soman, Prem	Medicine	Faculty.Professor.Associate	M.B.B.S.	Karnatak University
Sonel, Ali, Fuat	Medicine	Faculty.Professor.Associate	M.D.	Hacettepe University
Song, Youeun	Psychiatry	Faculty.Professor.Assistant	M.D.	Yonsei University College of Medicine
Sood, Puneet	Medicine	Faculty.Professor.Associate	M.B.B.S.	All India Institute
Soose, Ryan, J	Otolaryngology	Faculty.Professor.Associate	M.D.	University of Pittsburg
Sorkin, Alexander, Davidovich	Cell Biology	Faculty.Professor.Professor	Ph.D.	Academy of Sciences
Soto Gutierrez, Alejandro	Pathology	Faculty.Professor.Associate	M.D.	University of Guadalajara
Soundara Rajan, Deepa	Pediatrics	Faculty.Professor.Assistant	M.B.B.S.	Bangalore Medical College
South-Paul, Jeannette	Family Medicine	Faculty.Professor.Professor	M.D.	University of Pittsburgh School of Medicine
Sowa, Gwendolyn, A.	Physical Medicine & Rehabilitation	Faculty.Professor.Professor	M.D.	University of Wisconsin-Madison
Spagnoletti, Carla, L	Medicine	Faculty.Professor.Professor	M.D.	University of Pittsburgh
Sparks, Garrett M.	Psychiatry	Faculty.Professor.Assistant	M.D.	University of Michigan
Speer, Paul, D	OB-Gyn & Reproductive Science	Faculty.Professor.Associate	M.D.	Louisiana State University
Sperry, Jason, L	Surgery	Faculty.Professor.Professor	M.D.	Case Western Reserve University
Spiess, Alexander, Marcus	Plastic Surgery	Faculty.Professor.Assistant	M.D.	University of Illinois
Spiker, Duane, G	Psychiatry	Faculty.Professor.Assistant	M.D.	Ohio State University
Spiro, Ari Joseph	Radiology	Faculty.Professor.Assistant	M.D.	Albert Einstein Coll Med
Spokas, Laima	Psychiatry	Faculty.Professor.Assistant	M.D.	Vilnius University

Squires, James Eugene	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Texas
Squires, Janet, Endress	Pediatrics	Faculty.Professor.Professor	M.D.	Indiana University
Squires, Judy Hereford	Radiology	Faculty.Professor.Assistant	M.D.	University of Texas
Squires, Robert, Hilton, Jr	Pediatrics	Faculty.Professor.Professor	M.D.	University of Texas
Srinath, Arvind, Iyengar	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Srivastava, Abhishek Kumar	Surgery	Faculty.Professor.Research Assistant	Ph.D.	University of Louisville
St Croix, Claudette, Marie	Cell Biology	Faculty.Professor.Associate	Ph.D.	University of Western Ontario
St. Hilaire , Cynthia L.	Medicine	Faculty.Professor.Assistant	Ph.D.	Boston University
St. Leger, Anthony J	Ophthalmology	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh School of Medicine
Stabile, Laura, Ann	Pharmacology and Chemical Biology	Faculty.Professor.Research Associate	Ph.D.	West Virginia University
Stahl, Sarah Terese	Psychiatry	Faculty.Professor.Assistant	Ph.D.	West Virginia University
Stakic, Josif	Neurology	Faculty.Professor.Assistant	M.D.	University of Cincinnati
Standaert, Christopher John	Physical Medicine & Rehabilitation	Faculty.Professor.Visiting Associate	M.D.	Harvard Med Sch
Stapleton, Amanda, Leigh	Otolaryngology	Faculty.Professor.Assistant	M.D.	State University of New York at Buffalo
Starr, Matthew T.	Neurology	Faculty.Professor.Assistant	M.D.	University of New Mexico
Stauffer, William Richard	Neurobiology	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Steel, Jennifer, L	Surgery	Faculty.Professor.Associate	Ph.D.	Washington State University
Stefanovic-Racic, Maja	Medicine	Faculty.Professor.Assistant	M.D.	University of Belgrade
Stefko, Susan, Tonya	Ophthalmology	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Stehouwer, Jeffrey S	Radiology	Faculty.Professor.Assistant	Ph.D.	University of Nevada
Steiman, Jennifer Grusby	Surgery	Faculty.Professor.Assistant	M.D.	Southern Illinois University School of Medicine
Steinman, Richard, A	Medicine	Faculty.Professor.Associate	M.D.	University of Pennsylvania
Stepp, Stephanie, Diane	Psychiatry	Faculty.Professor.Associate	Ph.D.	University of Missouri
Stern, Andrew Michael	Computational and Systems Biology	Faculty.Professor.Research Associate	Ph.D.	University of California
Stetler, Ruth, A	Neurology	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Stocker, Sean David	Medicine	Faculty.Professor.Professor	Ph.D.	University of Pittsburgh

Stolz, Donna, B	Cell Biology	Faculty.Professor.Associate	Ph.D.	University of Massachusetts
Stone, David, A	Physical Medicine & Rehabilitation	Faculty.Professor.Assistant	M.D.	UMDNJ
Storkus, Walter, J	Dermatology	Faculty.Professor.Professor	Ph.D.	Duke University
Stowell, Keith, R	Psychiatry	Faculty.Professor.Assistant	M.D.	University of Maryland
Straub, Adam, C	Pharmacology and Chemical Biology	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Strick, Peter, Leonard	Neurobiology	Faculty.Professor.Distinguished	Ph.D.	University of Pennsylvania
Strollo, Diane, Clare	Cardiothoracic Surgery	Faculty.Professor.Visiting Associate	M.D.	Uniformed Services Univ of Health Sci
Strollo, Patrick, J	Medicine	Faculty.Professor.Professor	M.D.	Uniformed Services Univ of Health Sci
Styn, Mindi, Annette	Surgery	Faculty.Professor.Research Associate	Ph.D.	University of Pittsburgh
Subramaniam, Kathirvel	Anesthesiology	Faculty.Professor.Associate	M.D.	All India Institute of Medical Science
Subramanian, Subramanian	Radiology	Faculty.Professor.Assistant	M.B.B.S.	Stanley Medical College
Subramanya, Arohan, R	Medicine	Faculty.Professor.Assistant	M.D.	Case Western Reserve University
Suffoletto, Brian, Paul	Emergency Medicine	Faculty.Professor.Assistant	M.D.	Loyola-Stritch
Sufrinko, Alicia Morgan	Orthopaedic Surgery	Faculty.Professor.Assistant	Ph.D.	East Carolina University
Sukumvanich, Heather Lyn	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	SUNY
Sukumvanich, Paniti	OB-Gyn & Reproductive Science	Faculty.Professor.Associate	M.D.	SUNY
Sullivan, Daniel, Richard	Anesthesiology	Faculty.Professor.Associate	M.D.	Jefferson Medical College
Sullivan, Erin, Ann	Anesthesiology	Faculty.Professor.Associate	M.D.	Louisiana State University School of Medicine
Sultan, Ibrahim	Cardiothoracic Surgery	Faculty.Professor.Assistant	M.D.	Cornell University
Sumkin, Jules, H	Radiology	Faculty.Professor.Department Chair	D.O.	Ohio University Osteopathic Hospital
Sumpter, Tina, L	Dermatology	Faculty.Professor.Research Assistant	Ph.D.	Indiana University
Sumrok, Vanessa Fazio	Orthopaedic Surgery	Faculty.Professor.Assistant	Ph.D.	Suffolk University
Sun, Bin	Medicine	Faculty.Professor.Research Assistant	Ph.D.	Tongji Medical University
Sun, Dandan	Neurology	Faculty.Professor.Professor	M.D.	Harbin Medical University
Sun, Fan	Microbiology and Molecular Genetics	Faculty.Instructor.Research	Ph.D.	Chinese Academy of Science

Sun, Mingui	Neurological Surgery	Faculty.Professor.Professor	Ph.D.	University of Pittsburgh
Sun, Quanhong	Medicine	Faculty.Instructor.Research	Ph.D.	Chinese Academy of Science
Sun, Wei	Pathology	Faculty.Instructor.Research	Ph.D.	Chinese Academy of Sciences
Sundd, Prithu	Medicine	Faculty.Professor.Assistant	Ph.D.	Ohio University
Sunseri, Whitney	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Illinois COM
Suresh, Srinivasan	Pediatrics	Faculty.Professor.Visiting	M.B.B.S.	University of Madras
Surve, Sachin Vitthal	Cell Biology	Faculty.Instructor.Research	Ph.D.	National Centre for Cell Science
Suski, Valerie, Renee	Neurology	Faculty.Professor.Associate	D.O.	Lake Erie College of Osteopathic Medicin
Suyama, Joe	Emergency Medicine	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Svobodova, Vera	Cardiothoracic Surgery	Faculty.Professor.Associate	Ph.D.	University of Pittsburgh
Swamynathan, Shivalingappa, Kottur	Ophthalmology	Faculty.Professor.Associate	Ph.D.	Center for Cellular and Molecular Biology
Swarts, John, Douglas	Otolaryngology	Faculty.Professor.Associate	Ph.D.	University of Pittsburgh
Swartz, Holly, Ann	Psychiatry	Faculty.Professor.Professor	M.D.	Albert Einstein College of Medicine
Sweet, Robert, A	Psychiatry	Faculty.Professor.Professor	M.D.	University of Maryland SOM
Swerdlow, Steven, Howard	Pathology	Faculty.Professor.Professor	M.D.	Harvard Medical School
Swiatecka-Urban, Agnieszka	Pediatrics	Faculty.Professor.Associate	M.D.	Academia Medica Gedanensis
Switzer, Galen, E	Medicine	Faculty.Professor.Professor	Ph.D.	University of Colorado
Sylvester, Christin, L	Ophthalmology	Faculty.Professor.Assistant	D.O.	Lake Erie College of Osteopathic Med
Szabolcs, Paul	Pediatrics	Faculty.Professor.Professor	M.D.	Semmelweis University
Szanto, Katalin	Psychiatry	Faculty.Professor.Professor	M.D.	University of Medical Science
Szigethy, Eva, M	Psychiatry	Faculty.Professor.Professor	M.D.	University of Rochester
Szymusiak, John A	Medicine	Faculty.Professor.Assistant	M.D.	University of Cincinnati
Tabas, Gary, Howard	Medicine	Faculty.Professor.Professor	M.D.	University of Pennsylvania
Tadic, Stasa, Dusan	Medicine	Faculty.Professor.Associate	M.D.	University of Nis
Tadros, Sameh, Sami Ishac	Radiology	Faculty.Professor.Associate	M.B.Ch.B.	Ain Shams University
Tai, Changfeng	Urology	Faculty.Professor.Associate	Ph.D.	Xi'an Jiaotong University
Talabi, Mehret Selas Birru	Medicine	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Tamama, Kenichi	Pathology	Faculty.Professor.Associate	M.D.	Gunma University

Tan, Henkie, P	Surgery	Faculty.Professor.Associate	M.D.	Loma Linda University
Tan, Roderick, Jason Dy	Medicine	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Tandon, Manuj	Surgery	Faculty.Instructor.Research	Ph.D.	Kolkata & Jadavpur University
Tang, Dao Lin	Surgery	Faculty.Professor.Associate	M.D.	Norman Bethune University
Tang, Pei	Anesthesiology	Faculty.Professor.Professor	Ph.D.	SUNY
Tao, Cheng	Radiology	Faculty.Instructor.Research	M.D.	Huazhong University
Tao, Junyan	Pathology	Faculty.Professor.Research Assistant	Ph.D.	Hauzhong University of Science & Technology
Tarchichi, Tony R.	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Medicine and Dentistry
Tarin, Tatum Varut	Urology	Faculty.Professor.Visiting Assistant	M.D.	University of Pittsburgh
Tarkin, Ivan, Seth	Orthopaedic Surgery	Faculty.Professor.Professor	M.D.	SUNY
Tarleton, Jessica Leigh	OB-Gyn & Reproductive Science	Faculty.Instructor.Visiting	M.D.	Emory University
Tavakoli, Sina	Radiology	Faculty.Professor.Assistant	M.D.	Tehran University of Medical Sciences
Tavarez, Melissa M.	Pediatrics	Faculty.Professor.Assistant	M.D.	Columbia University
Taylor, Aisha	Urology	Faculty.Professor.Visiting Assistant	M.D.	Harvard Medical School
Taylor, Bradley K	Anesthesiology	Faculty.Professor.Visiting	Ph.D.	University of California
Taylor, D. Lansing	Computational and Systems Biology	Faculty.Professor.Distinguished	Ph.D.	SUNY
Taylor, Donald, P	Biomedical Informatics	Faculty.Professor.Visiting Associate	Ph.D.	University of Pittsburgh
Taylor, Gwen	Pediatrics	Faculty.Instructor.Research	Ph.D.	Purdue University
Taylor, Jennifer, Lynn	Dermatology	Faculty.Instructor.Research	Ph.D.	University of Pittsburgh
Taylor, Jennifer, Shen	Physical Medicine & Rehabilitation	Faculty.Professor.Assistant	M.D.	University of Illinois
Taylor, Sarah Elizabeth	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	West Virginia University
Teichert, Tobias	Psychiatry	Faculty.Professor.Assistant	Ph.D.	Philipps University
Teixeira, Miriam Scarpin	Otolaryngology	Faculty.Professor.Research Assistant	M.D.	Pontificia Universidade Catolica de Camp
Tejero Bravo, Jesus	Medicine	Faculty.Professor.Assistant	Ph.D.	University of Zaragoza
Telesco, Richard, R	Pediatrics	Faculty.Professor.Assistant	M.D.	SUNY

Tersak, Jean, M	Pediatrics	Faculty.Professor.Associate	M.D.	University of Pittsburgh School of Medicine
Tevar, Amit D.	Surgery	Faculty.Professor.Associate	M.D.	University of Missouri
Tew, James, Dinsmore, Jr	Psychiatry	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Thakkar, Kavita	Pediatrics	Faculty.Professor.Assistant	M.B.B.S.	Seth GS Medical College
Thakrar, Darshit, Jayesh	Radiology	Faculty.Professor.Assistant	M.B.B.S.	B.J. Medical College
Thangasamy, Senthur Jeyamurugan	Radiology	Faculty.Professor.Assistant	M.D.	Unviersity College of Medicine
Thathiah, Amantha	Neurobiology	Faculty.Professor.Assistant	Ph.D.	University of Texas
Thibodeau, Patrick, Harlan	Microbiology and Molecular Genetics	Faculty.Professor.Assistant	Ph.D.	University of Texas
Thirumala, Parthasarathy, Deenadayalan	Neurological Surgery	Faculty.Professor.Associate	M.B.B.S.	Stanley Medical College
Thomas, Gary	Microbiology and Molecular Genetics	Faculty.Professor.Professor	Ph.D.	University of Basel
Thomas, Holly, Nicole	Medicine	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Thompson, Ann, E	Critical Care Medicine	Faculty.Professor.Professor	M.D.	Tufts University SOM
Thompson, Mark, E	Medicine	Faculty.Professor.Professor	M.D.	University of Pittsburgh SOM
Thomson, Angus, W	Surgery	Faculty.Professor.Distinguished	Ph.D.	University of Aberdeen
Thorne, Stephen, Howard	Cell Biology	Faculty.Professor.Assistant	Ph.D.	Imperial College
Thull, Darcy, L	Medicine	Faculty.Instructor.Instructor	M.S.	University of Pittsburgh
Thurlow, Lance R	Microbiology and Molecular Genetics	Faculty.Professor.Assistant	Ph.D.	Kansas State University
Thurston, Rebecca, C	Psychiatry	Faculty.Professor.Professor	Ph.D.	Duke University
Tian, Jianmin	Pathology	Faculty.Professor.Research Assistant	Ph.D.	Geneva University
Tillman, Bryan, W	Surgery	Faculty.Professor.Assistant	M.D.	University of Alabama
Tillman, Tommy, Stevens	Anesthesiology	Faculty.Professor.Research Assistant	Ph.D.	Duke University
Tilstra, Jeremy S	Medicine	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Tilstra, Sarah Anne	Medicine	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Tobey, Allison, Beatrice-Jacquel	Otolaryngology	Faculty.Professor.Assistant	M.D.	University of Pittsburgh SOM
Tobias, Adam, Z	Emergency Medicine	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Tofovic, Stevan, P	Medicine	Faculty.Professor.Associate	M.D.	University of Skopje

Toma, Catalin	Medicine	Faculty.Professor.Assistant	M.D.	University of Medicine & Pharmacy
Toptan, Tuna	Pathology	Faculty.Instructor.Research	M.D.	Gazi University
Torok, Kathryn, Seraphin	Pediatrics	Faculty.Professor.Assistant	M.D.	Pennsylvania State University
Torregrossa, Mary M.	Psychiatry	Faculty.Professor.Associate	Ph.D.	University of Michigan
Tosun, Akif Burak	Computational and Systems Biology	Faculty.Instructor.Research	Ph.D.	Bilkent University
Towers, Adele, L	Medicine	Faculty.Professor.Associate	M.D.	University of Connecticut SOM
Tran, Thu Phuong	Pathology	Faculty.Professor.Assistant	M.D.	University of California
Traub, Linton, Mark	Cell Biology	Faculty.Professor.Professor	Ph.D.	Weizmann Institute of Science
Travis, Michael, John	Psychiatry	Faculty.Professor.Associate	M.B.B.S.	London University
Trejo Bittar, Humberto Enrique	Pathology	Faculty.Professor.Assistant	M.D.	Universidad Central de Venezuela
Trejejo-Nunez, Giralaine J.	Medicine	Faculty.Professor.Assistant	M.D.	Universidad Nacional Mayor de San Marcos
Triulzi, Darrell, J	Pathology	Faculty.Professor.Professor	M.D.	Albany Medical College
Trobaugh, Derek W.	Immunology	Faculty.Professor.Research Assistant	Ph.D.	University of Massachusetts
Trucco, Sara Marie	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Truschel, Steven, Thomas	Medicine	Faculty.Professor.Research Assistant	Ph.D.	University of Pittsburgh
Tsang, Michael Wai Kok	Developmental Biology	Faculty.Professor.Associate	Ph.D.	University College Dublin
Tsung, Allan	Surgery	Faculty.Professor.Professor	M.D.	SUNY
Tuan, Rocky, Sung Chi	Orthopaedic Surgery	Faculty.Professor.Distinguished	Ph.D.	Rockefeller University
Tublin, Mitchell, Evan	Radiology	Faculty.Professor.Professor	M.D.	SUNY
Tudorascu, Dana, Larisa	Medicine	Faculty.Professor.Associate	Ph.D.	University of Pittsburgh
Tumuluru, Rameshwari, V	Psychiatry	Faculty.Professor.Assistant	M.B.B.S.	Gandhi Medical College
Turner, II, Robert M.	Urology	Faculty.Professor.Assistant	M.D.	Loyola University
Turner, Neill, Jordon	Surgery	Faculty.Professor.Research Assistant	Ph.D.	University of Manchester
Turner, Robert, Sterling	Neurobiology	Faculty.Professor.Professor	Ph.D.	University of Washington
Turnquist, Heth	Surgery	Faculty.Professor.Associate	Ph.D.	University of Nebraska
Turturro, Michael, Anthony	Emergency Medicine	Faculty.Professor.Associate	M.D.	SUNY
Twitchell, Maria, Frances	Physical Medicine & Rehabilitation	Faculty.Professor.Assistant	M.D.	Michigan State University

Tyagi, Pradeep	Urology	Faculty.Professor.Visiting Research Associate	Ph.D.	University of Pittsburgh
Tyagi, Shachi	Medicine	Faculty.Professor.Assistant	M.B.B.S.	Himalayan Institute Medical Sciences
Tyler-Kabara, Elizabeth, Christi	Neurological Surgery	Faculty.Professor.Associate	M.D.	Vanderbilt University
Tzeng, Edith	Surgery	Faculty.Professor.Professor	M.D.	University of Chicago College of Medicine
Tzounopoulos, Athanassios	Otolaryngology	Faculty.Professor.Professor	Ph.D.	Oregon Health & Science University
Ufomata, Eloho Oyindasola	Medicine	Faculty.Professor.Assistant	M.D.	University of Kentucky
Unadkat, Jignesh, V	Plastic Surgery	Faculty.Professor.Assistant	M.B.B.S.	Grant Medical College
Updike, Glenn, Michael	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Urban, Alexandra	Neurology	Faculty.Professor.Associate	M.D.	Carol Davila University of Medicine and Pharmacy
Urban, Amy Michele	Pediatrics	Faculty.Professor.Assistant	D.O.	New York College of Osteo Medicine
Urish, Jr., Kenneth L.	Orthopaedic Surgery	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Vaisleib, Inna, Ilana	Pediatrics	Faculty.Professor.Associate	M.D.	Kharkov Medical Institute
Van Cott, Anne, C	Neurology	Faculty.Professor.Associate	M.D.	New York Medical College
Van Der Wel, Patrick	Structural Biology	Faculty.Professor.Associate	Ph.D.	University of Arkansas
Van Deusen, Reed, William	Medicine	Faculty.Professor.Assistant	M.D.	University of Cincinnati
Van Eck, Carola, Francisca	Orthopaedic Surgery	Faculty.Professor.Assistant	M.D.	University of Amsterdam
Van Houten, Bennett	Pharmacology and Chemical Biology	Faculty.Professor.Professor	Ph.D.	University of Tennessee
Van Laar, Amber, Dawn	Neurology	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Van Laar, Victor, S	Neurology	Faculty.Instructor.Research	Ph.D.	University of Pittsburgh
Van Londen, Gijsberta, J	Medicine	Faculty.Professor.Associate	M.D.	University of Utrecht
Vanyukov, Polina Mikhaylovna	Psychiatry	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Varon, Daniel	Psychiatry	Faculty.Professor.Assistant	M.D.	Pontifican Universidad Javeriana
Vasile Pandrea, Ivona	Pathology	Faculty.Professor.Professor	M.D.	University of Iasi
Vats, Kalyani, Rai	Pediatrics	Faculty.Professor.Assistant	M.B.B.S.	Veer Surendra Sai Medical College
Vaughan, Kevin, Gregory	Radiology	Faculty.Professor.Assistant	M.D.	University of Pittsburgh

Vazquez, Alberto, Luis	Radiology	Faculty.Professor.Research Associate	Ph.D.	University of Michigan
Veeragandham-Anne, Gautami	Psychiatry	Faculty.Professor.Assistant	M.B.B.S.	Siddhartha Medical College
Velayutham, Murugesan	Surgery	Faculty.Professor.Research Assistant	Ph.D.	Indian Institute of Technology Madras
Veldkamp, Peter, J	Medicine	Faculty.Professor.Associate	M.D.	University of Alabama at Birmingham
Vellody, Kishore	Pediatrics	Faculty.Professor.Associate	M.D.	University of Illinois
Venditti, Elizabeth	Psychiatry	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Venkat, Veena, Lalita	Pediatrics	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Venkataraman, Shekhar, T	Critical Care Medicine	Faculty.Professor.Professor	M.D.	Jawaharlal Inst of Postgrad Med Ed & Res
Vento, Rebecca Amber	Medicine	Faculty.Professor.Assistant	M.D.	New York Medical College
Ventrelli, Stephen, M	Radiology	Faculty.Professor.Assistant	D.O.	New York College of Osteopathic Medicine
Vera, Chido Dorothy	Radiology	Faculty.Professor.Assistant	M.D.	St. George's University
Veraldi, Kristen, L	Medicine	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Vernetti, Lawrence	Computational and Systems Biology	Faculty.Professor.Research Associate	Ph.D.	University of Arizona
Versace, Amelia Lucia	Psychiatry	Faculty.Professor.Research Assistant	M.D.	Universtyt of Verona
Viegas, Melita Lynnette	Cardiothoracic Surgery	Faculty.Professor.Assistant	M.D.	Indiana University
Vignali , Dario Angelo Alberto	Immunology	Faculty.Professor.Professor	Ph.D.	University of London
Villardaga, Jean, Pierre	Pharmacology and Chemical Biology	Faculty.Professor.Professor	Ph.D.	Free University of Brussels
Villa Sanchez, Manuel A	Cardiothoracic Surgery	Faculty.Professor.Assistant	M.D.	Universidad Nacional de Colombia
Villanueva, Flordeliza, S	Medicine	Faculty.Professor.Professor	M.D.	Boston University SOM
Villaruz, Liza, C	Medicine	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Virji, Mohamed, A	Pathology	Faculty.Professor.Professor	M.B.Ch.B.	University of East Africa
Visoiu, Mihaela	Anesthesiology	Faculty.Professor.Assistant	M.D.	Carol Davila University
Viswanathan, Pushpa, A	Pediatrics	Faculty.Professor.Assistant	M.B.B.S.	University of Kerala
Visweswaran, Shyam	Biomedical Informatics	Faculty.Professor.Associate	M.B.B.S.	Jawaharlal Inst of PGME & Res
Vitale, Melissa, Ann	Pediatrics	Faculty.Professor.Assistant	M.D.	Johns Hopkins University

Vitturi Iglesias, Dario A.	Pharmacology and Chemical Biology	Faculty.Professor.Research Assistant	Ph.D.	University of Alabama
Vlad, Anda, Mioara	OB-Gyn & Reproductive Science	Faculty.Professor.Associate	Ph.D.	University of Pittsburgh
Vo, Nam, V	Orthopaedic Surgery	Faculty.Professor.Associate	Ph.D.	University of California
Vockley, Gerard	Pediatrics	Faculty.Professor.Professor	M.D.	University of Pennsylvania
Vodovotz, Yoram	Surgery	Faculty.Professor.Professor	Ph.D.	Cornell University Medical College
Vogt, Andreas	Computational and Systems Biology	Faculty.Professor.Associate	Ph.D.	University of Hamburg
Vogt, Keith	Anesthesiology	Faculty.Professor.Assistant	M.D.	The Ohio State University
Voigt, Andrew, H	Medicine	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Volk, David, William	Psychiatry	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Volkar, Judith K.	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	Drexel University
Vries, John, K	Computational and Systems Biology	Faculty.Professor.Associate	M.D.	University of California SOM
Vujanovic, Lazar, Nikola	Medicine	Faculty.Instructor.Research	Ph.D.	University of Pittsburgh
Vyas, Avani Romesh	Otolaryngology	Faculty.Instructor.Research	Ph.D.	Gujarat University
Vyas, Dharmesh R.	Orthopaedic Surgery	Faculty.Professor.Assistant	M.D.	University of Illinois
Wagner, Amy, Kathleen	Physical Medicine & Rehabilitation	Faculty.Professor.Professor	M.D.	Northwestern University Medical School
Wagner, Michael, M	Biomedical Informatics	Faculty.Professor.Professor	M.D.	New York University SOM
Wagner, William, R	Surgery	Faculty.Professor.Professor	Ph.D.	University of Texas
Waheed, Uzma	Radiology	Faculty.Professor.Assistant	M.D.	University of Toledo College of Medicine
Wakabayashi, Nobunao	Pharmacology and Chemical Biology	Faculty.Professor.Research Assistant	Ph.D.	Tohoku University
Walker, Aisha Lanette	Medicine	Faculty.Professor.Assistant	B.S.	Presbyterian College
Walker, William, Henry	OB-Gyn & Reproductive Science	Faculty.Professor.Associate	B.S.	University of North Carolina
Wallace, David J.	Critical Care Medicine	Faculty.Professor.Assistant	M.D.	SUNY Downstate
Wallace, Meredith Joanne Lotz	Psychiatry	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Waltner-Toews, Rebecca I	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.B.Ch.B.	University of Pittsburgh

Wang, Bing	Orthopaedic Surgery	Faculty.Professor.Associate	M.D.	Tong-Ji Medical University
Wang, Dawn Jennifer Geisler	Plastic Surgery	Faculty.Professor.Assistant	M.D.	University of Michigan
Wang, Eric Wesley	Otolaryngology	Faculty.Professor.Associate	M.D.	Baylor College of Medicine
Wang, Huicong	Orthopaedic Surgery	Faculty.Professor.Professor	Ph.D.	University of Cincinnati
Wang, Ling	Medicine	Faculty.Professor.Research Assistant	M.D.	Shanghai Medical School
Wang, Man-Tzu	Pharmacology and Chemical Biology	Faculty.Professor.Assistant	Ph.D.	Southern Illinois University
Wang, Norman, C	Medicine	Faculty.Professor.Assistant	M.D.	Northwestern University
Wang, Peng	Dermatology	Faculty.Instructor.Research	Ph.D.	Institute of Biophysics
Wang, Qiming, Jan	Pharmacology and Chemical Biology	Faculty.Professor.Associate	Ph.D.	Creighton University
Wang, Qingde	Surgery	Faculty.Professor.Research Assistant	M.D.	Henan Medical University
Wang, Xiaosong	Pathology	Faculty.Professor.Associate	M.B.B.S.	China Medical University
Wang, Xingan	Medicine	Faculty.Professor.Assistant	M.D.	Shanghai Jiaotong University
Wang, Yudong	Pediatrics	Faculty.Professor.Research Assistant	Ph.D.	Beijing Agricultural University
Wang, Yue	Surgery	Faculty.Instructor.Research	M.D.	China Medical University
Wang, Zhi, Qiang Kent	Pathology	Faculty.Instructor.Research	Ph.D.	Duquesne University
Wang, Zhou	Urology	Faculty.Professor.Professor	Ph.D.	University of Pittsburgh
Ward, W, Timothy	Orthopaedic Surgery	Faculty.Professor.Professor	M.D.	University of Pittsburgh SOM
Wasan, Ajay D.	Anesthesiology	Faculty.Professor.Professor	M.D.	University of Illinois
Watchko, Jon, F	Pediatrics	Faculty.Professor.Professor	M.D.	University of Pittsburgh SOM
Waters, Jonathan, H	Anesthesiology	Faculty.Professor.Professor	M.D.	George Washington University
Watkins, Courtney Elaine	Medicine	Faculty.Professor.Research Assistant	Ph.D.	Duquesne University
Watkins, Simon, C	Cell Biology	Faculty.Professor.Distinguished	Ph.D.	Newcastle University
Watson, Alan M	Cell Biology	Faculty.Professor.Research Assistant	Ph.D.	Penn State Univ
Watson, Andrew, Rose	Surgery	Faculty.Professor.Assistant	M.D.	Columbia University
Watson, Gregory, A	Surgery	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Watson, Katherine Irene	Pediatrics	Faculty.Professor.Assistant	D.O.	Edward Via Virginia College
Watters, Rebecca Jean	Orthopaedic Surgery	Faculty.Professor.Research Assistant	Ph.D.	Penn State University
Watt-Morse, Margaret, L	OB-Gyn & Reproductive Science	Faculty.Professor.Associate	M.D.	University of Illinois College of Medicine

Waxman, Evan, Lewis	Ophthalmology	Faculty.Professor.Associate	M.D.	Mount Sinai School of Medicine
Weathington, Nathan M	Medicine	Faculty.Professor.Assistant	M.D.	University of Alabama
Weberding, Nathaniel Thomas	Pediatrics	Faculty.Professor.Assistant	D.O.	Kansas Ciy University of Medicine and Bisciences
Webster, Marshall, W	Surgery	Faculty.Professor.Distinguished Service	M.D.	Johns Hopkins University SOM
Wechsler, Lawrence, R	Neurology	Faculty.Professor.Professor	M.D.	University of Pennsylvania Medical School
Wei, Xiangyun	Ophthalmology	Faculty.Professor.Associate	Ph.D.	SUNY at Buffalo
Weinberg, Jacqueline Gale	Pediatrics	Faculty.Professor.Assistant	M.D.	George Washington University
Weiner, Daniel, Jerome	Pediatrics	Faculty.Professor.Associate	M.D.	University of Michigan
Weiner, Debra, Kaye	Medicine	Faculty.Professor.Professor	M.D.	University of Missouri
Weisbord, Steven, D	Medicine	Faculty.Professor.Associate	M.D.	George Washington University
Weisel, Florian, J	Immunology	Faculty.Professor.Research Assistant	Ph.D.	University Erlangen-Nuremberg
Weiss, Kurt, Richard	Orthopaedic Surgery	Faculty.Professor.Associate	M.D.	Jefferson Medical College
Weiss, Leonard S	Emergency Medicine	Faculty.Professor.Assistant	M.D.	Indiana University SOM
Weisz, Ora, Anna	Medicine	Faculty.Professor.Professor	Ph.D.	Johns Hopkins Medical School
Wells, Alan, H	Pathology	Faculty.Professor.Professor	M.D.	Brown University
Wen, Xiaoyan	Critical Care Medicine	Faculty.Professor.Research Assistant	M.D.	China Medical College
Wendell, Stacy Lynn	Pharmacology and Chemical Biology	Faculty.Professor.Research Assistant	Ph.D.	University of Maryland BC
Wendell, Steven, K	Pharmacology and Chemical Biology	Faculty.Professor.Assistant	Ph.D.	University of Minnesota
West, Shawn Clark	Pediatrics	Faculty.Professor.Assistant	M.D.	Medical College of Georgia
Weyer, Allison G	Radiology	Faculty.Professor.Assistant	M.D.	University of Pennsylvania
Wheeler, Sarah Elizabeth	Pathology	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Whitcomb, David, C	Medicine	Faculty.Professor.Professor	M.D.	Ohio State University
White, Crystal D.	Psychiatry	Faculty.Professor.Assistant	M.D.	Baylor College
White, Douglas, B	Critical Care Medicine	Faculty.Professor.Professor	M.D.	University of California
Whitehurst, Steven, L	Anesthesiology	Faculty.Professor.Assistant	M.D.	University of Alabama SOM
Whiting, Bruce Raymond	Radiology	Faculty.Professor.Research Associate	Ph.D.	Carnegie Mellon University
Whitley, Matthew J.	Pharmacology and Chemical Biology	Faculty.Instructor.Research	Ph.D.	University of North Carolina at Chapel Hill

Whyte, Ellen, M	Psychiatry	Faculty.Professor.Assistant	M.D.	State University of NY
Wiesenfeld, Harold, C	OB-Gyn & Reproductive Science	Faculty.Professor.Professor	M.D.C.M.	McGill University
Wijkstrom, Martin Nicolas	Surgery	Faculty.Professor.Assistant	M.D.	Karolinska Institute
Wilckens, Kristine	Psychiatry	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Wiley, Clayton, A	Pathology	Faculty.Professor.Professor	M.D.	University of California
Wilkins, Isabelle Ann	OB-Gyn & Reproductive Science	Faculty.Professor.Professor	M.D.	Duke University
Will, Jenny, Ying	Ophthalmology	Faculty.Professor.Assistant	M.D.	The Ohio State University
Willeitner, Andrea	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Vienna
Williams, Brian, A	Anesthesiology	Faculty.Professor.Professor	M.D.	Northeastern Ohio University College of Medicine
Williams, Don Dennis	Radiology	Faculty.Professor.Assistant	M.D.	New York University
Williams, John Vance	Pediatrics	Faculty.Professor.Professor	M.D.	Medical College of Virginia
Williams, John, Phillip	Anesthesiology	Faculty.Professor.Professor	M.D.	Baylor College of Medicine
Williams, Shelley, Dianne	Pediatrics	Faculty.Professor.Associate	M.D.	Bowman Gray School of Medicine
Willis, Carolyn Anne	Dermatology	Faculty.Instructor.Instructor	M.D.	Albert Einstein College of Medicine
Wills, Zachary Patrick	Neurobiology	Faculty.Professor.Assistant	Ph.D.	Harvard Medical Center
Wilson, David, O	Medicine	Faculty.Professor.Associate	M.D.	University of Pittsburgh
Wilson, Jacqueline Deanna	Medicine	Faculty.Professor.Assistant	M.D.	Yale University
Wilson, Mark, A	Surgery	Faculty.Professor.Visiting	M.D.	New Jersey Medical School
Wilson, Paria Majd	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Louisville School of Medicine
Wilson, Stephen	Family Medicine	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Wincko, Tamara, L	Otolaryngology	Faculty.Instructor.Instructor	M.S.	Nova Southeastern University
Windreich, Randy M	Pediatrics	Faculty.Professor.Associate	M.D.	Sackler School of Medicine
Winkeller, Victoria Sophia	Psychiatry	Faculty.Professor.Assistant	M.D.	Albany Medical College
Witchel, Selma, Feldman	Pediatrics	Faculty.Professor.Professor	M.D.	University of Pittsburgh SOM
Wittenberg, George Frederick	Neurology	Faculty.Professor.Visiting	M.D.	University of California
Woerner, Audrey Claire	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Texas
Wolford, Jennifer, Elaine	Pediatrics	Faculty.Professor.Assistant	D.O.	Philadelphia College of Osteo Med

Wolfson, Allan, B	Emergency Medicine	Faculty.Professor.Professor	M.D.	University of Pennsylvania SOM
Wolfson, Lee, K	Psychiatry	Faculty.Instructor.Instructor	M.Ed.	University of Pittsburgh
Wollman, Michael, R	Pediatrics	Faculty.Professor.Professor	M.D.	SUNY
Wolmark, Norman	Surgery	Faculty.Professor.Professor	M.D.	McGill University Faculty of Medicine
Wong, Timothy, C	Medicine	Faculty.Professor.Assistant	M.D.	New York University
Woodcock, Steven, Robert	Pharmacology and Chemical Biology	Faculty.Instructor.Research	Ph.D.	University of Oregon
Woods, Kendra S.	Critical Care Medicine	Faculty.Instructor.Instructor	M.D.	Southern Illinois University
Wood-Trageser, Michelle A.	Pathology	Faculty.Professor.Research Assistant	Ph.D.	University of Pittsburgh
Workman, Creg J.	Immunology	Faculty.Professor.Research Assistant	Ph.D.	University of Illinois
Worobey, Lynn, A	Physical Medicine & Rehabilitation	Faculty.Professor.Research Assistant	Ph.D.	University of Pittsburgh
Wright, Erik Scott	Biomedical Informatics	Faculty.Professor.Assistant	Ph.D.	University of Wisconsin-Madison
Wright, Rollin, M	Medicine	Faculty.Professor.Assistant	M.D.	Albany Medical College
Wu , Minjie	Psychiatry	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Wu, Christine, Mona	Medicine	Faculty.Professor.Associate	M.D.	Johns Hopkins University
Wu, Chuanyue	Pathology	Faculty.Professor.Professor	Ph.D.	University of Pittsburgh
Wu, Shandong	Radiology	Faculty.Professor.Assistant	Ph.D.	City University of Hong Kong
Wu, Yijen	Developmental Biology	Faculty.Professor.Research Assistant	B.S.	National Taiwan University
Wyse, Aaron J.	Radiology	Faculty.Professor.Assistant	M.D.	Duke University
Xavier, Frederico	Pediatrics	Faculty.Professor.Assistant	M.D.	University of South Alabama CoM
Xavier, Jennifer Mary	Pharmacology and Chemical Biology	Faculty.Professor.Research Assistant	Ph.D.	University of Bradford
Xia, Yaqin	Family Medicine	Faculty.Professor.Assistant	M.D.	Sun Yat-sen University of Medical Science
Xia, Zongqi	Neurology	Faculty.Professor.Assistant	M.D.	Case Western Reserve University
Xiao, Gutian	Microbiology and Molecular Genetics	Faculty.Professor.Professor	Ph.D.	Fudan University
Xiao, Kunhong	Pharmacology and Chemical Biology	Faculty.Professor.Associate	M.D.	Peking University
Xiao, Xiangwei	Surgery	Faculty.Professor.Assistant	M.D.	Tianjin Medical University

Xing, Jianhua	Computational and Systems Biology	Faculty.Professor.Associate	Ph.D.	University of California
Xing, Juan	Pathology	Faculty.Professor.Assistant	M.D.	Baotou Medical College
Xiong, Zeyu	Medicine	Faculty.Professor.Research Assistant	M.D.	Shaanxi College of Medicine
Xu, Yan	Anesthesiology	Faculty.Professor.Professor	Ph.D.	SUNY
Yabes, Jonathan, Guerrero	Medicine	Faculty.Professor.Assistant	Ph.D.	University of Pittsburgh
Yadav, Dhiraj	Medicine	Faculty.Professor.Professor	M.B.B.S.	Jawaharlal Nehru Medical College
Yagi, Hisato	Developmental Biology	Faculty.Instructor.Research	Ph.D.	Tokyo Women's Medical University
Yan, Alan Yong	Orthopaedic Surgery	Faculty.Professor.Assistant	M.D.	SUNY - Ston Brook University SoM
Yan, Qi	Pediatrics	Faculty.Professor.Research Assistant	Ph.D.	University of Alabama at Birmingham
Yang, Qin	Critical Care Medicine	Faculty.Instructor.Research	M.D.	Nanjing University of Medical Science
Yankura, David, J	Psychiatry	Faculty.Professor.Assistant	M.D.	University of Pittsburgh
Yanowitz, Judith, L	OB-Gyn & Reproductive Science	Faculty.Professor.Associate	Ph.D.	Princeton University
Yanowitz, Toby, D	Pediatrics	Faculty.Professor.Associate	M.D.	Albert Einstein College of Medicine
Yanta, Claire Allison	Neurology	Faculty.Professor.Assistant	M.D.	University of Chicago
Yanta, Joseph H.	Emergency Medicine	Faculty.Professor.Assistant	M.D.	University of Chicago
Yassin, Mohamed, Hamdy	Medicine	Faculty.Professor.Visiting Associate	M.D.	Cairo University
Yates, Adam, M	Emergency Medicine	Faculty.Professor.Associate	M.D.	The Ohio State University
Yates, Adolph, J	Orthopaedic Surgery	Faculty.Professor.Associate	M.D.	Johns Hopkins University
Yates, Billy, Joe	Otolaryngology	Faculty.Professor.Professor	Ph.D.	University of Florida
Yates, Nathan A.	Cell Biology	Faculty.Professor.Associate	Ph.D.	University of Florida
Yatsenko, Alexander Nikolaevich	OB-Gyn & Reproductive Science	Faculty.Professor.Assistant	M.D.	Russian State Medical University
Yatsenko, Svetlana Anatolievna	Pathology	Faculty.Professor.Associate	M.D.	Russian State Medical University
Yazer, Mark, Harris	Pathology	Faculty.Professor.Professor	M.D.	University of Ottawa
Ye, Qing	Neurology	Faculty.Instructor.Research	M.D.	JiangXi Medical College
Ye, Sang Ho	Surgery	Faculty.Professor.Research Assistant	Ph.D.	University of Tokyo
Yealy, Donald, Matthew	Emergency Medicine	Faculty.Professor.Department Chair	M.D.	Medical College of Pennsylvania

Yechoor, Vijay K	Medicine	Faculty.Professor.Visiting	M.D.	All India Institute of Medical Science
Yeh, Fang Cheng	Neurological Surgery	Faculty.Professor.Assistant	M.D.	National Taiwan University
Yeh, Joanne, I-Ti	Structural Biology	Faculty.Professor.Associate	Ph.D.	University of California-Berkeley
Yende, Sachin, Purushottam	Critical Care Medicine	Faculty.Professor.Professor	M.B.B.S.	University of Mumbai
Yilmaz, Sabri	Radiology	Faculty.Professor.Assistant	M.D.	Karadeniz Technical University
Yimlamai, Dean	Pediatrics	Faculty.Professor.Assistant	M.D.	Tufts University
Yin, Kejie	Neurology	Faculty.Professor.Assistant	M.D.	Yangzhou University Medical College
Yip, Linwah	Surgery	Faculty.Professor.Associate	M.D.	University of Chicago
Yoon, Pyongsoo, David	Cardiothoracic Surgery	Faculty.Professor.Visiting Associate	M.D.	Medical College of Virginia
Yoshimura, Naoki	Urology	Faculty.Professor.Professor	M.D.	Kyoto University
You, Zhaoyang	Dermatology	Faculty.Professor.Assistant	Ph.D.	Peking Union Medical College
Young, Kymberly D	Psychiatry	Faculty.Professor.Assistant	Ph.D.	American University
Yousem, Samuel, A	Pathology	Faculty.Professor.Professor	M.D.	University of Maryland SOM
Yu, Jian	Pathology	Faculty.Professor.Professor	Ph.D.	Johns Hopkins University
Yu, Jing	Pathology	Faculty.Professor.Associate	M.D.	Shanghai Medical University
Yu, Lan	Medicine	Faculty.Professor.Associate	Ph.D.	Pennsylvania State University
Yu, Yanping	Pathology	Faculty.Professor.Associate	M.D.	Guangzhou Medical Institute
Yun, Hongmin	Ophthalmology	Faculty.Professor.Research Assistant	M.D.	Tongi Medical University
Yuo, Theodore Hwan	Surgery	Faculty.Professor.Assistant	M.D.	Dartmouth Medical School
Zabbarova, Irina, Valerjevna	Medicine	Faculty.Professor.Research Assistant	Ph.D.	Lomonosov Moscow State University
Zaher, Naoir	Neurology	Faculty.Professor.Assistant	M.D.	Tichreen University
Zahid, Maliha	Developmental Biology	Faculty.Professor.Assistant	M.B.B.S.	The Aga Khan Unviersity
Zamora, Ruben	Surgery	Faculty.Professor.Research	Ph.D.	University of Antwerp
Zandberg, Dan Paul	Medicine	Faculty.Professor.Visiting Associate	M.D.	Jefferson Medical College
Zank, Jennifer Shin	Pediatrics	Faculty.Professor.Assistant	M.D.	Loyola University of Chicago
Zarit, Jennifer Spanbauer	Pediatrics	Faculty.Professor.Assistant	M.D.	University of Pittsburgh School of Medicine
Zarnegar, Abdolreza	Pathology	Faculty.Professor.Professor	Ph.D.	East Tennessee State University
Zarour, Hassane, Mohamed	Medicine	Faculty.Professor.Professor	M.D.	Medical University of Marseille

Zaydan, Islam Mohsen	Neurology	Faculty.Professor.Associate	M.B.Ch.B.	Alexandria University
Zeevi, Adriana	Pathology	Faculty.Professor.Professor	Ph.D.	Bar-Ilan University
Zelevnik, Anthony, J	OB-Gyn & Reproductive Science	Faculty.Professor.Professor	Ph.D.	University of Michigan
Zemke, Anna Christine	Medicine	Faculty.Professor.Assistant	M.D.,Ph.D.	University of Pittsburgh
Zenati, Mazen	Surgery	Faculty.Professor.Associate	M.D.	Damascus University
Zhang, Cheng	Pharmacology and Chemical Biology	Faculty.Professor.Assistant	Ph.D.	University of Science and Technology
Zhang, Feng	Neurology	Faculty.Professor.Assistant	M.D.	Shanghai Medical University
Zhang, Jianying	Orthopaedic Surgery	Faculty.Professor.Research Associate	Ph.D.	Kochi University
Zhang, Jie	Cardiothoracic Surgery	Faculty.Instructor.Instructor	M.D.,Ph.D.	Former Shanghai Med University
Zhang, LiLi	Neurology	Faculty.Instructor.Research	M.D.	Fujian Medical College
Zhang, Li-Ming	Anesthesiology	Faculty.Professor.Associate	M.D.	Hunan Medical University
Zhang, Lin	Pharmacology and Chemical Biology	Faculty.Professor.Professor	Ph.D.	University of Southern California
Zhang, Mei	Developmental Biology	Faculty.Professor.Assistant	Ph.D.	University of Texas
Zhang, Peijun	Structural Biology	Faculty.Professor.Associate	Ph.D.	University of Virginia
Zhang, Wensheng	Plastic Surgery	Faculty.Instructor.Research	M.D.	Anhui Medical University
Zhang, Xianghong	Surgery	Faculty.Instructor.Research	Ph.D.	Peking Union Medical College
Zhang, Xichen	Radiation Oncology	Faculty.Instructor.Research	M.D.	Wuhan Medial College
Zhang, Yingze	Medicine	Faculty.Professor.Associate	Ph.D.	University of Pittsburgh School of Medicine
Zhao, Chengquan	Pathology	Faculty.Professor.Professor	M.D.	Qingdao Medical College
Zhao, Jing	Medicine	Faculty.Professor.Associate	M.D.	Dalian Medical University
Zhao, Jinming	Medicine	Faculty.Professor.Research Assistant	Ph.D.	Medical Center of Fudan University
Zhao, Yutong	Medicine	Faculty.Professor.Associate	M.D.	Dalian Medical University
Zheng, Aiping	Microbiology and Molecular Genetics	Faculty.Instructor.Research	Ph.D.	Hokkaido University
Zhou, Dong	Pathology	Faculty.Professor.Research Assistant	M.D.	Nanjing University
Zhou, Jingjiao	Surgery	Faculty.Professor.Research Assistant	Ph.D.	Sun Yat-Sen University
Zhou, Xiaohong	Structural Biology	Faculty.Instructor.Research	Ph.D.	Graduate University of Chinese Academy of Sciences

Zhou, Xiuxia	Medicine	Faculty.Professor.Research Assistant	Ph.D.	Hebei Medical University
Zhou, Yihua	Radiology	Faculty.Professor.Visiting Associate	M.D.,Ph.D.	Zunyi Medical College
Zhu, Jianhui	Medicine	Faculty.Professor.Research Assistant	M.D.	Nantong Medical College
Ziembicki, Jenny, A	Surgery	Faculty.Professor.Assistant	M.D.	Temple University
Zigmond, Michael, J	Neurology	Faculty.Professor.Professor	Ph.D.	University of Chicago
Zimmerman, Richard, K	Family Medicine	Faculty.Professor.Professor	M.D.	Ohio State University College of Medicine
Zinn, Matthew D.	Pediatrics	Faculty.Professor.Assistant	D.O.	Philadelphia College of Osteopathic Medicine
Zitelli, Basil, J	Pediatrics	Faculty.Professor.Professor	M.D.	University of Pittsburgh SOM
Zivkovic, Sasa	Neurology	Faculty.Professor.Professor	M.D.	University of Zagreb
Zou, Chunbin	Medicine	Faculty.Professor.Research Assistant	M.D.	Hengyang Medical College
Zuckerbraun, Brian, Scott	Surgery	Faculty.Professor.Professor	M.D.	Northwestern University Medical School
Zuckerbraun, Noel, Spears	Pediatrics	Faculty.Professor.Associate	M.D.	Northwestern University
Zuley, Margarita, L	Radiology	Faculty.Professor.Professor	M.D.	University of Pittsburgh School of Medicine
Zuo, Zehua	Pathology	Faculty.Instructor.Research	M.D.	Wuhan University
Zureikat, Amer, Haran Yacoub	Surgery	Faculty.Professor.Assistant	M.B.B.Ch.	Royal College of Surgeons
Zyczynski, Halina, Maria	OB-Gyn & Reproductive Science	Faculty.Professor.Professor	M.D.	Albany Medical College

School of Nursing

<http://www.nursing.pitt.edu/>

The School of Nursing was established as an independent school of the University by action of the Board of Trustees in April 1939 and was opened in September of the same year. The University conferred the degree Bachelor of Science in Nursing Education for the first time in August 1939. The University conferred the first Bachelor of Science in Nursing degrees in February 1942.

The first Master's degree was awarded in 1944, and the first Doctor of Philosophy degree in 1957. The first Doctorate of Nursing Practice degree was awarded in 2008.

Mission

The University of Pittsburgh School of Nursing, founded in 1939, is one of the oldest programs in baccalaureate and doctoral education in nursing in the United States. As one of the nation's distinguished schools of nursing, the resources of the School constitute an invaluable asset for the intellectual, scientific, and economic enrichment of health care in Pennsylvania, the nation, and throughout the world.

The School of Nursing's mission is to:

- provide high-quality undergraduate education in nursing;
- maintain and develop superior graduate programs in nursing that respond to the needs of health care in general and nursing in particular within Pennsylvania, the nation, and the world;
- engage in research and other scholarly activities that advance learning through the extension of the frontiers of knowledge in health care;
- cooperate with health care, governmental, and related institutions to transfer knowledge in health sciences and health care;
- offer continuing education programs adapted to the professional upgrading and career advancement interests and needs of nurses in Pennsylvania; and
- make available to local communities and public agencies the expertise of the School of Nursing in ways that are consistent with the primary teaching and research functions and contribute to the intellectual and economic development in health care within the commonwealth, the nation, and the world.

Contact Information

University of Pittsburgh
School of Nursing
Student Affairs & Alumni Relations Office
240 Victoria Building
Pittsburgh, PA 15261
412-624-4586 or 1-888-747-0794
E-mail: sao50@pitt.edu
www.nursing.pitt.edu

Master's Program Admission Process and Admission Criteria

<http://www.nursing.pitt.edu/degree-programs/master-science-nursing-msn/msn-applicationadmission>

Applications are available online at www.nursing.pitt.edu. Admission criteria are described on the school's Web site (<http://www.nursing.pitt.edu/degree-programs/master-science-nursing-msn/msn-applicationadmission>). Complete applications will be reviewed and interviews (face to face or by telephone) will be conducted prior to an admission decision. The School offers master's admission to only the Clinical Nurse Leader, and Nursing Informatics areas of concentration. The application deadlines for Nursing Informatics are February 15th and May 1st. International students are advised to apply by the February 15th deadline. Complete applications received by February 15th will be reviewed and an admission decision will be made by June 1. Complete application received by the May 1st deadline will be reviewed and admission decisions made

by June 30th. The application deadlines for Clinical Nurse Leader are Fall Term admissions May 1, Spring Term admission October 1, and Summer Term admission March 1. Applicants must apply online at <https://app.applyyourself.com/?id=up-nurs>

Applications to the Master Program in nursing are reviewed by the faculty in the applicant's Major/Area of Concentration. Applicants must meet the criteria listed below. Qualified applicants are considered without regard to race, color, religion, national origin, ancestry, sex, age, marital status, familial status, sexual orientation, disability, or status as a disabled veteran or a veteran of the Vietnam era.

Applicants must have:

- A baccalaureate degree in nursing from an ACEN (NLN), ACICS, or CCNE accredited program.
- Current RN license in U.S. state/territory or locale where student will complete clinical requirements.
- A GPA of 3.0 or higher in the undergraduate degree.
- A pre-admission interview. If the applicant resides at a great distance, a telephone interview may be conducted.
- Official scores on the Graduate Record Examination (GRE). The GRE may be waived if the GPA is 3.5 or higher.
- Pre-requisite statistics course within the last 10 years with a grade of B- or better.
- Three letters of recommendation attesting to the applicant's capacity and potential for master's study from each of the following (these can be uploaded into the online application) (/apply-now): The director or a faculty member from the most recent academic program attended (if applicant has been a nursing student in the last 5 years); a recent employer; and a person who can speak to the applicant's professional work.
- A typed essay (500-word minimum) stating your philosophy of nursing; reasons for wanting to study in a particular area of concentration; what you expect from the master's program; and your future career goals.

RN-MSN

Applicants to the RN-MSN program must graduate from a CCNE, ACICS or ACEN [NLN] accredited associate degree program or diploma school of nursing. A student may be admitted to the DNP program pending satisfactory completion of the 24 graduate bridge credits and completion of the BSN.

Doctor of Nursing Practice (DNP) Admission Process and Admission Criteria

<http://www.nursing.pitt.edu/degree-programs/doctor-nursing-practice-dnp>

Application

Pitt Nursing accepts applications for admission to all areas of the DNP Program via Apply Yourself. Each applicant must complete and submit the following:

1. A non-refundable application fee of \$50.00
2. Complete official transcripts of **all** undergraduate and graduate education (sent by the institution at which courses were taken)
3. Official GRE Scores (per Admission Criteria)
4. Three letters of professional recommendation indicating the reviewer's support of the student's ability to successfully complete a demanding graduate level academic and clinical program. At least one recommendation should come from a current or recent direct supervisor. Before you submit your application, ask your references in which form they wish to submit their recommendation -- by paper or electronically. For both paper and electronic submission of recommendation letters, please follow the instructions outlined on Apply Yourself.
5. Personal essay stating one's philosophy of nursing, reasons for wanting to study in a particular major or concentration, expectation of the DNP program, and future career goals. This should include a proposed area of interest for the DNP project.
6. Current CV or resume

Admission

You may apply to the DNP program at various points in your educational career. The school offers both *BSN to DNP* and *MSN to DNP* pathways; your choice will depend upon which degrees you previously earned and which majors/concentrations you select.

Students, who are currently enrolled in their last term of a BSN program, may apply to the BSN to DNP focus areas which do not require clinical experience beyond the BSN educational experiences. If offered admission, it would be contingent on the student's (1) successful completion of the BSN and (2) obtainment of the RN license.

BSN-prepared students, who are currently enrolled in their last term of a MSN or MS program in a related focus, may apply to the MSN to DNP. If offered admission, it would be contingent on the student's (1) successful completion of the MSN or MS in a related focus and (2) fulfillment of all admission criteria.

The University of Pittsburgh School of Nursing admits a **FALL COHORT ONLY** to all DNP Program areas of concentration except the Nurse Anesthesia BSN to DNP major which admits a **SPRING TERM COHORT** only. The application deadlines for all areas are February 15th and May 1st. International students are advised to apply by the February 15th deadline. Complete applications received by February 15th will be reviewed and an admission decision will be made by June 1. Complete application received by the May 1st deadline will be reviewed and admission decisions made by June 30th.

Applicants must apply online at <https://app.applyyourself.com/?id=up-nurs>.

Admission to the DNP Program

The DNP Program admits BSN graduates and, advanced practice nurses and nursing administrators who have completed a graduate degree in nursing from a CCNE, ACICS, or ACEN [NLN] accredited program in nursing.*

* BSN graduates with a master's in other areas may be considered for admission.

BSN to DNP

- Current RN license in U.S. state/territory or locale where student will complete clinical requirements
- ≥ 3.0 GPA in BSN (from ACEN [NLN], ACICS, or CCNE accredited program)
- GRE: Verbal & Quantitative sections (competitive scores), Analytical Writing (≥ 3)
- Pre-requisite statistics course within the last 10 years with a grade of B- or better.
- Clinical experience for select focus areas ** required or preferred for selected majors and concentrations

MSN to DNP

- Current RN license in U.S. state/territory or locale where student will complete clinical requirements
- ≥ 3.0 GPA in MSN from an accredited program or master's in related field (must have BSN from an accredited program)
- GRE: Verbal & Quantitative sections (competitive score), Analytical Writing (≥ 3)
(may be waived if MSN or master's in related field with GPA ≥ 3.5)
- Pre-requisite statistics course within the last 10 years with a grade of B- or better.
- Clinical experience for select focus areas**
- Nurse Anesthesia MSN to DNP (additional requirements)
 - 1) current Nurse Anesthetist certification in US state/territory or locale where student will complete the DNP Scholarly Project
 - 2) Minimum of 3.0 GPA in MSN or MS in Nurse Anesthesia from an accredited program

RN-DNP

Applicants to the RN-DNP program must graduate from a CCNE, ACICS or ACEN [NLN] accredited associate degree program or diploma school of nursing. A student may be admitted to the DNP program pending satisfactory completion of the 24 graduate bridge credits and completion of the BSN.

**Clinical Experience for Select Focus Areas

- **Neonatal NP:** Equivalent of 2 years full time (within last 5 years) nursing experience in the care of critically ill newborns, infants, and children in critical care inpatient settings (preferably Level III NICU) Students may enroll in pre-clinical courses while obtaining practice experience

- **Health Systems Executive Leadership:** 2 years of management experience
- **Nurse Anesthesia BSN to DNP:**
Minimum of 1 year full-time ICU/critical care nursing experience (within last 5 years) by start of program (may apply if employed in ICU/critical care and will have required experience before admission term)
- **Nurse-Midwife:** One year of nursing experience in a Labor and Delivery unit preferred, but will consider applicants demonstrating other interest/experience in women's health.

Doctor of Philosophy (PhD) Admission Process and Admission Criteria

<http://www.nursing.pitt.edu/degree-programs/doctor-philosophy-phd>

The PhD program follows a FALL TERM ONLY COHORT ADMISSIONS process. Applicants to the PhD program must submit their completed applications by February 1. Complete applications received by February 1 will be reviewed and admission decisions made prior to June 1. Application decisions (except for international applicants) will be communicated electronically (by e-mail). Applicants must apply online at <https://app.applyyourself.com/?id=up-nurs>. The School offers BSN-PhD and MSN-PhD options. Applicants are expected to be RN's. The School of Nursing also offers a currently matriculating BSN to PhD option, in which a student who has not yet completed the BSN can be admitted conditionally into the PhD program pending successful completion of their BSN. Interested applicants should contact the Student Affairs & Alumni Relations Office at 412-624-4586 for further information.

Admission to the PhD Program

Admission to the PhD program is assessed through interviews, references, standardized testing, a written statement of goals, and a second writing sample. Documentation of academic success and achievement of competitive scores on the Graduate Record Examination (GRE) taken within the last five years are required.

The doctoral faculty strongly recommends that students develop knowledge of and experience with word processing, database management, and computerized literature searches prior to applying to the PhD program.

Length of Program

The post-master's full-time student (MSN to PhD) is comprised of 48 credits minimum, and students may complete the program in approximately two and a half years depending on the nature and complexity of research for the dissertation. Twenty-four credits are granted from the prior master's program. For courses taken prior, an evaluation of the content of a course taken elsewhere must be approved by the Director of the PhD Program to determine its comparability with the coursework at the University of Pittsburgh. Students entering the MSN to PhD program will work with their academic advisor to conduct a gap analysis to review prior research-related coursework to determine if additional research core coursework is needed beyond that specified in the MSN to PhD curriculum plan. The part-time student may complete the program in three to four years. The statute of limitations for completion of the MSN to PhD track is eight consecutive calendar years from the first term of registration for credits that are in the required curriculum plan for the doctoral degree. (MSN to PhD track)

The BSN to PhD program requires 72 credits minimum. Students admitted to the BSN to PhD track are expected to enroll full-time, and the program can be completed in three years, depending on the complexity of research for dissertation. Students are also encouraged to consider obtaining a simultaneous master's degree such as the Clinical Nurse Leader. The statute of limitations for completion of the BSN to PhD track is 10 consecutive calendar years from the first term of registration for credits that are in the required curriculum plan for the doctoral degree.

For more information, see Policy 208.

Doctor of Philosophy (PhD)

Doctor of Philosophy

The Doctor of Philosophy (PhD) program prepares nurse scholars who will discover and extend scientific knowledge that advances the science and practice of nursing and contributes to other disciplines. Graduates can assume leadership roles within research teams, health care systems, and schools of nursing in academic institutions.

The PhD program of study provides a coherent series of courses, seminars, and discussions designed to develop in the student a mature understanding of content, methods, and values of the discipline of nursing and its relation to other fields. The curriculum includes courses in the philosophical underpinnings and theoretical foundations for research, and research design, measurement and intervention development. Courses also include advanced statistics, advanced quantitative and qualitative methods, the responsibilities and activities of scientists, and the art and science of teaching and learning. Students work closely with research faculty members from nursing and other disciplines. Each student also participates in two mentored research experiences. The first is the Apprenticeship Practica, wherein students affiliate with a mentor's established research team over time to explore the scientific literature, develop, plan, and implement an apprenticeship research project, and disseminate findings. This experience allows for the opportunity to acquire individualized and tangible research skills within a mentored application environment which is additive to and precedes the dissertation experience. The second mentored research experience is the students development and implementation of their independent dissertation project, culminating in dissertation defense. Students prepare and submit applications for competitive research funding.

Admission of Students from Other Countries (MSN, DNP, and PhD)

Students from other countries applying to the School of Nursing should apply using the same admissions process and admissions criteria described above. The application should be completed in English and be accompanied by official academic credentials with notarized English translations. Applicants must successfully complete the TOEFL or IELTS if English is a second language. Applicants must also have a professional nursing license. The following links specify the licensure requirement for the MSN, DNP, and PhD programs. Applicants who need to apply for a professional nursing license are encouraged to visit the Pennsylvania State Board website which contains information for internationally educated nurses applying to take the NCLEX-RN examination.

Insurance and Health Care Requirements

All students admitted with full or provisional status are automatically enrolled in a University liability insurance policy annually and to have a physical examination upon admission. All admitted students are required to submit Act 33, 34 and 73 clearances completed within 3 months of admission. Individual students must meet additional health requirements of clinical agencies such as drug testing. Students must submit a completed School of Nursing's Annual Health Form each year. Current CPR certification is required prior to enrollment in all clinical courses. Students are required to carry health insurance for the duration of their study, which will cover payment for treatment and follow-up procedures related to injury or medical problems incurred during graduate study. The University of Pittsburgh makes insurance programs available to graduate students (see: <http://www.hr.pitt.edu/benefits/student-in>).

Financial Assistance

<http://www.nursing.pitt.edu/scholarship-opportunities>

The sources of awards and aid may include: professional nurse traineeships, graduate student assistant positions, graduate student researcher positions, teaching assistant positions, teaching fellow positions, school scholarships, pre- and postdoctoral training grant fellowships, federal Stafford Loans, private loans, and emergency aid.

Academic Policies

<http://www.nursing.pitt.edu/resources-students/policies>

All students in the School of Nursing are governed by School of Nursing and University policies. Therefore, it is essential that students regularly review and familiarize themselves with those policies, both general and graduate. Question about policies should be directed to the academic advisor or to their respective program, major or area of concentration director/coordinator. Policies of particular importance deal with admission criteria, registration processes, transfer of credits, acceptable academic status, warning and probation, readmission, requirements for degree completion, academic integrity, unsafe clinical performance, and impaired clinical performance.

Advising

Each new student who is admitted to the graduate program is assigned a faculty advisor from the specific major or area of concentration to which the student is admitted. The faculty advisor provides some initial orientation to the school, the University, and the program requirements. Each student meets at least once a term with the advisor for course selection and other academic advising, although students and advisors can meet additionally as needed. The advisor is actively involved if there are academic concerns.

Students also can use the staff in the Student Affairs & Alumni Relations Office in the School of Nursing to obtain information about sources of financial aid, scholarships, school policies, registration, course availability, University resources, and community resources for help with personal problems. An online general orientation program is mandatory for all new students.

General Degree Requirements

To earn the Master of Science in Nursing (MSN), the Doctor of Nursing Practice (DNP) and Doctor of Philosophy (PhD) the student must demonstrate satisfactory academic achievement in required coursework prescribed by the curriculum with an overall academic achievement of a minimum Grade Point Average (GPA) of 3.00. Successful completion of a comprehensive examination is also required for the MSN, BSN to DNP and PhD in nursing. The DNP requires a DNP project and the PhD requires successful defense of an original dissertation.

Application for Graduation

Each candidate for graduation must file an official Application for Graduation in the Nursing Student Affairs & Alumni Relations Office at least three months before the degree is to be completed, otherwise there is a fee assessment after the deadline. Students must be registered in the term in which they take their comprehensive examination. International students must be registered according to the conditions of their visa. Every student is required to be registered for at least one credit at the University in the 12 month period before graduation.

Major and Degree Options

The School of Nursing offers the following graduate degrees:

- The Master of Science in Nursing with majors and areas of concentration in the following areas:
 - Nurse Practitioner
 - Neonatal Nurse Practitioner* (no longer accepting applications as of December 2018)
 - Nurse Specialty Role
 - Nursing Administration* (no longer accepting applications)
 - Clinical Nurse Leader
 - Nursing Informatics

**not currently accepting applications*

- The Doctor of Nursing Practice (DNP)
 - MSN to DNP Options
 - Nurse Practitioner
 - Adult-Gerontology Acute Care Nurse Practitioner
 - Adult-Gerontology Primary Care Nurse Practitioner
 - Family (Individual Across the Lifespan) Nurse Practitioner
 - Pediatric Primary Care Nurse Practitioner
 - Neonatal Nurse Practitioner
 - Psychiatric Mental Health Nurse Practitioner
 - Clinical Nurse Specialist
 - Adult-Gerontology (CNS)
 - Nurse Specialty Role
 - Health Systems Executive Leadership
 - Nurse Anesthesia

- BSN to DNP Options
 - Nurse Practitioner
 - Adult-Gerontology Acute Care Nurse Practitioner
 - Adult Gerontology Primary Care Nurse Practitioner
 - Family (Individual Across the Lifespan) Nurse Practitioner
 - Pediatric Primary Care Nurse Practitioner
 - Neonatal Nurse Practitioner
 - Psychiatric Mental Health Nurse Practitioner
 - Clinical Nurse Specialist
 - Adult-Gerontology (CNS)
 - Nurse Anesthesia
 - Nurse-Midwife

The Doctor of Philosophy (PhD) in Nursing (including the BSN to PhD and MSN to PhD options.)

**not currently accepting applications*

Special Academic Opportunities/Programs

The School of Nursing offers a variety of special programs within its master's and doctoral programs:

Minors

Students in the Master's program, the DNP program and the PhD program have the option of completing a minor in nursing education, nursing informatics, nursing research, nursing administration, and gerontology for nurse practitioners, or health care genetics. The minimum credits required to obtain a minor is 9-12 credits.

Post-Professional Certificates

Post-Professional certificates are available in nursing education, health care genetics, nursing informatics, nursing research, gerontology for nurse practitioners, adult-gerontology acute care nurse practitioner, neonatal nurse practitioner, and psychiatric mental health nurse practitioner. The certificate options require a minimum of 15 credits; additional credits may be required depending on the certificate program and previous graduate course work. All students admitted to a nurse practitioner certificate programs must meet all curriculum requirements of the full graduate degree program, either through previous course work or credits earned during the certificate program. Individual review of transcripts will determine the exact number of credits needed to meet curriculum requirements.

Admission criteria for master's level certificate programs include:

Evidence of successful completion of MSN, DNP or other relevant first professional degree
 Relevant work experience
 Three letters of recommendation
 Satisfactory interview with program faculty
 Current RN license if the certificate program includes clinical experiences.

School of Nursing Faculty

School of Nursing Faculty

Program and Course Offerings

Certificate

Adult-Gerontology Acute Care Nurse Practitioner Certificate

Post-Professional Adult-Gerontology Acute Care Nurse Practitioner

This non-degree certificate is designed for nurse practitioners or clinical nurse specialists with a previous Master of Nursing or Doctor of Nursing Practice who are seeking to expand their roles via nurse practitioner certification in Adult-Gerontology Acute Care. The total credits required are 24.

Overview

The Adult-Gerontology Acute Care Nurse Practitioner (AG-ACNP) Post-Professional Certificate is designed for graduate prepared Nurse Practitioners (NP) or Clinical Nurse Specialists (CNS) who are seeking to expand their roles via nurse practitioner certification in Adult-Gerontology Acute Care. The curriculum prepares nurse practitioners to function as generalist, principal providers of care for adults and older adults with acute, critical and complex chronic health problems across the continuum of acute care services.

AG-ACNP students may choose a clinical emphasis in cardiopulmonary, critical care, oncology, trauma emergency preparedness or directed study. The directed study allows students to design clinical experiences around a particular area of interest (i.e. internal medicine, general surgery). The curriculum consists of NP and AG-ACNP specialty courses and clinical practice hours.

Graduates of the AG-ACNP Post-Professional Certificate are eligible to sit for the national certification examination in Adult-Gerontology Acute Care offered by the American Nurses Credentialing Center or American Association of Critical Care Nurses. Successful passing of the national certification examination entitles the graduate to apply for certification as a Certified Registered Nurse Practitioner (CRNP) in Adult-Gerontology Acute Care by the State Board of Nurse Examiners of the Commonwealth of Pennsylvania.

Curriculum Format

- Course work may be completed in 3 terms
- 540 clinical hours**
- Online or onsite
- Students are required to attend 2 onsite laboratory intensives - 2 days in the Summer term and 1 day in the Fall term. Each student will be responsible for the room and board cost during the lab intensives.
- Online students will need to arrange for clinical placements and appropriate physician or nurse practitioner preceptors. An Affiliation Agreement between the University and the clinical site is required before clinical hours can begin.

Program Outcomes

Graduates of the AG-ACNP Post-Professional Certificate are prepared to accomplish the following:

- Assume responsibility for promoting, maintaining and restoring health to acutely/critically or complex chronically ill adults and older adults
- Identify health risks, promote wellness, and diagnosis and manage acute and chronic illness
- Participate in multi-disciplinary research and provide leadership in mobilizing health services

Admission Criteria

- Valid registered nurse license in state where clinical experiences are performed
- Minimum of one year nursing experience recommended
- BSN required
- Previous MS, MSN or DNP as a NP or CNS (from accredited program (ACEN, NLN, ACICS, or CCNE)
- GPA ≥ 3.0 in the MS, MSN or DNP degree
- Pre-admission interview
- Complete online application
- *International applicants: see www.nursing.pitt.edu and www.ois.pitt.edu*
- Spring Term Admission Only

Courses with a "D" can be delivered synchronously via distance technology. Such courses are open only to qualified on-site students as per Policy

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Curriculum (subject to change)

- NUR 2044 - NURSING GRADUATE ORIENTATION MODULE
- NURNP 2100 - MANAGEMENT OF ADULT EPISODIC/CHRONIC HEALTH PROBLEMS IN ACUTE CARE THEORY
or
- NURNP 2100D - MANAGEMENT OF ADULT WITH EPISODIC/CHRONIC HEALTH PROBLEMS IN ACUTE CARE THEORY
- NURNP 2101 - MANAGEMENT OF ADULT EPISODIC/CHRONIC HEALTH PROBLEMS IN ACUTE CARE CLINICAL *
- NUR 2680 - INTRODUCTION TO GENETICS AND MOLECULAR THERAPEUTICS
or
- NUR 2680D - INTRODUCTION TO GENETICS AND MOLECULAR THERAPUTICS
- NURNP 2104 - MANAGEMENT OF COMPLEX HEALTH PROBLEMS OF THE ACUTELY AND CRITICALLY ILL ADULT
or
- NURNP 2104D - MANAGEMENT OF COMPLEX HEALTH PROBLEMS OF THE ACUTELY AND CRITICALLY ILL ADULT
- NURNP 2526 - MANAGEMENT: GERIATRIC HEALTH THEORY
or
- NURNP 2526D - MANAGEMENT: GERIATRIC HEALTH
- NURNP 2102 - MANAGEMENT OF COMPLEX HEALTH PROBLEMS OF THE ACUTELY AND CRITICALLY ILL ADULT 2
or
- NURNP 2102D - MANAGEMENT OF COMPLEX HEALTH PROBLEMS OF THE ACUTELY AND CRITICALLY ILL ADULT 2
- NURNP 2028 - ROLE PRACTICUM *

Choose one of the following: (3 cr. each)

- NURNP 2105 - CLINICAL EMPHASIS - CARDIOPULMONARY
- NURNP 2106 - CLINICAL EMPHASIS - CRITICAL CARE
- NURNP 2107 - CLINICAL EMPHASIS - ONCOLOGY
- NURNP 2109 - CLINICAL EMPHASIS - DIRECTED STUDY
- NURNP 2194 - CLINICAL EMPHASIS: TRAUMA EMERGENCY PREPAREDNESS

Note

Successful completion of the AG-ACNP Specialty Comprehensive Exam is required.

* Dependent on the individual's previous role, population of patients and years of experience, up to 300 clinical hours may be completed through the option of credit by course examination."

The total credits required will vary based on evaluation of the student's previous coursework. Additional coursework may be required and/or credit may be given for previous coursework that meets the core curriculum requirements.

Total Credits: 24

Certificate in Gerontology for Nurse Practitioners

The Post-Professional Certificate in Gerontology for Nurses Practitioners is a non-degree certificate designed for graduate-prepared Family, Adult Primary Care, Psychiatric Mental Health Primary Care, and Adult Acute Care Nurse Practitioners who seek to increase their formal education as a principal provider of primary health care in the care of older adults.

The curriculum includes a total of 15 credits; nine (9) credits of core advanced nursing practice and six (6) approved elective credits. The core advanced nursing practice courses are specifically designed to enable the Nurse Practitioner to increase their capacity in the complex care of older adults. The curriculum includes a clinical practicum to provide students with the opportunity to synthesize and integrate concepts learned in the delivery of primary health care to older adults across a variety of settings.

Students will select six (6) credits of elective courses related to their career goals or interests (taught through other departments).

Upon successful completion of all requirements students will receive a Certificate in Gerontology for Nurse Practitioners. Certificate in Gerontology for Nurse Practitioners will appear on the student transcript.

Graduates will increase their marketability across health care settings with expertise in geriatrics and will enhance their clinical practice to better meet the complex health care needs of our aging population.

Curriculum Format

- 100% online delivery (no onsite campus requirements)
- Part time (2-3 terms)
- 15 credits (includes 180 practicum hours in student's locale)
- Fall term admission

Program Outcomes

Graduates of the Certificate in Gerontology for Nurse Practitioners will be prepared to:

- Apply advanced knowledge about gerontology and geriatrics, and specialized knowledge of aging and the aging process
- Bring expertise to the NP role that includes the diagnosis and management of acute, chronic, and preventive health care needs of the older adult population
- Collaborate with and lead inter-disciplinary health care teams in the care of older adults.

Admission Criteria

- Current RN license in U.S. state/territory where student will complete practicum requirement
- ≥ 3.0 GPA in MSN or DNP as a Family, Adult Primary Care, Psychiatric Mental Health Primary Care, or Adult Acute Care NP program from ACEN, NLN, ACICS, or CCNE accredited program
- Pre-admission interview
- Short essay

Core Advance Nursing Practice (Required): 9 Credits

- NURNP 2526 - MANAGEMENT: GERIATRIC HEALTH THEORY
- NURNP 2527 - ADVANCED MANAGEMENT: COMPLEX GERIATRIC HEALTH ISSUES
- NURNP 2528 - SEMINAR IN GERIATRIC CARE
- NURNP 2529 - GERONTOLOGY CLINICAL PRACTICUM

Electives: 6 Credits

Choose two courses from the following:

- GERON 2001 - ETHICS AND AGING
- GERON 2002 - PREVENTION AND HEALTHY AGING
- GERON 2004 - MENTAL HEALTH AND MENTAL ILLNESS IN LATE-LIFE
- GERON 2005 - PERSPECTIVES IN AGING

- GERON 2006 - MULTI-DISCIPLINARY ASPECTS OF DEMENTIA
- GERON 2008 - HUMAN PERFORMANCE, NUTRITION AND AGING
- GERON 2009 - AGING AND COMMUNICATION

Course Offerings

Fall Term

- NURNP 2526 - MANAGEMENT: GERIATRIC HEALTH THEORY
Elective Options:
- GERON 2001 - ETHICS AND AGING
- GERON 2004 - MENTAL HEALTH AND MENTAL ILLNESS IN LATE-LIFE
- GERON 2008 - HUMAN PERFORMANCE, NUTRITION AND AGING

Spring Term

- NURNP 2527 - ADVANCED MANAGEMENT: COMPLEX GERIATRIC HEALTH ISSUES
- NURNP 2528 - SEMINAR IN GERIATRIC CARE
Elective Options:
- GERON 2002 - PREVENTION AND HEALTHY AGING
- GERON 2005 - PERSPECTIVES IN AGING
- GERON 2006 - MULTI-DISCIPLINARY ASPECTS OF DEMENTIA

Summer Term

- NURNP 2529 - GERONTOLOGY CLINICAL PRACTICUM
Elective Options:
- GERON 2009 - AGING AND COMMUNICATION

Certificate in Health Care Genetics

Genetic based health care is routinely becoming a part of daily health care, having major impacts on patient diagnosis, prognosis and treatment. The Certificate in Health Care Genetics is designed for health care workers who are seeking focused, graduate-level education in the specialty of genetics. Knowledge gained through coursework will enable healthcare workers to better care for and educate their patients..

Admission Criteria

- Healthcare worker with a Bachelor's or Master's Degree
- GPA ≥ 3.0 in the Bachelor's or Master's Degree
- Pre-admission interview
- Complete online application
- International applicants
- Fall, Spring, Summer Term Admission

Curriculum

The curriculum includes courses in genetics (taught through the School of Nursing) and choice of 3 courses related to the student's career goals or interests (taught through other departments in the Schools of the Health Sciences). Learning experiences may be enriched through Clinical Genetics Case Conferences, Human Genetics Research Seminar, Human Genetics Journal Club, Genetics Grand Rounds, and a Research Practicum in a molecular genetics laboratory.

- Full-time or Part-time (~ 3 terms)
- Electives (per approval of Coordinator) **9 cr.**
- NUR 2680 - INTRODUCTION TO GENETICS AND MOLECULAR THERAPEUTICS
- NUR 2681 - ADV TOPICS IN HUMAN GENETICS

Total Credits: 15

Program Outcomes

Graduates of the Certificate in Health Care Genetics are prepared to:

- Guide patients in their understanding of the genetic basis of disease as well as providing patient education and guidance in the areas of available genetic testing, interpretation of testing, recurrence risks, and genetic based therapies
- Provide advocacy for patients and families with genetic conditions
- Utilize family histories to determine disorders for which the patient is at risk
- Utilize a variety of resources to stay up to date with advances in genetic based medicine
- Determine when patient referral to a genetic professional is required
- Utilize a variety of resources to provide patients and their families with support mechanisms
- Interpret genetic research findings

Neonatal Nurse Practitioner Certificate

The Neonatal Nurse Practitioner (NNP) Post-Professional Certificate is designed for graduate prepared nurse practitioners who are seeking to expand their roles via nurse practitioner certification in neonatal critical care. The NNP is prepared to manage the health care of high-risk infants, their families and children up to 2 years of age. This expanded role is performed in collaboration with neonatologists and other pediatric clinicians. NNPs are primarily employed in neonatal intensive care units (NICUs) and are involved in coordinating and managing care for infants with chronic health problems and providing continuity for these children from hospital to home.

The NNP curriculum provides students with course work and clinical experiences focusing on the care and management of critically ill and convalescent premature and full-term infants. The sequence of courses provides for a logical building of the clinical decision making skills necessary to function as a NNP. Clinical experiences may be in a variety of clinical settings which include newborn nurseries, intensive care nurses of various levels and out-patient clinics.

Graduates are prepared to perform acts of medical diagnosis and prescribe medical therapeutics and corrective measures. In addition, the NNP selects and performs clinically advanced diagnostic and therapeutic invasive procedures on newborns in the intensive care setting.

Graduates are eligible for both legal certification as a Certified Registered Nurse Practitioner (CRNP) and prescriptive authority by the Commonwealth of Pennsylvania, as well as other states and national professional certification as an NNP offered by the National Certification Corporation.

Curriculum Format

- Full-time or Part-time (length depends on prior academic preparation)
- 600 clinical hours (minimum)

Program Outcomes

Graduates of the Post-Professional NNP area of concentration are prepared to accomplish the following:

- Assume responsibility for promoting, maintaining, and restoring health to infants from the newborn period up to 2 years of age
- Identify health risks, promote wellness, and diagnosis and manage acute and chronic illness
- Participate in research and provide leadership in mobilizing health care resources in the community

Admission Criteria

- MSN or DNP preparation as a nurse practitioner
- A baccalaureate degree in nursing from accredited program (ACEN, NLN, ACICS, or CCNE)
- Valid registered nurse license in state where clinical experiences are performed
- Equivalent of 2 year full-time, recent (within past 5 years) practice experience as a registered nurse in the care of critically ill newborns, infants or children in critical inpatient settings, primarily in Level III or IV NICU. Applicants must have acquired this experience or be currently employed in the indicated settings
- Competitive GPA from graduate nursing degree
- Official GRE scores (may be waived if GPA from graduate nursing degree was ≥ 3.5)
- Prerequisite statistics course
- Pre-admission interview
- Complete online application
- *International applicants: see www.nursing.pitt.edu and www.ois.pitt.edu*

Curriculum

- NURNP 2028 - ROLE PRACTICUM
- NURNP 2570 - COMPREHENSIVE NEONATAL ASSESSMENT THEORY
- NURNP 2571 - GENERAL MANAGEMENT OF THE SICK NEONATE - THEORY
- NURNP 2572 - GENERAL ASSESSMENT AND MANAGEMENT OF THE SICK NEONATE - CLINICAL
- NURNP 2573 - NEONATAL DISEASE PROCESS 1 - THEORY
- NURNP 2574 - NEONATAL DISEASE PROCESS 2 - THEORY

Total Credits: 25 (minimum)

The total credits required will vary based on evaluation of the student's previous coursework.

Nursing Education Certificate

The Post-Professional Certificate in Nursing Education combines didactic courses and two field-based preceptorships in settings and roles of the student's interest. The curriculum prepares students to apply instructional theory and research in the following types of educational settings and roles: schools of nursing, health care agency staff development, continuing education departments, advanced practice nursing and patient and community education agencies. The Minor in Nursing Education is also available to University of Pittsburgh School of Nursing graduate students. Students should consult with their academic advisor.

Graduates may be eligible for the Certified Nurse Education Exam offered by the National League of Nursing (NLN) (Note: visit the NLN website at www.nln.org for eligibility requirements)

Program Outcomes

Graduates of the Post-Professional Certificate in Nursing Education are prepared to:

- design current, progressive nursing education programs using research and theories of learning instruction, curriculum, evaluation and measurement.
- utilize a variety of teaching strategies and media appropriate to learner characteristics, instructional objectives, and nursing or health-related content.
- plan the learning activities of individuals and groups of students in clinical and didactic settings.
- guide the performance of learners in settings where nurses function as educators for nurse colleagues, students, patients, families, and communities.

- apply principles of measurement and evaluation to the development of learner assessment procedures for didactic and educational instruction.
- utilize computer technology and educational informatics as integral components of nursing education and training.
- articulate the role of the nurse educator within the health professions, schools of nursing, and community.
- perform the role of education consultant in settings where nurses, patients, families, and communities participate in education activities.

Admission Criteria

- Valid registered nurse license in state where clinical experiences are performed
- GPA ≥ 3.0 in MSN or DNP Degree (from accredited program (ACEN, NLN, ACICS, or CCNE)
- Pre-admission interview
- Complete online application
- International applicants: see www.nursing.pitt.edu and www.ois.pitt.edu
- Fall, Spring, Summer Term admission

Curriculum

- Elective (per approval of Coordinator) **3 cr.**
- NURSP 2071 - DESIGN AND PROCESS OF INSTRUCTION
- NURSP 2072 - MEASUREMENT AND EVALUATION
- NURSP 2073 - PRACTICUM 1 IN NURSING EDUCATION: TEACHING AND LEARNING ASSESSMENT
- NURSP 2074 - PRACTICUM 2 IN NURSING EDUCATION: EDUCATIONAL PROGRAM MANAGEMENT

Total Credits: 15

Nursing Informatics Certificate

The Post-Professional Certificate in Nursing Informatics is a combination of cognitive science, computer science, information science, and nursing science. It includes the development, analysis, and evaluation of information systems that support, enhance and manage patient care. Informatics nurses are involved in practice, education, research, administration, and consultation and can work in public, private, or corporate settings. Career opportunities for graduates of this specialty are numerous.

The curriculum includes course work in introduction to informatics, clinical information systems, and project management. Practicums are designed to enhance the students' knowledge and skill set through active participation in a selected informatics role.

Curriculum Format

- Part-time (~ 4 terms)
- 240 practicum hours (minimum)
- 15 course credits
- Online only

Program Outcomes

Graduates of the Post-Professional Certificate in Nursing Informatics are prepared to:

- Analyze clinical information systems for adoption by healthcare systems
- Manage projects in a multidisciplinary integrated healthcare informatics environment
- Consult with companies in the design of healthcare information systems
- Plan and develop informatics applications for telehealth, consumer health, and community-based care.

Admission Criteria

- Valid registered nurse license in state where clinical experiences are performed
- 3.0 or higher in MSN, DNP or higher nursing degree (from accredited program (ACEN, NLN, ACICS, or CCNE)
- Satisfactory resume
- Pre-admission interview
- Complete online application
- *International applicants: see Pitt's Office of International Services*
- Fall Term Admission

Admission of International Applicants

Applications from international students are reviewed according to the admission criteria stated above, and admissions deadlines for all programs are available online. The on-line application must be completed in English. See the School of Nursing International Applicants page for specific admission requirements for international applicants.

Curriculum

- NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS
- NURSP 2076 - CLINICAL INFORMATION SYSTEMS
- NURSP 2070 - INFORMATION TECHNOLOGY PROJECT MANAGEMENT
- NURSP 2085 - NURSING INFORMTCS PRACTICUM 1
- NURSP 2086 - NURSING INFORMTCS PRACTICUM 2

Total Credits: 15

Nursing Research

The online Certificate in Nursing Research is a non-degree certificate for nurses with a Bachelor's degree who are seeking a focus on research as well as current graduate students and nurses with a Masters or DNP degree. This certificate particularly targets nurses interested in advancing their knowledge and skills as clinical research coordinators and quality assurance managers. The curriculum builds upon the students' existing research knowledge and skills and enhances their expertise to conduct and coordinate clinical research studies following federal regulations and Good Clinical Practice (GCP). Graduates broaden their marketability in a variety of clinical research settings.

Graduates of the Certificate in Nursing Research are eligible for National Certification as a Certified Clinical Research Coordinator by the Association of Clinical Research Professionals (ACRP) after successful completion of the Clinical Research Coordinator (CRC) Certification Exam. (*Note: clinical research coordinator experience is required for the exam.*)

Admission Criteria

- Valid registered nurse license in state where clinical experiences are performed
- ≥ 3.0 GPA in BSN from accredited program (ACEN, NLN, ACICS, or CCNE)
- Minimum of one year nursing experience recommended
- Official GRE scores (may be waived if GPA ≥ 3.5)
- Prerequisite statistics course
- Pre-admission interview
- Complete online application
- International applicants

Admission of International Students

Applications from international students are reviewed according to the admission criteria stated above, and admissions deadlines for all programs are available online. The on-line application must be completed in English. See the School of Nursing International Applicants page for specific admission requirements for international applicants.

Curriculum Format

- Part-time (~ 5 terms)
- Fall, Spring, Summer Term admission
- Online

Curriculum

- Elective (approval by Coordinator, Nursing Research Concentration **3 cr.**)
- Module CITI Biomedical Responsible Conduct of Research **0 cr.**
- Module CITI Biomedical Human Subjects Research **0 cr.**
- Module CITI Conflicts of Interest **0 cr.**
- Module CITI Good Clinical Practice **0 cr.**
- Module CITI Clinical Research Coordinator **0 cr.**
- Module CITI Privacy and Information Security **0 cr.**
- Module ISER Responsible Literature Searching **0 cr.**
- NUR 2000 - RESEARCH FOR EVIDENCE-BASED PRACTICE 1
- NUR 2008 - ETHICS FOR ADVANCED PRACTICE NURSING
- NUR 2011 - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
- NUR 2044 - NURSING GRADUATE ORIENTATION MODULE
- NUR 2800 - COORDINATING CLINICAL TRIALS
- NUR 3052 - MANUSCRIPT DEVELOPMENT
- NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS
- NURSP 2388 - DATABASE MANAGEMENT

Note

Graduates of the Certificate in Nursing Research are prepared to accomplish the following:

- Conduct and coordinate clinical studies sponsored by the federal government, industry, and foundations for phase I, II, and III studies of drugs, devices, and biologics as well as behavioral interventions across the lifespan
- Pursue employment as quality assurance managers, clinical research coordinators or monitors in Schools of the Health Sciences, Pharmaceutical Companies, Clinical Research Organizations, Institutional Review Boards, Education and Compliance Offices, and other research settings

Total Credits: 16

Psychiatric Mental Health Nurse Practitioner Certificate

The Psychiatric Mental Health Nurse Practitioner Post-Professional Certificate is designed for graduate prepared Nurse Practitioners (NP) or Clinical Nurse Specialists (CNS) who are seeking to expand their roles via nurse practitioner certification in Psychiatric Mental Health Care.

The curriculum includes foundational and psychiatric care content providing students with the advanced practice skills to effectively manage persons with psychiatric disorders across the lifespan. Emphasis is placed on psychobiologic diagnosis and treatment, including psychotherapies for these individuals and their families to promote mental health and prevent subsequent mental disorders.

Clinical experiences are designed so that students provide comprehensive management to psychiatric clients with mental illness in intensive and varied clinical experiences. Culminating clinical management practice provides students with the opportunity to synthesize and integrate concepts from primary health care with their psychiatric knowledge base.

Graduates are eligible for national certification offered by the American Nurses Credentialing Center (ANCC) and legal certification as a CRNP and prescriptive authority through the State Board of Nursing of the Commonwealth of Pennsylvania.

Curriculum Format

- Full-time or Part-time (length depends on prior academic preparation)
- 640 clinical hours (length depends on prior academic preparation)

Program Outcomes

Graduates of the PMHNP are prepared to accomplish the following:

- Provide comprehensive care to psychiatric clients
- Conduct psychotherapies for psychiatric clients and their families

Admission Criteria

- Valid registered nurse license (all students must obtain a Pennsylvania license)
- Previous MS or MSN as a NP or CNS (from accredited program (ACEN, NLN, ACICS, or CCNE)
- GPA ≥ 3.0 in the MS or MSN degree
- Official GRE scores (may be waived if GPA ≥ 3.5)
- Minimum of one year nursing experience recommended
- Prerequisite statistics course (within 10 years) with a grade of B- or higher
- Pre-admission interview
- Complete online application
- International applicants: see www.nursing.pitt.edu and www.ois.pitt.edu
- Rolling admissions

Curriculum

*Courses with a "D" can be delivered synchronously via distance technology. Such courses are open only to qualified on-site students as per Policy 438.

- NURNP 2026 / NURNP 2026D - ROLE SEMINAR 1*
- NURNP 2029 / NURNP 2029D - ROLE SEMINAR 2*
- NURNP 2320 - NEUROBIOLOGY OF PSYCHIATRIC DISORDERS
- NURNP 2325 - PSYCHOPHARMACOLOGY
- NURNP 2330 - PSYCHIATRIC DIAGNOSIS THEORY
- NURNP 2331 - PSYCHIATRIC DIAGNOSIS PRACTICUM
- NURNP 2340 - MANAGEMENT OF ACUTE HEALTH PROBLEMS OF PSYCHIATRIC PATIENTS
- NURNP 2341 - MANAGEMENT PRACTICUM OF ACUTE HEALTH PROBLEMS OF PSYCHIATRIC PATIENTS
- NURNP 2345 - MANAGEMENT OF CHRONIC HEALTH PROBLEMS OF PSYCHIATRIC PATIENTS
- NURNP 2346 - MANAGEMENT PRACTICUM CHRONIC HEALTH PROBLEMS OF PSYCHIATRIC PATIENTS
- NURNP 2520 / NURNP 2520D - MGT: PEDIATRIC HEALTH THEORY*
- NURNP 2521 - MANAGEMENT: PEDIATRIC HEALTH CLINICAL
- NURNP 2540 / NURNP 2540D - PEDIATRIC WELL CHILD CARE THEORY*
- NURNP 2526 / NURNP 2526D - MANAGEMENT: GERIATRIC HEALTH*

- NURCNS 2350 - GROUP THERAPY THEORY / NURCNS 2351 - GROUP THERAPY PRACTICUM or NURCNS 2352 - FAMILY THEORY/THERAPY TECHNIQUES / NURCNS 2353 - FAMILY THERAPY ROLE SEMINAR AND CLINICAL PRACTICUM
- NURCNS 2354 / NURCNS 2354D - INDIVIDUAL PSYCHOTHERAPY THEORY* / NURCNS 2355 - INDIVIDUAL PSYCHOTHERAPY PRACTICUM

Doctoral

DNP

- Clinical Nurse Specialist
- Nurse Practitioner
- Nurse Specialty Role
- Nurse-Midwife, BSN to DNP
- Nursing Anesthesia

PhD

- Nursing - BSN to PhD Track
- Nursing - Post-MSN to PhD Track

Joint Degree

Public Policy and Management/Doctor of Nursing Practice, MPPM/DNP

MASTERS OF PUBLIC POLICY AND MANAGEMENT IN THE GRADUATE SCHOOL OF PUBLIC AND INTERNATIONAL AFFAIRS (GPSIA) AND THE DOCTOR OF NURSING PRACTICE HEALTH SYSTEMS EXECUTIVE LEADERSHIP (HSEL) IN THE GRADUATE SCHOOL OF NURSING

There is a real and increasingly urgent need for nursing professionals to have a strong understanding of nonprofit management techniques and international development strategies, particularly if they seek employment in not-for-profit hospital systems or charitable organizations that provide health care services to underdeveloped communities at home or abroad.

The University of Pittsburgh is uniquely positioned to train leaders for such positions. GPSIA is nationally renowned as a center for the study of international development, human rights, poverty, and the administration of nonprofit organizations. The School of Nursing is consistently ranked as one of the leading schools of its type in the world, and nurses seek out its graduate programs as a credential of choice to advance their careers.

The intention of this joint degree program is to enable students who are in the process of acquiring professional training as health care executive leaders to obtain simultaneously a substantial knowledge of public and nonprofit management tools and techniques that will be useful to them in their careers leading healthcare organizations.

Students will be informed of the joint degree option upon interview, and they will be able to enter the joint program at any time during their course of study. Students in the DNP program move between full- and part-time enrollment depending on concurrent employment demands, this will continue to be facilitated in the School of Nursing. The joint program between the MPPM program in GPSIA and the HSEL DNP program in the School of Nursing is offered both on-campus and as a distance learning option.

Applicants will apply separately to both schools, and they must meet all of the usual admissions requirements for both. The schools will make their admissions decisions independently. Any applicant accepted to both schools will have the option of pursuing the joint degree. Applicants may apply to both schools at the same time. Students enrolled in the MPPM program may apply to the DNP before completing their first 24 credits at GPSIA. Students enrolled in the DNP may apply to GPSIA before completing their first 24 credits at the School of Nursing.

Students may apply to GPSIA at www.gspia.pitt.edu. A complete application to the MPPM program at GPSIA consists of a personal statement, resume, two letters of recommendation, and transcripts showing prior undergraduate and graduate-level work. Successful MPPM candidates must have at least five years of full-time work experience in positions with some management or budgetary responsibility.

Students may apply to SON DNP HSEL at www.nursing.pitt.edu/degree-programs/doctor-nursing-practice-dnp/dnp-admission. A complete application to the DNP HSEL program at the SON consists of a personal essay stating one's philosophy of nursing, reasons for wanting to study in a particular major or concentration, expectation of the DNP program, and future career goals. This should include a proposed area of interest for the DNP project, current CV or resume, three letters of professional recommendation indicating the reviewer's support of the student's ability to successfully complete a demanding graduate level academic and clinical program, official transcripts showing prior undergraduate and graduate-level work, and official GRE Scores (per Admission Criteria).

Candidates for the joint degree program must have at the time of admission at least 5 years of full time work experience in positions with supervisory or budgetary responsibility as defined in the GSPIA MPPM admission requirements.

Sample Curriculum Plan

A sample curriculum plan of the joint program is outlined below.

NOTE: Actual courses and sequencing may vary.

Year 1: Fall Term

- NUR 3099 - THE SCIENCE OF HEALTH CARE DELIVERY
- NUR 2011 - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
- NUR 3012 - PUBLIC POLICY IN HEALTH CARE

Year 1: Spring Term

- NUR 2000 - RESEARCH FOR EVIDENCE-BASED PRACTICE 1
- NUR 3013 - ETHICS IN HEALTHCARE

Year 1: Summer Term

- NUR 3031 - METHODOLOGIES FOR DNP PROJECTS
- NUR 2010 - HEALTH PROMOTION AND DISEASE PREVENTION IN CULTURALLY DIVERSE POPULATIONS

Year 2: Fall Term

- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS
- GSPIA Elective

Year 2: Spring Term

- PIA 2104 - FINANCIAL MANAGEMENT
- PIA 2117 - PUBLIC PROGRAM EVALUATION

Year 2: Summer Term

- PIA 2024 - ECONOMICS FOR PUBLIC AFFAIRS
- GSPIA Elective

Year 3: Fall Term

- PIA 2896 - MPPM POLICY SEMINAR

- GSPIA Elective

Year 3: Spring Term

- NURSP 2388 - DATABASE MANAGEMENT
- NUR 3032 - DATA ANALYSIS FOR DNP PROJECTS

Year 3: Summer Term

- Introduction to Informatics
- DNP Residency
- NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS
- NURSP 3097 - DNP RESIDENCY: ADMINISTRATION

Year 4: Fall Term

- NURSP 3096 - DATA ANALYTICS AND CLINICAL SYSTEMS DESIGN
- NURSP 3094 - EVIDENCE-BASED MANAGEMENT AND QUALITY IMPROVEMENT

Year 4: Spring Term

- NUR 3052 - MANUSCRIPT DEVELOPMENT
- NURSP 3092 - LEADERSHIP IN COMPLEX SYSTEMS

Year 4: Summer Term

- NURSP 3097 - DNP RESIDENCY: ADMINISTRATION
- NUR 3037 - DNP PROJECT CLINICAL

37 Credits SON; 24 Credits GSPIA = Total 61 credits for Joint Degree

NOTE: PIA 2020 meet the School of Nursing requirements for NURSP 2061.

PIA 2024 meets the School of Nursing requirements for NURSP 2091.

Master's

Masters Neonatal Nurse Practitioner

Nurse Practitioner Major

<http://nursing.pitt.edu/degree-programs/master-science-nursing-msn/msn-program-majors/neonatal-nurse-practitioner-nnp>

We are no longer accepting admissions to the MSN Neonatal Nurse Practitioner Program, as of December 31, 2018. Applicants interested in becoming a neonatal nurse practitioner who have an earned BSN are encouraged to apply to the Doctor of Nursing Practice (DNP) Neonatal Nurse Practitioner BSN to DNP Concentration program. Those with and earned MSN as a neonatal nurse practitioner may add the DNP degree by applying to the Neonatal Nurse Practitioner MSN to DNP Concentration .

The Neonatal Nurse Practitioner (NNP) is prepared to manage the health care of high-risk infants within families and children up to 2 years of age. This expanded clinician role is performed in collaboration with neonatologists and other pediatric clinicians. Graduates assume leadership roles in a

variety of clinical settings including intensive care nurseries of various levels, newborn nurseries and high-risk follow-up clinics. Course work and clinical experiences focus on the care and management of critically ill and convalescent premature and full-term infants. Graduates select and perform diagnostic and therapeutic invasive procedures on newborns in the intensive care setting. Students are also prepared to participate in research.

The NNP area of concentration offers both full and part time study on the main campus in Pittsburgh. A post master's option is also available. Selected core courses may be transmitted to distance students (additional fees apply). Graduates are eligible to take the NNP certification examination offered by the National Certification Corporation (NCC) and for legal certification as a CRNP and prescriptive privileges through the State Board of Nursing of the Commonwealth of PA.

Applicant Requirements

A baccalaureate degree in nursing from a CCNE, ACICS or ACEN [NLN] accredited program in nursing An RN-Option, Early Admission to MSN/DNP is available for this Area of Concentration. Other requirements for admission include an application, transcripts, professional references, an essay, a resume/CV, a prerequisite statistics course within the last 10 years with a grade of B- or better, and a copy of a current license to practice nursing in a state or territory of the United States. All students must obtain a Pennsylvania license prior to beginning clinical courses. Official scores on the Graduate Record Examination (GRE).The GRE may be waived if the BSN GPA IS 3.5 or higher.

Relevant clinical experience: Equivalent of 2 year full time recent (within past 5 years) practice experience as a registered nurse in the care of critically ill newborns, infants, or children in critical care inpatient settings , primarily Level III or IV NICU is required before a student begins the clinical courses

NNP Full-Time Sample Curriculum Plan:

<http://www.nursing.pitt.edu/degree-programs/master-science-nursing-msn/msn-program-majors/neonatal-nurse-practitioner-nnp>

Fall Term (YR 1)

- NUR 2044 - NURSING GRADUATE ORIENTATION MODULE
- NUR 2004 - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN
or
- NUR 2004D - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN

- NUR 2010 - HEALTH PROMOTION AND DISEASE PREVENTION IN CULTURALLY DIVERSE POPULATIONS
or
- NUR 2010D - HEALTH PROMOTION AND DISEASE PREVENTION IN CULTURALLY DIVERSE POPULATIONS

- NUR 2011 - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE
or
- NUR 2011D - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE

- NURNP 2026 - ROLE SEMINAR 1
or
- NURNP 2026D - ROLE SEMINAR 1

Spring Term (YR 1)

- NUR 2000 - RESEARCH FOR EVIDENCE-BASED PRACTICE 1
or
- NUR 2000D - RESEARCH FOR EVIDENCE-BASED PRACTICE 1

- NUR 2034 - ADVANCED PHARMACOLOGY ACROSS THE LIFESPAN
or

- NUR 2034D - ADVANCED PHARMACOLOGY ACROSS THE LIFESPAN
- NURNP 2540 - PEDIATRIC WELL CHILD CARE THEORY
or
- NURNP 2540D - PEDIATRIC WELL CHILD CARE THEORY
- NURNP 2570 - COMPREHENSIVE NEONATAL ASSESSMENT THEORY

Summer Term (YR 1)

- NUR 2031 - THE DIAGNOSTIC PHYSICAL EXAM ACROSS THE LIFE SPAN
- NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS
or
- NURSP 2075D - INTRODUCTION TO HEALTH INFORMATICS

Fall Term (YR 2)

- NUR 2032 - DIFFERENTIAL DIAGNOSIS CLINICAL
or
- NUR 2032D - DIFFERENTIAL DIAGNOSIS CLINICAL
- NUR 2033 - DIFFERENTIAL DIAGNOSIS THEORY ACROSS THE LIFE SPAN
or
- NUR 2033D - DIFFERENTIAL DIAGNOSIS THEORY ACROSS THE LIFE SPAN
- NURNP 2571 - GENERAL MANAGEMENT OF THE SICK NEONATE - THEORY
- NURNP 2572 - GENERAL ASSESSMENT AND MANAGEMENT OF THE SICK NEONATE - CLINICAL

Spring Term (YR 2)

- NURNP 2573 - NEONATAL DISEASE PROCESS 1 - THEORY
- NURNP 2028 - ROLE PRACTICUM
- NURSP 2098 - HEALTHCARE QUALITY

Summer Term (YR 2)

- NUR 2008 - ETHICS FOR ADVANCED PRACTICE NURSING
- NUR 2009 - LEADERSHIP AND HEALTHCARE SYSTEMS: POLICY, ORGANIZATION, AND FINANCING OF HEALTH CARE
- NURNP 2574 - NEONATAL DISEASE PROCESS 2 - THEORY
- NURNP 2028 - ROLE PRACTICUM
- NURNP 2029 - ROLE SEMINAR 2
or
- NURNP 2029D - ROLE SEMINAR 2
- Comprehensive Exam

Total Credits: 58

* Courses with a "D" are delivered synchronously via distance education for qualified students per Policy 438

Nurse Specialty Role

- Clinical Nurse Leader Concentration
- Nursing Administration Concentration
- Nursing Informatics Concentration

Minor

Gerontology Minor for Nurse Practitioners

A 9-credit Gerontology Minor for Nurse Practitioners (NP) can be obtained by DNP students who are enrolled in the Family (Individual Across the Lifespan) Nurse Practitioner (FNP) DNP or the Psychiatric Mental Health Nurse Practitioner (PMHNP) DNP area of concentration.

The Nurse Practitioner functions in an expanded role that includes the diagnoses and management of health care needs of a specific population and this curriculum will prepare the Nurse Practitioner to develop expertise in the care of older adults. The gerontology courses are specifically designed to address the needs of the older adult in regard to the common geriatric syndromes, geriatric economic and social issues and the unique presentation of disease. Content includes an emphasis on chronic conditions, multi-morbidity, and internal medicine.

The diagnosis and management of these conditions will be emphasized in keeping with the role of the Nurse Practitioner. The courses were designed using national standards for nurse practitioner education through a combination of didactic and clinical learning experiences.

The Gerontology Minor is a 9 credit curriculum available to DNP students currently enrolled in the Family (Individual Across the Lifespan) Nurse Practitioner (FNP) DNP or Psychiatric Mental Health Nurse Practitioner (PMHNP) DNP programs who want to increase their knowledge and expertise related to the diagnosis and management of health care needs in the care of older adults.

Curriculum Format

- ~ 3 Terms
- Onsite
- 180 Practicum Hours

Program Outcomes

Graduates of the Gerontology Minor are prepared to accomplish the following:

- Provide comprehensive, evidence-based geriatric focused care for elderly patients and their caregivers based on physical, mental, emotional and functional changes
- Practice culturally sensitive care in regard to ethnicity, religion, gender and socio-economic status
- Identify available community resources to promote health, safety, function and independence
- Provide leadership to other members of the interdisciplinary team that is focused on the needs and wishes of the patient
- Assume the role of advocate for patients and caregivers in regard to access and transitions within the health care system

Curriculum: Gerontology Minor (subject to change)

- NURNP 2526 - MANAGEMENT: GERIATRIC HEALTH THEORY
or
- NURNP 2526D - MANAGEMENT: GERIATRIC HEALTH
- NURNP 2527 - ADVANCED MANAGEMENT: COMPLEX GERIATRIC HEALTH ISSUES
or
- NURNP 2527D - ADVANCED MANAGEMENT: COMPLEX GERIATRIC HEALTH ISSUES
- NURNP 2529 - GERONTOLOGY CLINICAL PRACTICUM
- NURNP 2528 - SEMINAR IN GERIATRIC CARE

Total Credits: 9

*Courses with a "D" can be delivered synchronously via distance technology. Such courses are open only to qualified on-site students as per Policy 438.

Health Care Genetics Minor

Genetic based medicine is routinely becoming a part of daily health care, having major impacts on patient diagnosis, prognosis and treatment. The curriculum is designed for health care workers who are seeking focused, graduate-level education in the specialty of genetics. Knowledge gained through coursework will enable healthcare workers to better care for and educate their patients.

The Minor in Health Care Genetics is available to enrolled University of Pittsburgh graduate students. Students should consult with their academic advisor. The Minor includes courses in genetics (taught through the School of Nursing) and choice of 2 courses related to the student's career goals or interests (taught through other departments in the Schools of the Health Sciences). Learning experiences may be enriched through Clinical Genetics Case Conferences, Human Genetics Research Seminar, Human Genetics Journal Club, Genetics Grand Rounds, and a Research Practicum in a molecular genetics laboratory.

Curriculum Format

- Full-time or Part-time (~ 3 terms)

Program Outcomes

Graduates of the Minor in Health Care Genetics are prepared to accomplish the following:

- Guide patients in their understanding of the genetic basis of disease as well as providing patient education and guidance in the areas of available genetic testing, interpretation of testing, recurrence risks, and genetic based therapies
- Provide advocacy for patients and families with genetic conditions
- Utilize family histories to determine disorders for which the patient is at risk
- Utilize a variety of resources to stay up to date with advances in genetic based medicine
- Determine when patient referral to a genetic professional is required
- Utilize a variety of resources to provide patients and their families with support mechanisms
- Interpret genetic research findings

Admission Criteria

- GPA \geq 3.0 in current graduate program

Curriculum

- Electives (per approval of Coordinator) **6 cr.**
- NUR 2680 - INTRODUCTION TO GENETICS AND MOLECULAR THERAPEUTICS
- NUR 2681 - ADV TOPICS IN HUMAN GENETICS

Total Credits: 12

Nursing Administration

The Minor in Nursing Administration is available to enrolled University of Pittsburgh School of Nursing graduate students pursuing education in advanced clinical specialty roles who want the opportunity to also obtain knowledge and experience pertinent in management and leadership. Students should consult with their academic advisor. The minor will prepare nurses to assume positions as advanced practice nurses with some management and/or leadership responsibility.

The curriculum focuses on management in complex social and operational systems for healthcare delivery. Attention is given to applying role-related knowledge and skills in diverse settings and populations, including acute care, long term care, psychiatric, and community settings. The culminating practicum is a uniquely designed mentored clinical experience that provides students with an opportunity to experience a leadership role.

Curriculum Format

- Part-time (~ 2 terms)
- 180 Clinical hours

Program Outcomes

Graduates of the Minor in Nursing Administration are prepared to accomplish the following:

- Assume leadership for clinical initiatives and outcomes within their area of clinical focus
- Develop a business case for change within their area of clinical focus

Curriculum

* These courses are available via distance education for qualified students per Policy 438

- NURSP 2061 / NURSP 2061D - ORGANIZATION & MANAGEMENT THEORY*
- NURSP 2091 / NURSP 2091D - FINANCE AND ECONOMICS FOR HEALTH CARE LEADERS*
- NURSP 2092 / NURSP 2092D - LEADERSHIP DEVELOPMENT*
- NURSP 2064 - NURSING ADMINISTRATION SEMINAR AND PRACTICUM

Nursing Education

The Minor in Nursing Education combines didactic courses and two field-based preceptorships in settings and roles of the student's interest. The curriculum prepares students to apply instructional theory and research in the following types of educational settings and roles: schools of nursing, health care agency staff development, continuing education departments, advanced practice nursing, and patient and community education agencies. The Minor is available to enrolled University of Pittsburgh School of Nursing graduate students. The minor involves the completion of a minimum of 12 credits of coursework. Students should consult with their academic advisor.

Graduates may be eligible for the Certified Nurse Education Exam offered by the National League of Nursing (NLN) (*Note: visit the NLN website for eligibility requirements*)

Curriculum Format

- Part-time (~ 4-5 terms)
- 330 practicum hours

Program Outcomes

Graduates of the Minor in Nursing Education are prepared to:

- design current, progressive nursing education programs using research and theories of learning instruction, curriculum, evaluation and measurement.
- utilize a variety of teaching strategies and media appropriate to learner characteristics, instructional objectives, and nursing or health-related content.
- plan the learning activities of individuals and groups of students in clinical and didactic settings.
- guide the performance of learners in settings where nurses function as educators for nurse colleagues, students, patients, families, and communities.
- apply principles of measurement and evaluation to the development of learner assessment procedures for didactic and educational instruction.
- utilize computer technology and educational informatics as integral components of nursing education and training.
- articulate the role of the nurse educator within the health professions, schools of nursing, and community.
- perform the role of education consultant in settings where nurses, patients, families, and communities participate in education activities.

Admission Criteria

- GPA \geq 3.0 in current MSN program

Curriculum

- NURSP 2071 - DESIGN AND PROCESS OF INSTRUCTION
- NURSP 2072 - MEASUREMENT AND EVALUATION
- NURSP 2073 - PRACTICUM 1 IN NURSING EDUCATION: TEACHING AND LEARNING ASSESSMENT
- NURSP 2074 - PRACTICUM 2 IN NURSING EDUCATION: EDUCATIONAL PROGRAM MANAGEMENT

Total Credits: 12

Nursing Informatics Minor

The Minor in Nursing Informatics is a combination of cognitive science, computer science, information science, and nursing science. It includes the development, analysis, and evaluation of information systems that support, enhance and manage patient care. Informatics nurses are involved in practice, education, research, administration, and consultation and can work in public, private, or corporate settings. Career opportunities for graduates of this specialty are numerous.

The Minor in Nursing Informatics is available to enrolled University of Pittsburgh School of Nursing graduate students. The informatics curriculum includes introduction to informatics, clinical information systems, database management, and project management courses. Students should consult with their academic advisor.

Curriculum Format

- Part-time (2-3 terms)
- 11 course credits
- Online

Program Outcomes

Graduates of the Minor in Nursing Informatics are prepared to:

- Analyze clinical information systems for adoption by healthcare systems
- Manage projects in a multidisciplinary integrated healthcare informatics environment
- Consult with companies in the design of healthcare information systems
- Assist in the planning and development of informatics applications for telehealth, consumer health, and community-based care.

Curriculum

- NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS
- NURSP 2388 - DATABASE MANAGEMENT
- NURSP 2076 - CLINICAL INFORMATION SYSTEMS
- NURSP 2070 - INFORMATION TECHNOLOGY PROJECT MANAGEMENT

Total Credits: 11

Nursing Research

The Minor in Nursing Research is available to students pursuing education in advanced clinical specialty roles who want the opportunity to also obtain training pertinent to conduct and coordinate clinical research. Students should consult with their academic advisor. The curriculum focuses on research methodology and statistics. The Minor will enable graduates to apply their clinical and research skills in the following types of positions: clinical trial interventionists, research consultants, adverse events coordinators, and research project managers.

Graduates of the Minor in Nursing Research are eligible for National Certification as a Certified Clinical Research Coordinator by the Association of Clinical Research Professionals (ACRP) after successful completion of the Clinical Research Coordinator (CRC) Certification Exam. (Note: clinical research coordinator experience is required for exam).

Curriculum Format

- Part-time (~ 4 terms)
- Onsite

Program Outcomes

Graduates of the Minor in Nursing Research are prepared to accomplish the following:

- Apply research principles to the management of clinical investigations
- Participate in the research process including the development of reviews of literature, research protocols, and human subjects protection protocols
- Participate in recruitment of research subjects, data collection, and dissemination of research findings
- Utilize computer technology and informatics as an integral component of a research program or project
- Articulate the role of the clinical researcher within the health professions and society
- Perform the role of nurse researcher within clinical research settings

Curriculum

- Elective - (approval by Coordinator, Nursing Research Concentration) **3 cr.**
- NUR 2011 - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE

- NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS
- NUR 3052 - MANUSCRIPT DEVELOPMENT
- NUR 2800 - COORDINATING CLINICAL TRIALS

Total Credits: 12

School of Nursing Faculty

Full-Time Faculty

- Sheila A. Alexander, PhD, University of Pittsburgh
- Marianne Allen, DNP, Drexel University
- Salah S. Al-Zaiti, PhD, University of Buffalo
- Maighdlin Anderson, DNP, University of Pittsburgh
- Michael D. Beach, DNP, University of Pittsburgh
- Catherine M. Bender, PhD, University of Pittsburgh
- Alice M. Blazeck, DNSc, University of Pennsylvania
- Betty J. Braxter, PhD, University of Pittsburgh
- Marnie L. Burkett, DNP, Chatham University
- Judith A. Callan, PhD, University of Pittsburgh
- Grace B. Campbell, PhD, University of Pittsburgh
- Brenda L. Cassidy, DNP, University of Pittsburgh
- Denise Charron-Prochownik, PhD, University of Michigan
- Eileen R. Chasens, PhD, University of Alabama at Birmingham
- Tim M. Coleman, DNP, Carlow University
- Yvette P. Conley, PhD, University of Pittsburgh
- Rose E. Constantino, PhD, University of Pittsburgh
- Elizabeth A. Crago, PhD, University of Pittsburgh
- Cynthia A. Danford, PhD, University of California, San Francisco
- Jason J. Dechant, PhD, University of Pittsburgh
- Jill R. Demirci, PhD, University of Pittsburgh
- Annette J. DeVito Dabbs, PhD, University of Pittsburgh
- Heidi A. Donovan, PhD, University of Wisconsin-Madison
- Willa M. Doswell, PhD, New York University
- Jacqueline M. Dunbar-Jacob, PhD, Stanford University
- Sandra J. Engberg, PhD, University of Pittsburgh
- Becky L. Faett, PhD, University of Pittsburgh
- Christine A. Feeley, PhD, University of Alabama at Birmingham
- Laura A. Fennimore, DNP, University of Pittsburgh
- Lisa Y. Foertsch, DNP, University of Pittsburgh
- Sandra A. Founds, PhD, University of Massachusetts
- Hayley D. Germack, PhD, University of Pennsylvania
- Catherine Grant, DNP, Chatham University
- Jane Guttendorf, DNP, University of Pittsburgh
- Teresa L. Hagan, PhD, University of Pittsburgh
- Alice J. Haines, DNP, University of Pittsburgh
- Melissa D. Harlan, DNP, University of Pittsburgh
- Richard A. Henker, PhD, University of Washington
- Rosemary L. Hoffmann, PhD, University of Pittsburgh

- Marilyn T. Hravnak, PhD, University of Pittsburgh
- Chris C. Imes, PhD, University of Washington
- Brayden Kameg, DNP, University of Pittsburgh
- Jacob K. Kariuki, PhD, University of Massachusetts
- Robert R. Kaufman, PharmD, Duquesne University
- Linda K. Kelly, JD, Duquesne University
- Julius M. Kitutu, PhD, University of Pittsburgh
- Lisa M. Kreashko, DNP, University of Pittsburgh
- Claudia M. Kregg-Byers, PhD, University of Pittsburgh
- Heeyoung Lee, PhD, University of Washington
- Young Ji Lee, PhD, Columbia University
- Dan Li, PhD, University of Miami
- Jennifer H. Lingler, PhD, University of Pittsburgh
- Faith S. Luyster, PhD, Kent State University
- Grant R. Martsolf, PhD, Penn State University
- Judith T. Matthews, PhD, University of Pittsburgh
- Geraldine M. Maurer, DNP, Waynesburg University
- Judith A. Mermigas, DNP, Case Western Reserve University
- Susan E. Miller, DNP, University of Pittsburgh
- Laurel A. Miner, PhD, Capella University
- Ann M. Mitchell, PhD, University of Pittsburgh
- Michael W. Neft, DNP, Chatham University
- Nancy A. Niemczyk, PhD, University of Pittsburgh
- Marci L. Nilsen, PhD, University of Pittsburgh
- Lorraine M. Novosel, PhD, University of South Florida
- John M. O'Donnell, DrPH, University of Pittsburgh
- Na-Jin Park, PhD, University of Alabama?
- Dianxu Ren, PhD, University Of Pittsburgh
- Barbara Rauscher, PhD, East Tennessee State University
- Margaret Q. Rosenzweig, PhD, University of Pittsburgh
- Elizabeth A. Schlenk, PhD, University of Michigan
- Jennifer B. Seaman, PhD, University of Pittsburgh
- Paul Scott, PhD, University of Pittsburgh
- Mandy J. Schmella, PhD, University of Pittsburgh
- Susan M. Sereika, PhD, University of Michigan
- Paula R. Sherwood, PhD, Michigan State University
- Lucille A. Sowko, PhD, University of Pittsburgh
- Teresa Thomas, PhD, University of Pittsburgh
- Patricia K. Tuite, PhD, University of Pittsburgh
- Darcy K. Waechter, DNP, University of Pittsburgh
- Weiwen Wang, DNP, University of Pittsburgh
- Karin Warner, DNP, Duke University
- Susan W. Wesmiller, PhD, University of Pittsburgh
- Cecelia C. Yates Binder, PhD, Tuskegee University
- Judith F. Zedreck Gonzalez, DNP, University of Pittsburgh
- Jamie M. Zelazny, PhD, University of Pittsburgh
- Fei Zhang, PhD, University of Miami

Part-Time Faculty

- Virginia L. Allison, DNP, University of Pittsburgh
- Tom Bassett, MSN, University of Pittsburgh
- Vivian J. Boyer, DNP, Chatham University
- Cathleen Brzeinski, PhD, Northcentral University
- Lora E. Burke, PhD, University of Pittsburgh
- Megan Dill, DNP, Missouri State University
- Bettina A. Dixon, MSN, University of Pittsburgh
- Julie Eiler, MSN, University of Pittsburgh
- Andrea F. Fischl, PhD, University of Pittsburgh
- Jason C. Fisher, DNP, University of Pittsburgh
- Ashley Foster, MSN, California University of Pennsylvania
- Sharyn A. Gesmond, MSN, University of Pittsburgh
- Joseph S. Goode Jr., MSN, University of Pittsburgh
- Carolyn A. King, MSN, Chatham University
- Christina R. Lauderman, MSN, Robert Morris University
- Maria Leventis, MSN, New York University of Nursing
- Eileen Maly, MSN, Indiana University of Pennsylvania
- Joseph G. Mattis, MSN, University of Pittsburgh
- Kathleen S. Perdziola, MSN, Kent State University
- Jeffrey M. Rohay, PhD, University of Pittsburgh
- Danielle Schnauber, MSN, Carlow University
- Donette Svidron, MSN, University of Pittsburgh
- Robin W. Tate, MBA, Waynesburg University
- Jessica G. Tillia, MS, University of Pittsburgh
- Charles W. Warner, DNP, University of Pittsburgh

School of Pharmacy

Chartered in 1878, the School of Pharmacy has a tradition of developing leaders and innovators that drive the future of pharmacy. We investigate, discover, and create ways to improve patient health and, through partnerships, change practice and improve efficiency of care. We also use computational and bench research methods to discover and develop drugs and drug delivery systems, and optimize drug therapy. The School of Pharmacy leads the way in education, personalizing education and getting students to expert faster. The School of Pharmacy is among the oldest pharmacy schools in the country. **Pitt Pharmacy is in the top tier of schools of pharmacy in US News & World Report rankings and NIH-funded research.**

Mission

The School of Pharmacy is committed to improving health through excellence, innovation, and leadership in education of pharmacists and pharmaceutical scientists, in research and scholarship, in care of patients, and in service to our communities.

Vision

To be an outstanding school of pharmacy renowned for excellence in discovery and advancement of science-based use of medicines and other interventions to enhance the vitality and quality of life.

Values

Integrity guides our daily work. We foster:

Passion, commitment, and diligence

Creativity and personal growth

Collaboration and teamwork

A culture of respect for the individual.

Doctor of Pharmacy (PharmD) Program

The professional curriculum is composed of a course of study requiring two years (62 credits) of pre-professional study followed by four years of professional courses. The four-year professional curriculum emphasizes problem solving and critical thinking, blending classroom and laboratory learning with experiential learning in practice. The required component of experiential learning is designed to facilitate progress from initial stages of making meaningful connections with patients to caring for complex patients with acute and chronic diseases. Experiences include patient care in communities, in hospitals, and during transitions of care. This experiential education begins in the first weeks of the P1 year.

Through our commitment to personalizing education, PittPharmacy inspires students to use their unique interests and talents to improve the lives of people through the safe, effective, and responsible use of medications and other interventions.

The PharmD program prepares students to be practitioners who advance the profession by fostering innovation, leadership, interprofessional collaboration, civic engagement, advocacy, life-long learning, and a professional attitude of inclusion.

Accreditation Council for Pharmacy Education

The University of Pittsburgh School of Pharmacy's Doctor of Pharmacy program is accredited by the Accreditation Council for Pharmacy Education, 190 South LaSalle Street, Suite 2850, Chicago, IL 60503, 312/664-3575; FAX 866/228-2631, web site www.acpe-accredit.org.

Contact Information

School of Pharmacy

Admissions: 412-383-9000

E-mail: rxschool@pitt.edu

www.pharmacy.pitt.edu

Special Academic Opportunities

PittPharmacy provides opportunities to personalize students' education and get them to expert faster.

Areas of Concentration

Areas of Concentration (ARCO's) provide ways to tailor education to explore personal and professional interests. During pharmacy school, students can pursue an area of pharmacy in depth through specialized courses and experiences, mentoring, and a scholarly project. Students may apply for an ARCO during their second professional year of PharmD training. Each ARCO has specific requirements.

- Community Leadership, Innovation, and Practice
- Geriatrics and Palliative Care
- Global Health
- Pediatrics
- Pharmacoeconomics
- Pharmacotherapy Scholars
- Pharmacy Business Administration
- Research

International Pharmacy Travel

Pitt student pharmacists have the opportunity to gain exposure to diverse practices of pharmacy and global cultures through international experiences.

Student-Driven Independent Study

Students work directly with a faculty member to design a unique one-on-one learning experience in the community, hospital, or laboratory. Unlike traditional electives, students play an active role in establishing the goals and parameters of the project. Check out videos by faculty who offer electives and special topic opportunities.

PharmD/PhD Combined Program

If students are committed to extending their research education, we offer an opportunity for a pathway to obtain a Doctor of Philosophy in Pharmaceutical Sciences (PhD) degree.

Selecting Experiential Rotations

Students can design an individualized combination of core and elective rotations that are unique to their professional interests, talents, and goals. Students are able to choose from over 1,000 rotations in a wide range of pharmacy careers locally, nationally, and internationally.

Admissions

The School of Pharmacy admits students to its programs under one of two pathways-guarantee or open. Those two admission pathways are detailed below:

Pharmacy Guarantee Freshman Admission

All students should first submit an application to the University of Pittsburgh, Office of Admissions and Financial Aid. The School offers a guaranteed acceptance to a limited number of high school seniors who enroll at one of the University of Pittsburgh campuses. The number of guaranteed offers is limited and offered on a rolling basis. Students who have demonstrated academic success in high school, score 1330 or higher on the SAT I (Math and Critical Reading sections), with a minimum of 660 in the Math section, and specify Pharmacy on the application will be offered the guaranteed admission, if available.

Students who receive the guaranteed admission are expected to perform well in their pre-professional courses. In order to secure a place in the PharmD Program, students must earn:

- a letter grade of a C or better in all pre-professional courses with no repeat of pre-professional courses
- a 3.25 or greater overall GPA in pre-professional courses
- a competitive Math and Science GPA of 3.0
- Note: Required Math and Science courses must be taken at the University of Pittsburgh (AP credits are acceptable)

To exercise the guaranteed admission, all applicants, must:

- Submit the Pharmacy College Admissions Test (PCAT) scores
- Submit a completed PharmCAS application and fee
- Participate in a satisfactory interview prior to School of Pharmacy Admission

Students who meet these performance criteria will be admitted into the PharmD Program.

Open Admission

Students admitted to the program through open admission compete for remaining spaces in the class. The requirements to be considered a competitive applicant for the School of Pharmacy's professional program are:

- completion of the pre-professional requirements
- competitive Math and Science GPA of 3.0
- submission of the Pharmacy College Admission Test (PCAT) scores
- submit a completed PharmCAS application and fee
- selected applicants will be required to participate in a satisfactory interview (interviews are by invitation only)

More information about PharmCAS and deadlines for application can be found at www.pharmcas.org.

Students applying for admission must apply through PharmCAS, the Web-based Pharmacy College Application Service.

Visit the School of Pharmacy Web site at www.pharmacy.pitt.edu.

Application Procedures and Deadlines

All applicants must file an application through PharmCAS, a Web-based Pharmacy College Application Service, by January 6, 2020.

The application process, application deadlines, and other admission requirements are summarized on the School of Pharmacy Web site.

Throughout the application process, it is the student's responsibility to follow all instructions and meet all deadlines. Failure to do so might result in their application being canceled. It is highly recommended that students apply early to ensure that all application materials are received by the January deadline. tab.

Preparing to Complete the Application

The School of Pharmacy recommends that students thoroughly review the application process before entering data or filling out forms so that they are aware of all the information they will need to gather and how much time the entire process will take. Visit the PharmCAS Web site at www.pharmcas.org and review the "Preparing to Apply" tab. Then review the Checklist, PharmCAS Instructions, and the Applicant Code of Conduct links. Review the time line for the application process: Admissions Calendar

Complete Pre-professional Courses and Minimum Eligibility Requirements: Math & Science course requirements must be completed by the end of spring term of year of admission and all other courses must be completed before the fall term. NOTE: Early Decision applicants must have all of the pre-professional required course work completed and letter grades recorded on official transcripts by the PharmCAS Early Decision deadline of September 3, 2019.

Register to take the PCAT (Pharmacy College Admission Test): Visit the PCAT web site for registration deadlines for test dates and register as early as possible since the test sites have a limited number of examinee seats for each exam date. Register to take the PCAT (recommended test dates include July and/or September, October/November) and have your scores sent to PharmCAS, code 104. Applications are not complete until PCAT scores are received. Only completed applications are considered for an interview invitation. NOTE: Since the January PCAT scores will not be received until after interviews are offered, the Admissions Committee recommends an earlier PCAT testing date.

Completing the Application Process

The application process consists of one application.

PharmCAS (Pharmacy College Application Service): This service enables students to generate one primary application that can be submitted to multiple PharmD degree programs. For the University of Pittsburgh School of Pharmacy, the application must be electronically submitted on or before midnight Eastern Standard Time on January 6, 2020.

To eliminate any unforeseen problems, it is recommended that students submit their application early; i.e., November 1st. This will ensure eligibility to update fall grades and, if issues arise, they can be investigated and resolved before the December deadline.

After electronically submitting the PharmCAS application and fee for the PharmD program, there are follow-up steps that applicants must address to be certain that all the required documents (such as transcripts to PharmCAS) have been received on time.

Tuition and Financial Aid

Students should investigate their eligibility for federal and state programs by calling the Office of Admissions and Financial Aid at 412-624-PITT or e-mail oafa@pitt.edu.

The University's financial advisors are the best source of information about local grants or scholarships that extend beyond federal and state programs. Students are encouraged to look outside of the health professions for additional support. Students may be able to compete successfully for economically or academically awarded scholarships from private groups and associations.

In addition, the School of Pharmacy has a number of general scholarships provided through the generosity of the School's alumni and friends. These are described in detail on the school's Web site at <http://www.pages.pharmacy.pitt.edu/pharmdhandbook/the-pharmd-student-handbook/admissions/scholarships/>

Tuition Rates and Fees can be found on the school's Web site at <https://oafa.pitt.edu/financialaid/costs/>.

Academic and Professional Standards

Academic Integrity

School of Pharmacy students are responsible for upholding the standards of behavior outlined in the University's Guidelines on Academic Integrity, the University's policy on sexual harassment, and other policies related to student behavior.

Enrollment in the School of Pharmacy carries with it obligations of conduct within and outside of the classroom. Professional students are expected to maintain the highest standards of personal integrity and conduct themselves in a manner that is a credit to themselves, the school, and the profession.

Each year, students will be asked to sign a copy of the University of Pittsburgh School of Pharmacy Code of Conduct that reaffirms their commitment to ethical and professional behavior. Details of the Code are outlined on the school's Web site.

Grading System

Doctor of Pharmacy students are subject to the provisions of the Guidelines and Regulations for the Promotion of Students in force at the time. All students will be given a copy of these guidelines and regulations upon entry into the program.

Calculation of grade point average (GPA) will include all required professional courses and approved electives taken while enrolled in the PharmD program. Cumulative GPA will be calculated at the end of each term. All PharmD students must maintain a cumulative GPA of 2.00. Students who fail to maintain a cumulative GPA of 2.00 or above will be placed on academic probation and given one opportunity to repeat selected courses in order to raise their cumulative GPA above 2.00. Students failing to increase their cumulative GPA above a 2.00 during this period of academic probation will be dismissed from the PharmD program. Term GPA will be calculated at the end of each term. Students with a term GPA under 2.00 will be placed on academic probation and must achieve a GPA of 2.00 or above during the following term. Students failing to achieve a term GPA of 2.00 or above during this period of academic probation will be dismissed from the PharmD program.

It is the responsibility of students to monitor their academic progress and become familiar with the program degree requirements and academic regulations.

Clearance and Immunization Policy

The Office of Experiential Learning manages learning experiences in communities and professional practice environments that are embedded across all four years of the PharmD program. Because these experiences involve direct patient contact, the practice sites where students are placed require

proof of immunization to communicable diseases, fingerprinting, background checks, and drug screens. Students who fail to complete these prerequisites no later than two weeks prior to the start of classes will not be able to fulfill their experiential learning requirements. PittPharmacy works with CastleBranch, a background screening and compliance tracking solutions company, to collect and manage the documentation of all such prerequisites. Each student has access to his or her information through the secure CastleBranch web site both as a student and after graduation. CastleBranch maintains a secure site to which only the Office of Experiential Learning Office and the student have access.

A positive criminal history and/or positive drug screen may disqualify a student from completing required experiential learning and may prevent successful completion of the PharmD program. Many of the sites used for experiential learning require students to meet certain prerequisites. These prerequisites may include showing proof of immunization to communicable diseases, undergoing criminal background checks, and drug screening. Failure to meet these prerequisites can result in students being unable to complete their experiential learning requirements.

Additionally, in order to become a licensed pharmacist, many states will inquire as to whether the applicant has been convicted of any misdemeanor, felony, or any illegal act associated with alcohol and/or substance abuse. A criminal history may delay or prevent licensure.

PhD or MS in Pharmaceutical Sciences

The School of Pharmacy offers graduate level training to highly motivated individuals. Our mission is to train the next generation of leaders and decision makers seeking to improve the health of the community through outstanding basic and clinical research. Major strengths include highly accomplished, well-funded research faculty, multidisciplinary training opportunities, and cutting-edge technologies.

Training consists of required core courses, elective courses, journal clubs, research presentations, and an original faculty-advised research project leading to a final thesis or dissertation. Students may select to enroll in one of five Primary Tracks: medicinal chemistry, biochemical pharmacology, pharmaceuticals, clinical pharmaceutical sciences, or health outcomes and policy research.

Contact Information

Lori Altenbaugh
Graduate Program Coordinator
University of Pittsburgh
School of Pharmacy
Pittsburgh, PA 15261
412-648-1014
altenbaughlm@pitt.edu

Application Process

Applications must be submitted electronically at the Pharmacy College Application Service for Graduate Programs (PharmGrad). Application to our program requires a \$50.00 fee that cannot be waived.

Applications for the fall term must be submitted no later than January 3, 2020. Applications are reviewed on a first-come, first-served basis so it is wise to apply as early as possible. Applications for spring term admission are not accepted.

The School of Pharmacy highly recommends that applicants to the PhD program have research experience and that students mention specific faculty with whom they would like to work in their Personal Statement.

When complete, student applications are reviewed. No preliminary assessments are made on individuals applying to the program until all application requirements are complete. The GRE is required in order to submit your application. Subject-specific tests are not required. GRE scores are good for five years; the ETS will not release GRE scores after 5 years from the date of the exam. We do not state a minimum GRE or GPA as we prefer to look at the entire representation of the applicant. The average GRE score for those students admitted for 2019 verbal is 152 (56th percentile), quantitative is 168 (95th percentile) and analytical writing is 3.5.

We require three references that **MUST** be submitted online. Written references are not accepted.

IMPORTANT: WE DO NOT ACCEPT ANY DOCUMENTS SENT VIA MAIL TO OUR DEPARTMENT. You will be notified if your application is reviewed and you are invited for an interview. At that time, you will need to supply an official transcript.

International Students

For the Test of English as a Foreign Language (TOEFL), a minimum result of 100 on the iBT (Internet-based test) is required. For IELTS the minimum acceptable score is 7.0. You must submit GRE and TOEFL (or IELTS) scores to the University of Pittsburgh, institution code is 2927. You do not need a department code. TOEFL scores are good for two years; the ETS will not release TOEFL scores after 2 years from the date of the exam. **If you have graduated from a U.S. institution OR if English is the official language of your country then proof of English proficiency is not required.**

Financial Assistance and Tuition

Most students accepted to our PhD program are offered full tuition scholarship plus a teaching assistant stipend. Teaching assistant experience is not necessary as you will be trained upon acceptance into the program.

For the 2019-2020 academic year we granted scholarships and TA positions to 14 new admissions from a pool of approximately 101 applications. No financial assistance is available to MS students. Tuition Rates and Fees can be found on the school's Web site at <https://oafa.pitt.edu/financialaid/costs/>. NOTE: Health insurance is REQUIRED for all students.

All fees are the same for those students who are not offered a scholarship.

Length of Programs

The PhD Program requires a minimum of 72 credits. Most students complete the PhD degree within five years. The statute of limitations for completion of the PhD degree is ten years. (See Statute of Limitation/Leaves of Absence in the University catalog for more information.)

The MS (thesis-based) program requires a minimum of 30 credits. Most students complete the MS degree in two academic years. The statute of limitations for completing the MS degree is four consecutive calendar years from the first term of registration.

The Non-Thesis MS program requires a minimum of 34 credits and is usually completed within one calendar year (three semesters). The statute of limitations for completing the MS degree is four consecutive calendar years from the first term of registration.

Academic Standards

School of Pharmacy students are responsible for upholding the standards of behavior outlined in the University's Guidelines on Academic Integrity, the University's policy on sexual harassment, and other policies related to student behavior.

MS Pharmacy Business Administration

The 12-month executive style Master of Science in Pharmacy Business Administration (MSPBA) program consists of 36 credits that build critical skills and expertise for pharmacy professionals seeking to substantially increase their business acumen and marketability.

Contact Information

Bridget T. Regan, MBA,RPh
Director of Pharmacy Business Programs and Assistant Professor
University of Pittsburgh
School of Pharmacy
Pittsburgh, PA 15261
412-648-8565
Bridget.Regan@pitt.edu

Amy Giles
Program Coordinator
University of Pittsburgh

Application and Requirements

Prerequisite

- Two years of professional experience is recommended
- Candidates with a PharmD or BS in Pharmacy will receive preferential admission

To apply to the program, you must complete the following requirements:

- Completed Application Form (Application PDF)
- Résumé or CV
- One self-nomination letter describing:
 - Current job responsibilities and assignments
 - Finest achievements and greatest disappointments
 - Challenges met within current organization
 - Civic and community activities and any offices held
 - Reasons and motivations for entering the MSPBA program
 - Professional and personal goals and plans
- Two letters of professional reference
- College or university transcripts
- Graduate school admission exam scores (recommended)
- GMAT
- TOEFL or the IELTS examination (for anyone who speaks English as a second language)
- In-person interview with MSPBA program representatives

Applicants will be contacted for scheduling of an on-site interview following receipt of complete packet of information

Tuition and Financial Aid

Tuition

Tuition Rates and Fees can be found on the school's Web site at <http://mspba.pitt.edu/tuition/>. Tuition is paid in equal parts per term for three terms.

All students, including students traveling from out of town, are responsible for all travel expenses.

The MSPBA program will provide a list of hotels that offer University rates from which students can select and reserve rooms.

Financial Aid

Federal Stafford loans are available to U.S. citizens for up to \$20,500 per academic year. Refer to the University's Office of Admissions and Financial Aid for information on how to apply. U.S. citizens who are funding the degree in full, in part, or whose employer reimburses only after the end of a term, may consider financing. Furthermore, students may also finance their costs through standard loans.

Tuition Includes

- All books, cases, and simulations; meals during class sessions

- Microsoft Windows and Program Bundle software packages
- Access to all University of Pittsburgh student resources such as libraries, fitness facilities, and public transportation while on campus

School of Pharmacy Faculty

School of Pharmacy Faculty

Accreditation

Accreditation Council for Pharmacy Education

The University of Pittsburgh School of Pharmacy's Doctor of Pharmacy program is accredited by the Accreditation Council for Pharmacy Education, 190 South LaSalle Street, Suite 2850, Chicago, IL 60503, 312/664-3575; FAX 866/228-2631, web site www.acpe-accredit.org.

Program and Course Offerings

Certificate

Pharmacy Business Administration Certificate

Pharmacy Business Administration Certificate

The PBA Certificate program is designed for working healthcare professionals who want to obtain sophisticated business knowledge and an in-depth understating of the business of medicines. This 12-month executive style program consists of 18 credits that focus on Pharmacy Business Administration.

Website: <http://mspba.pitt.edu/program/pba-certification-program/>

Contact Information

Bridget T. Regan, MBA,RPh
 Director of Pharmacy Business Programs and Assistant Professor
 University of Pittsburgh
 School of Pharmacy
 Pittsburgh, PA 15261
 412-648-8565
Bridget.Regan@pitt.edu

Amy Giles
 Program Coordinator
 University of Pittsburgh
 School of Pharmacy
 Pittsburgh, PA 15261
 412-624-1238
Amy.Giles@pitt.edu

Application and Requirements

Prerequisite

- Two years of professional experience is recommended
- Current employment in the healthcare industry
- Experience in strategy, business plans and finance preferred
- Masters degree preferred

To apply to the program, contact Dr. Regan directly and provide the following:

- Résumé or CV
- One self-nomination letter describing:
 - Current job responsibilities and assignments
 - Finest achievements and greatest disappointments
 - Challenges met within current organization
 - Civic and community activities and any offices held
 - Reasons and motivations for entering the PBA certificate program
 - Professional and personal goals and plans
- Two letters of professional reference
- College or university transcripts
- Graduate school admission exam scores (recommended)
- GMAT
- TOEFL or the IELTS examination (for anyone who speaks English as a second language)

Applicants will be contacted for scheduling of an on-site interview following receipt of complete packet of information

Tuition and Financial Aid

Tuition

Tuition Rates and Fees can be found on the school's Web site at <http://mspba.pitt.edu/tuition/>. Tuition is paid in equal parts per term for three terms.

All students, including students traveling from out of town, are responsible for all travel expenses.

The PBA certificate program will provide a list of hotels that offer University rates from which students can select and reserve rooms.

Tuition Includes:

- All books, cases, and simulations; meals during class sessions
- Microsoft Windows and Program Bundle software packages
- Access to all University of Pittsburgh student resources such as libraries, fitness facilities, and public transportation while on campus

Doctoral

Pharmaceutical Sciences - Biochemical Pharmacology Track, PhD

Biochemical Pharmacology

The biochemical pharmacology track focuses on the biochemical mechanisms responsible for drug and other xenobiotic, and gene actions on living systems, both healthy and compromised.

- You will have the opportunity to study with faculty in multiple areas including behavioral, cardiovascular and endocrine pharmacology, neuropharmacology, immunopharmacology, chemotherapy, toxicology, and metabolic diseases.
- Your research opportunities include studying the biochemical mechanism of drugs and genes in cell cultures and/or healthy and compromised animal models.

- You will have the opportunity to create and/or use genetically engineered animals that include transgenic and knockout mice, as well as to integrate disease models into the animal models in order to study the gene function in diseases.
- You will develop a broad knowledge of the regulation of drug metabolizing enzymes and transporters and the implications of this regulation in drug metabolism.

PhD Comprehensive Exam and Dissertation

Requirements:

Students must complete a total of 72 credit hours to fulfill the requirements for the PhD. Required courses for all PhD students are listed below. Students who have had prior course work or extensive experience in a given area may be exempted from the required course at the discretion of the faculty. The remaining credit requirements are completed through elective courses and dissertation research. The specific plan of study is developed by the student and their faculty advisor and committee. Courses should be selected to assure an adequate breadth of knowledge as well as depth in the student's focus area. For students interested in the Clinical Pharmaceutical Scientist Track, you may find the curriculum here: http://www.pharmacy.pitt.edu/research/clinical_pharma_science.php

1st Year: Fall

- PHARM 3040 - STATISTICAL METHODS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3028 - PHARMACOLOGY AND THERAPEUTICS
- PHARM 3043 - TEACH ME TO TEACH YOU
- PHARM 3042 - RESEARCH PRACTICUM

1st Year: Spring

- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3042 - RESEARCH PRACTICUM
- Track-Specific and/or Electives. - 3-4 credits

2nd Year: Fall

- PHARM 3028 - PHARMACOLOGY AND THERAPEUTICS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3038 - ESSENTIALS COMPETITIVE GRANT WRITING 1
- PHARM 3042 - RESEARCH PRACTICUM
- Track-Specific and/or Electives. - 3-4 credits

2nd Year: Spring

- PHARM 3039 - ESSENTIALS COMPETITIVE GRANT WRITING 2
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3042 - RESEARCH PRACTICUM
- Track-Specific and/or Electives. - 3-4 credits

3rd Year: Fall

- PHARM 3042 - RESEARCH PRACTICUM
- Track-Specific and/or Electives. - 3-4 credits

PhD Comprehensive Exam and Dissertation

Each student follows a program of study developed in conjunction with the major advisor with input from the student's doctoral committee. The program of study must contain all of the program core courses as well as elective courses specific to the student's focus area.

Following completion of course work, students are required to complete a comprehensive examination. To be eligible for the comprehensive examination, students must be in full graduate status and have completed didactic course work with a minimum grade point average (GPA) of 3.00. To qualify for advancement to candidacy for the Doctor of Philosophy degree the student must pass the comprehensive examination.

Admission to PhD candidacy constitutes a promotion of the student to the most advanced stage of graduate study and provides formal approval to devote essentially exclusive attention to research and writing of the dissertation.

Each PhD student must write a dissertation that presents the results of research carried out by the student. An appropriate research project involves a substantive piece of original and independent research grounded in an appropriate body of literature. It is relevant to an identifiable field as it is currently practiced. It represents a hypothesis tested by collection and analysis of data and provides a significant contribution or advancement to that field.

See Regulations Pertaining to Doctoral Degrees for a full overview of regulations and procedures for PhD candidates.

Further information is available on the School of Pharmacy website: http://www.pharmacy.pitt.edu/programs/grad/grad_index.php.

Pharmaceutical Sciences - Clinical Pharmaceutical Scientist Track, PhD

Clinical Pharmaceutical Scientist

The clinical pharmaceutical scientist is a specialty track in which students with expertise in pharmacotherapeutics investigate both the clinical and mechanistic elements of drug therapy issues.

- You will learn experimental design, experimental methods, data analysis, and data interpretation of human-based research projects.
- You will study how research discoveries are translated into practices that promote health and prevent disease.
- You will learn the process required to implement new therapies as standards of care through human-based research projects.

PhD Comprehensive Exam and Dissertation

Requirements:

Students must complete a total of 72 credit hours to fulfill the requirements for the PhD. Required courses for all PhD students are listed below. Students who have had prior course work or extensive experience in a given area may be exempted from the required course at the discretion of the faculty. The remaining credit requirements are completed through elective courses and dissertation research. The specific plan of study is developed by the student and their faculty advisor and committee. Courses should be selected to assure an adequate breadth of knowledge as well as depth in the student's focus area. For students interested in the Clinical Pharmaceutical Scientist Track, you may find the curriculum here: http://www.pharmacy.pitt.edu/research/clinical_pharma_science.php

1st Year: Fall

- PHARM 3040 - STATISTICAL METHODS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3028 - PHARMACOLOGY AND THERAPEUTICS
- PHARM 3043 - TEACH ME TO TEACH YOU
- PHARM 3042 - RESEARCH PRACTICUM

1st Year: Spring

- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3042 - RESEARCH PRACTICUM
- Track-Specific and/or Electives. - 3-4 credits

2nd Year: Fall

- PHARM 3028 - PHARMACOLOGY AND THERAPEUTICS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3038 - ESSENTIALS COMPETITIVE GRANT WRITING 1
- PHARM 3042 - RESEARCH PRACTICUM
- Track-Specific and/or Electives. - 3-4 credits

2nd Year: Spring

- PHARM 3039 - ESSENTIALS COMPETITIVE GRANT WRITING 2
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3042 - RESEARCH PRACTICUM
- Track-Specific and/or Electives. - 3-4 credits

3rd Year: Fall

- PHARM 3042 - RESEARCH PRACTICUM
- Track-Specific and/or Electives. - 3-4 credits

PhD Comprehensive Exam and Dissertation

Each student follows a program of study developed in conjunction with the major advisor with input from the student's doctoral committee. The program of study must contain all of the program core courses as well as elective courses specific to the student's focus area.

Following completion of course work, students are required to complete a comprehensive examination. To be eligible for the comprehensive examination, students must be in full graduate status and have completed didactic course work with a minimum grade point average (GPA) of 3.00. To qualify for advancement to candidacy for the Doctor of Philosophy degree the student must pass the comprehensive examination.

Admission to PhD candidacy constitutes a promotion of the student to the most advanced stage of graduate study and provides formal approval to devote essentially exclusive attention to research and writing of the dissertation.

Each PhD student must write a dissertation that presents the results of research carried out by the student. An appropriate research project involves a substantive piece of original and independent research grounded in an appropriate body of literature. It is relevant to an identifiable field as it is currently practiced. It represents a hypothesis tested by collection and analysis of data and provides a significant contribution or advancement to that field.

See Regulations Pertaining to Doctoral Degrees for a full overview of regulations and procedures for PhD candidates.

Further information is available on the School of Pharmacy website: http://www.pharmacy.pitt.edu/programs/grad/grad_index.php.

Pharmaceutical Sciences - Community Leadership, Innovation, and Practice, PhD

Pharmaceutical Sciences - Community Leadership, Innovation, and Practice, PhD

Pharmaceutical Sciences - Geriatrics & Palliative Care, PhD

Pharmaceutical Sciences - Global Health, PhD

Pharmaceutical Sciences - Medicinal Chemistry Track, PhD

Medicinal Chemistry

The medicinal chemistry track is a complex scientific discipline whose focus is to develop molecules that can impact human health by discovering, designing, synthesizing and characterizing safe and effective agents for disease therapy and diagnosis. The research involves a multidisciplinary approach encompassing chemistry and biology, and includes organic synthesis, protein and nucleic acid chemistry, natural product chemistry, computational chemistry, molecular biology, cell biology, structural biology, pharmacology and proteomics.

- You will learn to design, synthesize and characterize new medicinal agents and enhance the biological activity of existing pharmaceutical agents.
- You will learn to use computational, biophysical, structural biology and cell-based screening technologies to identify natural and synthetic compounds for pharmacological activity and to conduct structure-based drug design.
- You will isolate, characterize, and synthesize compounds based on natural products, as well as target identification for biologically active natural products.

PhD Comprehensive Exam and Dissertation

Requirements:

Students must complete a total of 72 credit hours to fulfill the requirements for the PhD. Required courses for all PhD students are listed below. Students who have had prior course work or extensive experience in a given area may be exempted from the required course at the discretion of the faculty. The remaining credit requirements are completed through elective courses and dissertation research. The specific plan of study is developed by the student and their faculty advisor and committee. Courses should be selected to assure an adequate breadth of knowledge as well as depth in the student's focus area. For students interested in the Clinical Pharmaceutical Scientist Track, you may find the curriculum here: http://www.pharmacy.pitt.edu/research/clinical_pharma_science.php

1st Year: Fall

- PHARM 3040 - STATISTICAL METHODS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3028 - PHARMACOLOGY AND THERAPEUTICS
- PHARM 3043 - TEACH ME TO TEACH YOU
- PHARM 3042 - RESEARCH PRACTICUM

1st Year: Spring

- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3042 - RESEARCH PRACTICUM
- Track-Specific and/or Electives. - 3-4 credits

2nd Year: Fall

- PHARM 3028 - PHARMACOLOGY AND THERAPEUTICS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR

- PHARM 3038 - ESSENTIALS COMPETITIVE GRANT WRITING 1
- PHARM 3042 - RESEARCH PRACTICUM
- Track-Specific and/or Electives. - 3-4 credits

2nd Year: Spring

- PHARM 3039 - ESSENTIALS COMPETITIVE GRANT WRITING 2
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3042 - RESEARCH PRACTICUM
- Track-Specific and/or Electives. - 3-4 credits

3rd Year: Fall

- PHARM 3042 - RESEARCH PRACTICUM
- Track-Specific and/or Electives. - 3-4 credits

PhD Comprehensive Exam and Dissertation

Each student follows a program of study developed in conjunction with the major advisor with input from the student's doctoral committee. The program of study must contain all of the program core courses as well as elective courses specific to the student's focus area.

Following completion of course work, students are required to complete a comprehensive examination. To be eligible for the comprehensive examination, students must be in full graduate status and have completed didactic course work with a minimum grade point average (GPA) of 3.00. To qualify for advancement to candidacy for the Doctor of Philosophy degree the student must pass the comprehensive examination.

Admission to PhD candidacy constitutes a promotion of the student to the most advanced stage of graduate study and provides formal approval to devote essentially exclusive attention to research and writing of the dissertation.

Each PhD student must write a dissertation that presents the results of research carried out by the student. An appropriate research project involves a substantive piece of original and independent research grounded in an appropriate body of literature. It is relevant to an identifiable field as it is currently practiced. It represents a hypothesis tested by collection and analysis of data and provides a significant contribution or advancement to that field.

See Regulations Pertaining to Doctoral Degrees for a full overview of regulations and procedures for PhD candidates.

Further information is available on the School of Pharmacy website: http://www.pharmacy.pitt.edu/programs/grad/grad_index.php.

Pharmaceutical Sciences - Pediatrics, PhD

Pharmaceutical Sciences - Pharmaceutical Outcomes and Policy Research Track, PhD

Pharmaceutical Outcomes and Policy Research

Pharmaceutical Outcomes and Policy Research (POPR) is a specialty track/program in Pharmaceutical Sciences. The POPR track will train students to investigate the impact and outcomes of pharmaceutical products, pharmacy services, and pharmaceutical policies across health care systems. The core mission of POPR is the advancement of knowledge about the safety and effectiveness of medicines, and pharmacy's role in improving population health. POPR students most often focus on patient-centered outcomes such as access, safety, quality of care, costs, and patient-reported health. Graduates will be trained to work in a broad range of settings, including: academia; pharmaceutical industry; government organizations such as FDA, AHRQ, NIH; contract research organizations; and health care systems

- You will learn epidemiological study designs, data management, data analysis, and data interpretation.

- You will develop strong quantitative methodological skills in pharmaceutical outcomes and health services research.
- You will apply social/behavioral theory to the study of patient, provider, and organizational behaviors as it relates to pharmaceuticals and pharmacy practice.
- You will learn how pharmaceutical outcomes research is used to inform clinical practice and guide health policy decisions.

PhD Comprehensive Exam and Dissertation

Requirements

Students must complete a total of 72 credit hours to fulfill the requirements for the PhD. Required courses for all MS students are listed below. Students who have had prior course work or extensive experience in a given area may be exempted from the required course at the discretion of the faculty. The remaining credit requirements are completed through elective courses and thesis research. The specific plan of study is developed by the student and their faculty advisor and committee. Courses should be selected to assure an adequate breadth of knowledge as well as depth in the student's focus area.

1st Year: Fall

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
 - EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
 - EPIDEM 2185 - INTRODUCTION TO SAS
 - PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- Journal Club
Electives

1st Year: Spring

- BIOST 2042 - INTRODUCTION TO STATISTICAL METHODS 2
 - BIOST 2049 - APPLIED REGRESSION ANALYSIS
 - EPIDEM 2180 - EPIDEMIOLOGICAL METHODS 1
 - PHARM 2003 - PHARMACOEPIDEMIOLOGY
 - PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
 - CLRES 3140 - INTRODUCTION TO TRANSLATIONAL RESEARCH IN HEALTH SCIENCES
- Journal Club

2nd Year: Fall

- BIOST 2046 - ANALYSIS OF COHORT STUDIES
 - EPIDEM 2187 - EPIDEMIOLOGICAL METHODS 2
 - PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
 - PHARM 3038 - ESSENTIALS COMPETITIVE GRANT WRITING 1
 - PHARM 3043 - TEACH ME TO TEACH YOU
- Journal Club
Social and Behavioral Theory

2nd Year: Spring

- PHARM 3039 - ESSENTIALS COMPETITIVE GRANT WRITING 2
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3062 - ADVANCED METHODS IN PHARMACEUTICAL OUTCOMES & POLICY RESEARCH

- CLRES 2050 - ETHICS & RESPONSIBLE CONDUCT OF RESEARCH (ONLINE)
Journal Club
Electives

3rd Year: Fall

- PHARM 3042 - RESEARCH PRACTICUM
Track-Specific and/or Electives

Pharmaceutical Sciences - Pharmaceutics Track, PhD

Pharmaceutics

The pharmaceutics track is concentrated on the study of the design of pharmaceutical dosage forms and their interaction with the human body. Topics included are physical pharmacy, bioanalysis, drug delivery and targeting, drug metabolism, drug transport, pharmacokinetics and pharmacodynamics.

- You will develop a thorough understanding of how to apply principles of physical pharmacy to dosage form design and optimization of drug product performance.
- You will develop the fundamentals required for design of both traditional and complex state-of-the-art drug delivery systems and skills essential for the advancement of targeted drug therapies using small molecules, proteins, peptides and other biomolecules, probiotics, and tissue engineered platforms.
- You will gain knowledge of the human body and the interaction of medications with the human body including metabolism, pharmacokinetics and pharmacodynamics.
- Your research opportunities include formulation of dosage forms, development of novel delivery systems and development of complex new therapies for site specific action, establishing novel markers for disease, study of metabolic pathways, development of bioanalytical techniques, and evaluation of absorption, distribution, and elimination of drug substances and their regulation.

PhD Comprehensive Exam and Dissertation

Requirements:

Students must complete a total of 72 credit hours to fulfill the requirements for the PhD. Required courses for all PhD students are listed below. Students who have had prior course work or extensive experience in a given area may be exempted from the required course at the discretion of the faculty. The remaining credit requirements are completed through elective courses and dissertation research. The specific plan of study is developed by the student and their faculty advisor and committee. Courses should be selected to assure an adequate breadth of knowledge as well as depth in the student's focus area. For students interested in the Clinical Pharmaceutical Scientist Track, you may find the curriculum here:

http://www.pharmacy.pitt.edu/research/clinical_pharma_science.php

1st Year: Fall

- PHARM 3040 - STATISTICAL METHODS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3028 - PHARMACOLOGY AND THERAPEUTICS
- PHARM 3043 - TEACH ME TO TEACH YOU
- PHARM 3042 - RESEARCH PRACTICUM

1st Year: Spring

- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3042 - RESEARCH PRACTICUM
- Track-Specific and/or Electives. - 3-4 credits

2nd Year: Fall

- PHARM 3028 - PHARMACOLOGY AND THERAPEUTICS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3038 - ESSENTIALS COMPETITIVE GRANT WRITING 1
- PHARM 3042 - RESEARCH PRACTICUM
- Track-Specific and/or Electives. - 3-4 credits

2nd Year: Spring

- PHARM 3039 - ESSENTIALS COMPETITIVE GRANT WRITING 2
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3042 - RESEARCH PRACTICUM
- Track-Specific and/or Electives. - 3-4 credits

3rd Year: Fall

- PHARM 3042 - RESEARCH PRACTICUM
- Track-Specific and/or Electives. - 3-4 credits

PhD Comprehensive Exam and Dissertation

Each student follows a program of study developed in conjunction with the major advisor with input from the student's doctoral committee. The program of study must contain all of the program core courses as well as elective courses specific to the student's focus area.

Following completion of course work, students are required to complete a comprehensive examination. To be eligible for the comprehensive examination, students must be in full graduate status and have completed didactic course work with a minimum grade point average (GPA) of 3.00. To qualify for advancement to candidacy for the Doctor of Philosophy degree the student must pass the comprehensive examination.

Admission to PhD candidacy constitutes a promotion of the student to the most advanced stage of graduate study and provides formal approval to devote essentially exclusive attention to research and writing of the dissertation.

Each PhD student must write a dissertation that presents the results of research carried out by the student. An appropriate research project involves a substantive piece of original and independent research grounded in an appropriate body of literature. It is relevant to an identifiable field as it is currently practiced. It represents a hypothesis tested by collection and analysis of data and provides a significant contribution or advancement to that field.

See Regulations Pertaining to Doctoral Degrees for a full overview of regulations and procedures for PhD candidates.

Further information is available on the School of Pharmacy website: http://www.pharmacy.pitt.edu/programs/grad/grad_index.php.

Pharmaceutical Sciences - PharmacoAnalytics, PhD

Pharmaceutical Sciences - Pharmacotherapy Scholars Program, PhD

Pharmaceutical Sciences - Research, PhD

Master's

Pharmaceutical Sciences - Biochemical Pharmacology Track, MS

Biochemical Pharmacology

The biochemical pharmacology track focuses on the biochemical mechanisms responsible for drug and other xenobiotic, and gene actions on living systems, both healthy and compromised.

- You will have the opportunity to study with faculty in multiple areas including behavioral, cardiovascular and endocrine pharmacology, neuropharmacology, immunopharmacology, chemotherapy, toxicology, and metabolic diseases.
- Your research opportunities include studying the biochemical mechanism of drugs and genes in cell cultures and/or healthy and compromised animal models.
- You will have the opportunity to create and/or use genetically engineered animals that include transgenic and knockout mice, as well as to integrate disease models into the animal models in order to study the gene function in diseases.
- You will develop a broad knowledge of the regulation of drug metabolizing enzymes and transporters and the implications of this regulation in drug metabolism.

MS Core Curriculum

Requirements:

Students must complete a total of 30 credit hours to fulfill the requirements for the MS. Required courses for all MS students are listed below. Students who have had prior course work or extensive experience in a given area may be exempted from the required course at the discretion of the faculty. The remaining credit requirements are completed through elective courses and thesis research. The specific plan of study is developed by the student and their faculty advisor and committee. Courses should be selected to assure an adequate breadth of knowledge as well as depth in the student's focus area.

1st Year: Fall

- PHARM 3040 - STATISTICAL METHODS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3028 - PHARMACOLOGY AND THERAPEUTICS
- PHARM 3042 - RESEARCH PRACTICUM
Choose one of the following Journal Club Courses:
- PHARM 3000 - TOPICS IN NEUROSCIENCE
- PHARM 3009 - ADVANCES IN PHARMACEUTICAL SCIENCES
- PHARM 3036 - ADVANCES IN DRUG DELIVERY AND REGENERATIVE MEDICINE

1st Year: Spring

- PHARM 2001 - PHARMACEUTICAL ANALYSIS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3042 - RESEARCH PRACTICUM
Choose one of the following Journal Club Courses:
- PHARM 3000 - TOPICS IN NEUROSCIENCE
- PHARM 3009 - ADVANCES IN PHARMACEUTICAL SCIENCES

2nd Year: Fall

- PHARM 2010 - MASTER OF SCIENCE THESIS
- Track-Specific and/or Electives. - 3-4 credits

2nd Year: Spring

- PHARM 2010 - MASTER OF SCIENCE THESIS
- Track-Specific and/or Electives. - 3-4 credits

MS Comprehensive Exam and Thesis

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

Pharmaceutical Sciences - Clinical Pharmaceutical Scientist Track, MS

Clinical Pharmaceutical Scientist

The clinical pharmaceutical scientist is a specialty track in which students with expertise in pharmacotherapeutics investigate both the clinical and mechanistic elements of drug therapy issues.

- You will learn experimental design, experimental methods, data analysis, and data interpretation of human-based research projects.
- You will study how research discoveries are translated into practices that promote health and prevent disease.
- You will learn the process required to implement new therapies as standards of care through human-based research projects.

MS Core Curriculum

Requirements:

Students must complete a total of 30 credit hours to fulfill the requirements for the MS. Required courses for all MS students are listed below. Students who have had prior course work or extensive experience in a given area may be exempted from the required course at the discretion of the faculty. The remaining credit requirements are completed through elective courses and thesis research. The specific plan of study is developed by the student and their faculty advisor and committee. Courses should be selected to assure an adequate breadth of knowledge as well as depth in the student's focus area.

1st Year: Fall

- PHARM 3040 - STATISTICAL METHODS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3028 - PHARMACOLOGY AND THERAPEUTICS
- PHARM 3042 - RESEARCH PRACTICUM
Choose one of the following Journal Club Courses:
- PHARM 3000 - TOPICS IN NEUROSCIENCE
- PHARM 3009 - ADVANCES IN PHARMACEUTICAL SCIENCES
- PHARM 3036 - ADVANCES IN DRUG DELIVERY AND REGENERATIVE MEDICINE

1st Year: Spring

- PHARM 2001 - PHARMACEUTICAL ANALYSIS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3042 - RESEARCH PRACTICUM
Choose one of the following Journal Club Courses:
- PHARM 3000 - TOPICS IN NEUROSCIENCE
- PHARM 3009 - ADVANCES IN PHARMACEUTICAL SCIENCES

2nd Year: Fall

- PHARM 2010 - MASTER OF SCIENCE THESIS
- Track-Specific and/or Electives. - 3-4 credits

2nd Year: Spring

- PHARM 2010 - MASTER OF SCIENCE THESIS
- Track-Specific and/or Electives. - 3-4 credits

MS Comprehensive Exam and Thesis

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

Pharmaceutical Sciences - Medicinal Chemistry Track, MS

Medicinal Chemistry

The medicinal chemistry track is a complex scientific discipline whose focus is to develop molecules that can impact human health by discovering, designing, synthesizing and characterizing safe and effective agents for disease therapy and diagnosis. The research involves a multidisciplinary approach encompassing chemistry and biology, and includes organic synthesis, protein and nucleic acid chemistry, natural product chemistry, computational chemistry, molecular biology, cell biology, structural biology, pharmacology and proteomics.

- You will learn to design, synthesize and characterize new medicinal agents and enhance the biological activity of existing pharmaceutical agents.
- You will learn to use computational, biophysical, structural biology and cell-based screening technologies to identify natural and synthetic compounds for pharmacological activity and to conduct structure-based drug design.
- You will isolate, characterize, and synthesize compounds based on natural products, as well as target identification for biologically active natural products.

MS Core Curriculum

Requirements:

Students must complete a total of 30 credit hours to fulfill the requirements for the MS. Required courses for all MS students are listed below. Students who have had prior course work or extensive experience in a given area may be exempted from the required course at the discretion of the faculty. The remaining credit requirements are completed through elective courses and thesis research. The specific plan of study is developed by the student and their faculty advisor and committee. Courses should be selected to assure an adequate breadth of knowledge as well as depth in the student's focus area.

1st Year: Fall

- PHARM 3040 - STATISTICAL METHODS
 - PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
 - PHARM 3028 - PHARMACOLOGY AND THERAPEUTICS
 - PHARM 3042 - RESEARCH PRACTICUM
- Choose one of the following Journal Club Courses:
- PHARM 3000 - TOPICS IN NEUROSCIENCE
 - PHARM 3009 - ADVANCES IN PHARMACEUTICAL SCIENCES
 - PHARM 3036 - ADVANCES IN DRUG DELIVERY AND REGENERATIVE MEDICINE

1st Year: Spring

- PHARM 2001 - PHARMACEUTICAL ANALYSIS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3042 - RESEARCH PRACTICUM
Choose one of the following Journal Club Courses:
- PHARM 3000 - TOPICS IN NEUROSCIENCE
- PHARM 3009 - ADVANCES IN PHARMACEUTICAL SCIENCES

2nd Year: Fall

- PHARM 2010 - MASTER OF SCIENCE THESIS
- Track-Specific and/or Electives. - 3-4 credits

2nd Year: Spring

- PHARM 2010 - MASTER OF SCIENCE THESIS
- Track-Specific and/or Electives. - 3-4 credits

MS Comprehensive Exam and Thesis

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

Pharmaceutical Sciences - Non -Thesis, MS

The Graduate Program in Pharmaceutical Sciences is pleased to offer the new Non-Thesis MS degree to qualified students.

Why choose the non-research based thesis?

Students will be able to complete the MS degree in one calendar year. Our MS in Pharmaceutical Sciences attracts students interested in drug discovery, delivery, and metabolism in addition to pharmacology, pharmacokinetics, and pharmacodynamics. Graduating with the MS in Pharmaceutical Sciences will prepare you for employment in pharmaceutical manufacturing plants and labs. Pharmaceutically-trained professionals are involved in biotechnology, research, synthesizing and testing new compounds, in marketing and sales of pharmaceuticals and biomedical devices, and in pharmaceutical benefit management. Some areas where graduates with degrees in Pharmaceutical Sciences are sought after are Cosmetic Science, Industrial Pharmacy, and University-based laboratory areas.

Non-Thesis MS Academic Requirements for Acceptance

- A BS or BA in biochemistry, biology, chemistry, pharmacy, pharmaceutical sciences or a related field is required.
- Applications must be submitted electronically.
- We require three references that MUST be submitted online. Written references are not accepted.
- Successful applicants will be admitted for fall 2012. We do not accept Spring Admissions.
- The Graduate Record Examination (GRE) is required and must have been taken within the past three years. Subject specific tests are not required.
- International applicants with English as a second language must complete the TOEFL or IELTS. For TOEFL a minimal score of 80 (Internet-based test), 550 (Paper-based test), or 213 (Computer-based test) is required. For IELTS the minimum acceptable score is 6.5.
- You must submit GRE and TOEFL (or IELTS) scores to the University of Pittsburgh, institution code is 2927. You do not need a department code. TOEFL scores are good for two years; the ETS will not release TOEFL scores after 2 years from the date of the exam.
- If you have graduated from a U.S. institution OR if English is the official language of your country then TOEFL or IELTS scores are not required.
- IMPORTANT: WE DO NOT ACCEPT ANY DOCUMENTS SENT VIA MAIL TO OUR DEPARTMENT. You will be notified if your application is reviewed and you are invited for an interview. At that time you will need to supply an official copy of your transcript.

- Application to our program requires a \$50.00 fee which cannot be waived. Credit cards are accepted. To apply, go to: http://www.pharmacy.pitt.edu/programs/grad/ms_nonthesis.php; click Apply On-line!

Program Requirements for Graduation

- 30 credits are required for graduation. A minimum of 10 credits must be taken in any given semester.
- In lieu of an original research study the student would complete a written project consisting of a comprehensive literature review of a topic of current interest in pharmaceutical sciences. The student would defend the project as an oral examination before their MS committee and major advisor.
- The MS committee will consist of the Director of the Graduate Program in Pharmaceutical Sciences, the student's major advisor and one other member of the faculty chosen by the student and major advisor and approved by the Program Director and Senior Associate Dean.
- Students would be required to attend the training courses offered by the University.
 - Small Animal Training
 - Bloodborne Pathogens Training
 - Chemical Hygiene Plan & Formaldehyde Awareness
 - Radiation Safety Course

Sample Curriculum for Non-Thesis MS

Fall Term

- PHARM 3040 - STATISTICAL METHODS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3028 - PHARMACOLOGY AND THERAPEUTICS
- PHARM 3042 - RESEARCH PRACTICUM
- Optional Electives - 0-4 credits

Spring Term

- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3042 - RESEARCH PRACTICUM
- Optional Electives - 0-4 credits

Summer Term

- PHARM 3042 - RESEARCH PRACTICUM
- Optional Electives - 0-9 credits

Pharmaceutical Sciences - Pharmaceutics Track, MS

Pharmaceutics

The pharmaceutics track is concentrated on the study of the design of pharmaceutical dosage forms and their interaction with the human body. Topics included are physical pharmacy, bioanalysis, drug delivery and targeting, drug metabolism, drug transport, pharmacokinetics and pharmacodynamics.

- You will develop a thorough understanding of how to apply principles of physical pharmacy to dosage form design and optimization of drug product performance.
- You will develop the fundamentals required for design of both traditional and complex state-of-the-art drug delivery systems and skills essential for the advancement of targeted drug therapies using small molecules, proteins, peptides and other biomolecules, probiotics, and tissue engineered platforms.

- You will gain knowledge of the human body and the interaction of medications with the human body including metabolism, pharmacokinetics and pharmacodynamics.
- Your research opportunities include formulation of dosage forms, development of novel delivery systems and development of complex new therapies for site specific action, establishing novel markers for disease, study of metabolic pathways, development of bioanalytical techniques, and evaluation of absorption, distribution, and elimination of drug substances and their regulation.

MS Core Curriculum

Requirements:

Students must complete a total of 30 credit hours to fulfill the requirements for the MS. Required courses for all MS students are listed below. Students who have had prior course work or extensive experience in a given area may be exempted from the required course at the discretion of the faculty. The remaining credit requirements are completed through elective courses and thesis research. The specific plan of study is developed by the student and their faculty advisor and committee. Courses should be selected to assure an adequate breadth of knowledge as well as depth in the student's focus area.

1st Year: Fall

- PHARM 3040 - STATISTICAL METHODS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3028 - PHARMACOLOGY AND THERAPEUTICS
- PHARM 3042 - RESEARCH PRACTICUM
Choose one of the following Journal Club Courses:
- PHARM 3000 - TOPICS IN NEUROSCIENCE
- PHARM 3009 - ADVANCES IN PHARMACEUTICAL SCIENCES
- PHARM 3036 - ADVANCES IN DRUG DELIVERY AND REGENERATIVE MEDICINE

1st Year: Spring

- PHARM 2001 - PHARMACEUTICAL ANALYSIS
- PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR
- PHARM 3042 - RESEARCH PRACTICUM
Choose one of the following Journal Club Courses:
- PHARM 3000 - TOPICS IN NEUROSCIENCE
- PHARM 3009 - ADVANCES IN PHARMACEUTICAL SCIENCES

2nd Year: Fall

- PHARM 2010 - MASTER OF SCIENCE THESIS
- Track-Specific and/or Electives. - 3-4 credits

2nd Year: Spring

- PHARM 2010 - MASTER OF SCIENCE THESIS
- Track-Specific and/or Electives. - 3-4 credits

MS Comprehensive Exam and Thesis

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

Pharmacy Business Administration, MPBA

In Summer 2019, the Master of Science in Pharmacy Business Administration (MSPBA) was renamed to Master of Pharmacy Business Administration (MPBA) and changed degree type to Master of Pharmacy Business Administration. Students currently enrolled may option to transfer into the new MPBA program.

Master of Pharmacy Business Administration

The 12-month executive style Master of Pharmacy Business Administration (MPBA) program consists of 36 credits that build critical skills and expertise for pharmacy professionals seeking to substantially increase their business acumen and marketability.

MPBA Value

- Designed for emerging pharmacy professionals seeking executive positions.
- Obtain an in-depth understanding of the business of medicines.
- Learn to innovate and solve real-world problems.
- Focus in specialized area of either Specialty or Community Pharmacy.

MPBA Fit

- Synergistically fusing the expertise of the Schools of Pharmacy and Business
- Efficiently formatted for working professionals
- Friday and Saturday every other week for 12 months.

Requirements

1st Semester

- BOAH 2421 - HUMN RESORC COMPETITIVE ADVNTG
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BACC 2401 - FINANCIAL ACCOUNTING
- BMKT 2409 - MARKETING MANAGEMENT
- BMIS 2409 - INFORMATION SYSTEMS
- PHARM 5915 - EXECUTIVE HEALTHCARE INNOVATIONS
- PHARM 5914 - GRADUATE EXECUTIVE BOARDROOM

2nd Semester

- BFIN 2409 - FINANCIAL MANAGEMENT 1
- PHARM 5911 - HEALTHCARE SALES AND MARKETING
- BFIN 2410 - FINANCIAL MANAGEMENT 2
- BACC 2401 - FINANCIAL ACCOUNTING

3rd Semester

- PHARM 5910 - US HEALTHCARE SYSTEM
- BSPP 2409 - STRATEGIC MANAGEMENT
- BIND 2444 - MANAGEMENT SIMULATION CAPSTONE
- PHARM 5912 - LEADERSHIP AND ETHICS IN HEALTHCARE

Professional

Doctor of Pharmacy, PharmD

Doctor of Pharmacy (PharmD) Program

The professional curriculum is configured in a course of study requiring two years (62 credits) of pre-professional study followed by four years of professional courses. The four-year professional curriculum emphasizes problem solving and critical thinking, blending classroom and laboratory learning with experiential learning practice. The required component of experiential learning is designed to facilitate progress from initial stages of making meaningful connections with patients to caring for complex patients with acute and chronic diseases. Experiences include patient care in communities, in hospitals, and during transitions of care. This experiential education begins in the first weeks of your P1 year.

Through our commitment to personalizing education, PittPharmacy inspires students to use their unique interests and talents to improve the lives of people through the safe, effective, and responsible use of medications and other interventions.

The PharmD program prepares students to be practitioners who advance the profession by fostering innovation, leadership, interprofessional collaboration, civic engagement, advocacy, life-long learning, and a professional attitude of inclusion.

Program Accreditation

University of Pittsburgh's Doctor of Pharmacy Program is accredited by the Accreditation Council for Pharmacy Education, 190 South LaSalle Street, Suite 2850, Chicago, IL 60603, 312/664-3575; FAX 866/228-2631, web site www.acpe-accredit.org

Pre-Professional Requirements

Applicants to the professional pharmacy program must have successfully completed, or be in the process of completing, all prerequisite mathematics and science subjects no later than the spring term of the year of admission. All other pre-professional courses should be completed no later than the first day of the fall term of admission. Pre-professional courses must be taken for a letter grade.

Pre-Professional Courses:

- General Biology (with lab) - 8 credits
- General Chemistry (with lab) - 8 credits
- Organic Chemistry (with lab) - 8 credits
- English Composition - 6 credits
- Calculus - 3-4 credits
- Statistics - 3-4 credits
- Elective courses+ - 24 credits

Total: 60-62 credits

+At least 9 credits must be in the humanities and 9 credits in the social sciences. A course in Public Speaking is recommended.

Non-native English-speaking applicants must supply evidence of their proficiency in the English language.

Degree Requirements

To earn the degree of Doctor of Pharmacy, the student must demonstrate satisfactory achievement in required course work prescribed by the curriculum (*detailed below under Program Description*), earning an overall GPA of 2.00 or higher. Refer to the school's Student Handbook for the guidelines for academic progress.

Program Description

The professional curriculum leads to the Doctor of Pharmacy (PharmD) degree and requires completion of 134.5 credits (note: this curriculum is subject to change):

Fall Term-First Professional Year (P-1)

- PHARM 5110 - PHARMACIST PATIENT CARE 1: PROCESS AND SKILLS
- PHARM 5112 - COMMUNITY HEALTH 1: COMMUNICATION AND WELLNESS
- PHARM 5114 - ANATOMY AND PHYSIOLOGY 1
- PHARM 5116 - BIOCHEMISTRY 1
- PHARM 5118 - PRINCIPLES OF DRUG ACTION
- PHARM 5120 - THE EMERGING PROFESSIONAL
- PHARM 5122 - CASE CONFERENCE SERIES 1

Total: 16 credits

Spring Term-First Professional Year (P-1)

- PHARM 5111 - PHARMACIST PATIENT CARE 2: SKILLS AND ENVIRONMENTS
- PHARM 5113 - COMMUNITY HEALTH 2: CULTURAL AWARENESS AND BEHAVIOR
- PHARM 5115 - ANATOMY AND PHYSIOLOGY 2
- PHARM 5117 - BIOCHEMISTRY 2
- PHARM 5219 - DOSAGE FORM DESIGN AND DELIVERY
- PHARM 5121 - CASE CONFERENCE SERIES 2

Total: 16 credits

Fall Term-Second Professional Year (P-2)

- PHARM 5210 - NONPRESCRIPTION THERAPIES AND SELF-CARE PRACTICE
- PHARM 5212 - COMMUNITY PHARMACIST PRACTICE 1: PATIENT-CENTERED CARE AND SILVER SCRIPTS
- PHARM 5214 - PHARMACOTHERAPY OF INFECTIOUS DISEASE 1
- PHARM 5216 - PHARMACOTHERAPY OF CARDIOVASCULAR DISEASE
- PHARM 5218 - PHARMACOKINETICS AND DRUG RESPONSE
- PHARM 5220 - CASE CONFERENCE SERIES 3

Total: 16 credits

Spring Term-Second Professional Year (P-2)

- PHARM 5211 - DRUG LITERATURE ANALYSIS AND EVALUATION

- PHARM 5213 - COMMUNITY PHARMACIST PRACTICE 2: MEDICATION THERAPY MANAGEMENT- IMMERSION IN PRACTICE
- PHARM 5215 - PHARMACOTHERAPY OF INFECTIOUS DISEASE 2
- PHARM 5119 - DRUG DEVELOPMENT 1
- PHARM 5223 - GASTROENTEROLOGY/NUTRITION
- PHARM 5227 - CASE CONFERENCE SERIES 4

Total: 15 credits

Fall Term-Third Professional Year (P-3)

- PHARM 5312 - HEALTH SYSTEM PHARMACY 1: OPERATIONS AND DISPENSING
- PHARM 5314 - IMMUNOLOGY
- PHARM 5316 - PULMONOLOGY/RHEUMATOLOGY
- PHARM 5318 - ENDOCRINOLOGY
- PHARM 5320 - POPULATION HEALTH AND MANAGEMENT
- PHARM 5322 - PHARMACY LAW
- PHARM 5324 - CASE CONFERENCE SERIES 5
- PHARM - Professional Elective - 3 credits

Total: 16.5 credits

Spring Term-Third Professional Year (P-3)

- PHARM 5311 - SAFE MEDICATION USE AND PHARMAECONOMICS
- PHARM 5313 - HEALTH SYSTEM PHARMACY 2: ADVANCED PRACTICE & MANAGEMENT
- PHARM 5315 - ONCOLOGY/HEMATOLOGY
- PHARM 5319 - NEUROLOGY/PSYCHIATRY
- PHARM 5321 - CRITICAL CARE & NEPHROLOGY
- PHARM 5323 - CASE CONFERENCE SERIES 6
- PHARM - Professional Electives - 3 credits

Total: 15 credits

Fourth Professional Year (P-4)

Spans 3 semesters (SUMMER, FALL, SPRING) with several options for credits earned per semester, for a total of 40 weeks

- PHARM 5401 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 1
- PHARM 5402 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 2
- PHARM 5403 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 3
- PHARM 5404 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 4
- PHARM 5405 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 5
- PHARM 5406 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 6
- PHARM 5407 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 7
- PHARM 5408 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 8

Total: 40 credits

Total Professional Credits: 134.5 credits

School of Pharmacy Faculty

Title	Name	Degree	Conferring School
Dean	Patricia D. Kroboth	PhD	University of Pittsburgh
Senior Associate Dean	Randall B. Smith	PhD	University of Texas
Associate Dean for Community Partnerships, Professor	Melissa A. McGivney	PharmD	University of Pittsburgh
Associate Dean for Education	Susan M. Meyer	PhD	Purdue University
Associate Dean for Graduate and Postdoctoral Programs, Professor	Samuel M. Poloyac	PhD	University of Kentucky
Associate Dean For Business Innovation, Associate Professor	Gordon J. Vanscory	MBA	University of Pittsburgh
Associate Dean for Research Innovation, Professor	Xiang-Qun Xie	MD, PhD	Second Military Medical University in Shanghai China; University of Connecticut
Associate Dean for PharmacoAnalytics, Professor	Richard Bertz	PhD	University of Pittsburgh
Assistant Dean of Students, Professor	Sharon E. Corey	PhD	West Virginia University
Assistant Dean for Academic Affairs, Associate Professor	Denise L. Howrie	PharmD	University of Cincinnati
Chair of Pharmaceutical Sciences, Professor	Wen Xie	MD, PhD	Peking University; University of Alabama at Birmingham
Chair of Pharmacy and Therapeutics, Professor	Amy L. Seybert	PharmD	University of Pittsburgh
Instructor	Ameer Ali	PharmD	University of Pittsburgh
Associate Professor	Sherrie L. Aspinall	PharmD	Duquesne University
Associate Professor	Neal J. Benedict	PharmD	Duquesne University
Assistant Professor	Lucas A. Berenbrok	PharmD	University of Pittsburgh
Associate Professor	Jan H. Beumer	PhD	University of Utrecht, Netherlands
Professor	Kim C. Coley	PharmD	University of the Sciences in Philadelphia
Associate Professor	Sharon E. Connor	PharmD	Creighton University
Associate Professor	James C. Coons	PharmD	University of Pittsburgh
Associate Professor	Colleen M. Culley	PharmD	Butler University
Associate Professor	Amy C. Donihi	PharmD	The State University of New York at Buffalo
Associate Professor	Scott R. Drab	PharmD	Duquesne University
Assistant Professor	Kerry M. Empey	PhD	University of Kentucky

Assistant Professor	Philip E. Empey	PhD	University of Kentucky
Associate Professor	Tanya J. Fabian	PhD	University of Pittsburgh
Assistant Professor	Bonnie A. Falcione	PharmD	Duquesne University
Assistant Professor	Roberta M. Farrah	PharmD	University of Pittsburgh
Assistant Professor	Zhiwei Feng	PhD	Soochow University in China
Assistant Professor	Christian A. Fernandez	PhD	University of Iowa
Assistant Professor	Mary M. Folan	PhD	University of Pittsburgh
Clinical Assistant Professor	Carl Gainor	JD, PhD	University of Pittsburgh
Professor	Robert B. Gibbs	PhD	University of California, Irvine
Associate Professor	Sandy Kane Gill	PharmD	University of Toledo
Instructor	Lorin B. Grieve	PharmD	University of Pittsburgh
Associate Professor	Deanne L. Hall	PharmD	University of Pittsburgh
Assistant Professor	Inmaculada Hernandez	PhD	University of Pittsburgh
Associate Professor	Edward Horn	PharmD	University of Pittsburgh
Research Professor	Donna Huryn	PhD	University of Pennsylvania
Research Assistant Professor	Prema C. Iyer	PhD	University of Mumbai, India
Assistant Professor	Heather Johnson	PharmD	University of Minnesota
Research Associate Professor	Paul A. Johnston	PhD	University of East Anglia, England
Lecturer	Stanton Jonas	MPH	University of Pittsburgh
Assistant Professor	Lauren Jonkman	PharmD	University of Pittsburgh
Professor	Levent Kirisci	PhD	University of Pittsburgh
Assistant Professor	Amanda S. Korenoski	PharmD	University of Pittsburgh
Professor	Song Li	MD, PhD	Fourth Military Medical University, China
Associate Professor	Xiaochao Ma	PhD	Chinese Academy of Sciences, China
Assistant Professor	Lee A. McDermott	PhD	Brown University
Research Assistant Professor	Terrance F. McGuire	PhD	University of Pittsburgh
Assistant Professor	M. Beth Minnigh	PhD	University of Pittsburgh
Associate Professor	Thomas D. Nolin	PhD	University of Pittsburgh

Instructor	Sravankumar Patel	PhD	Duquesne University
Associate Professor	Karen S. Pater	PharmD	University of Tennessee
Associate Professor	Brian A. Potoski	PharmD	University of Pittsburgh
Professor	Janice L. Pringle	PhD	University of Pittsburgh
Assistant Professor	Jennifer A. Pruskowski	PharmD	Wilkes University
Assistant Professor	James J. Pschirer	PharmD	University of Arkansas
Assistant Professor	Bridget T. Reagan	MBA	University of Pittsburgh
Research Assistant Professor	Maureen D. Reynolds	PhD	University of Pittsburgh
Professor	Lisa C. Rohan	PhD	University of Pittsburgh
Associate Professor	Shilpa Sant	PhD	Univeristy of Montreal, Canada
Assistant Professor	Vinayak Sant	PhD	University of Mambai, India
Assistant Professor	Christine M. Scelsci	PharmD	University of Pittsburgh
Professor	Paul L. Schiff	PhD	The Ohio State University
Assistant Professor	Kristine S. Schonder	PharmD	Duquesne University
Professor	Susan J. Skledar	MPH	University of Pittsburgh
Associate Professor	Pamela Smithburger	PharmD	University of Pittsburgh
Assistant Professor	James A. Stevenson	PharmD	University of Michigan
Professor	Dennis P. Swanson	MS	University of Southern California
Professor	Ralph E. Tarter	PhD	University of Oklahoma
Assistant Professor	Lauren Trilli	PharmD	The Ohio State University
Professor	Michael M. Vanyukov	PhD	USSR Academy of Medical Sciences Institute of Medical Genetics
Professor	Raman Venkataramanan	PhD	University of British Columbia, Canada
Assistant Professor	Margaret Verrico	BS	University of Pittsburgh
Associate Professor	Junmei Wang	PhD	Peking University, China
Assistant Professor	LiRong Wang	PhD	University of Science and Technology of China
Assistant Professor	Da Yang	MD, PhD	Harbin Medical University, China
Professor	Michael A. Zemaitis	PhD	Pennsylvania State University

Graduate School of Public and International Affairs

The mission of the Graduate School of Public and International Affairs (GSPIA) is to prepare students to make substantive contributions to society through careers as managers, advisors, and policy analysts in government and nonprofit organizations in a multitude of geographic locations throughout the world. This mission is accomplished through dedication to quality teaching that builds skills and commitments to the core values, challenges, and rewards of public service. It is supported through basic and applied research on timely issues of public management; international, regional, and urban affairs; and policy making. The school and faculty are committed to making a difference in the world by drawing on diverse skills and knowledge to improve the performance of public and nonprofit organizations that contribute to free and just societies in the United States and abroad. To accomplish these ends, GSPIA teaches, conducts research, and performs public service in the following areas:

- The management and administration of public and nonprofit agencies
- The growth and sustainable development of urban metropolitan regions throughout the world
- The economic and social development of newly independent and developing states
- The emerging dynamics that are shaping today's international political economy
- Threats to and issues in international security

The mission of GSPIA stresses the importance of democratic responsibilities and personal integrity in the management of human affairs as well as the professional qualifications required for managing constructive change. Students and faculty alike are required to:

- Demonstrate the highest standards of ethical and professional conduct
- Use critical thinking and problem solving skills in addressing public policy issues
- Consider the international and intersectoral aspects of public affairs
- Develop partnerships with others both internal and external to the University of Pittsburgh

Contact Information

Office of Student Services
Suite 3601 Posvar Hall
412-648-7640
Fax: 412-648-7641
E-mail: gspia@pitt.edu
www.gspia.pitt.edu

Admissions

<http://www.gspia.pitt.edu/Prospective-Students>

GSPIA admits persons who have demonstrated intellectual competence and high motivation in an academic and/or professional environment and who will enrich the quality of life in the school. Individuals from varied cultural, academic, and social backgrounds provide an exciting frame of reference for the stimulating exchanges so vital to a dynamic academic process. The following are required of all applicants: transcripts, application and fee, GRE score, TOEFL or IETS score (if international), letters of recommendation, essays, and resume.

Admission Prerequisites

It is desirable, but not mandatory, that PhD applicants have an earned master's degree in public and international affairs or a degree in one of the social sciences and work experience prior to undertaking doctoral study.

Admission Requirements

All applicants must have earned a bachelor's degree from a regionally accredited U.S. institution or a degree that is equivalent to a four-year U.S. bachelor's degree. Applicants are expected to have a B+ or better average (3.0 GPA) in their work to date. To be competitive for merit scholarships,

applicants normally need at least a 3.5 GPA. The admissions committee also takes into consideration GPA within the major, GPA within the last two years, extenuating circumstances, length of time since graduation from college, rigor of the undergraduate program, and other factors.

Doctoral applicants are only eligible for admission to full-time status in the Fall Term.

Application Requirements

Online Application

Complete and submit the online application in its entirety. All application materials can be submitted electronically using the online system, with the exception of official academic transcripts.

Application Fee

The non-refundable \$50 application fee may be paid by check or credit card. You will be prompted to pay the fee at the end of the online application process. The application fee is waived for Returned Peace Corps Volunteers, AmeriCorps Volunteers, Truman Scholars, Pickering Fellows, Coro Fellows, Rangel Fellows, McNair Fellows, Teach for America alumni, City Year alumni, Payne Fellows, Catholic Volunteer Network alumni, and veterans/active duty members of the US Armed Forces.

Early Application Discount: Prospective students who submit a complete online application for fall-term admission by December 31 of the previous year pay a reduced application fee of \$25.

Test of English as a Foreign Language (TOEFL) and the International English Language Testing System (IELTS)

TOEFL/IELTS Scores (international students only). International applicants must submit either the TOEFL or the IELTS. Contact Educational Testing Services directly to request that an official score report be sent to GSPIA. The minimum TOEFL score required for admission is 80 on the Internet-based test, although 90 or above is strongly preferred. The minimum IELTS score required for admission is 7.0 (overall, and in each of the subsections). GSPIA's institutional code is 2574.

Exceptions: International students who completed a degree at a regionally accredited college or university in the United States are not required to submit a TOEFL/IELTS score. Students from certain English-speaking countries are also exempt (see this link for a list of exempt countries). All US citizens and permanent residents are exempt.

GRE or GMAT Scores

GRE or GMAT Scores (not required for MPPM and non-degree applicants).

All applicants to the MPA, MPIA, MID, and PhD programs must have taken the GRE or GMAT within five years of the date of their application. It is not necessary to take both exams; either test score may be submitted. Official score reports must be sent directly from the testing agency to GSPIA. (GRE test takers can order score reports online at www.gre.org. GMAT test takers can order reports at www.mba.com). Copies of your own score report are not acceptable. GSPIA's institutional code is for the GRE 2574.

Exceptions: Students applying to GSPIA's joint-degree program with the University of Pittsburgh School of Law may substitute an LSAT score in lieu of the GRE.

Résumé

All applicants should upload a current résumé/curriculum vitae, showing relevant awards, academic achievements, full- and part-time job experience, internships, and volunteer work.

Personal Essay

Introduce yourself to the admissions committee. Discuss your professional goals and why you feel a GSPIA degree can help you attain them. Describe your background, interests, and motivation for pursuing graduate work in public & international affairs. There is a 5,000 character limit (approximately two double-spaced, typed pages).

Second Essay (PhD applicants only - not required for master's or non-degree candidates)

Identify the broad topic and research questions you envision as the focus of your doctoral dissertation research, as well as the methodologies you intend to use. There is a 5,000 character limit (approximately two double-spaced, typed pages).

Optional Essay

If there are any special circumstances you would like the admissions committee to consider, highlight them in the optional essay. Use this essay to include any information that you feel is important, but that you were not able to include elsewhere on the application. There is no penalty for leaving this blank.

Academic Transcripts

When completing the online application, you will be asked to upload copies of official transcripts from all colleges and universities you have attended, whether or not you earned a degree. You should upload a scanned copy of an official transcript generated by your university's registrar's office. Self-reported transcripts, student grade reports, or copies of unofficial transcripts are not acceptable.

It is not necessary to submit hard copies of your transcripts at the time of application, as long as your scanned copies have uploaded successfully. If you are admitted, you will then be required to submit final, official transcripts directly from your university's registrar's office to GSPIA. The official copy must exactly match the scanned copy that you submitted at the time of application.

If you do not have access to technology that will allow you to submit a scanned copy of your transcript at the time of application, you may submit an official copy instead. The official copy must be sent by mail directly from your university's registrar's office to GSPIA (3601 Posvar Hall; Pittsburgh, PA 15260).

Two Letters of Recommendation

Letters should be written by professors who have taught you or supervisors who have overseen your work, either professionally or in a volunteer capacity. If you graduated from college less than three years ago, at least one, if not both, of your letters should be from professors. Letters written by friends, family members, work colleagues, or anyone who has not taught or supervised you are not acceptable.

All letters must be submitted online. When you complete the online application, you will be prompted to enter the names and email addresses of your recommenders. The system will automatically send them an email explaining how they can upload their letters.

Admission Deadlines

GSPIA does not consider applications on a rolling basis. International students are strongly encouraged to submit application materials at least one month prior to the stated deadlines.

Application Deadlines: Fall Term

US Citizens/Permanent Residents:

January 15 - PhD applicants

February 1 - MPA, MPIA, MID

June 1 - MPPM applicants

August 1 - Non-degree applicants

International Students:

January 15 - MPA, MPIA, MID, PhD, and MPPM applicants

Early Application Discount: Prospective students who submit a complete online application for fall-term admission by December 31 of the previous year pay a reduced application fee of \$25.

Application Deadlines: Spring Term

US Citizens/Permanent Residents:

November 1 - MPA, MPIA, MID, and MPPM applicants

December 1 - Non-degree applicants

International Students:

August 1 - MPA, MPIA, MID, and MPPM applicants

Application Deadlines: Summer Term

US Citizens/Permanent Residents:

March 1 - MPPM applicants

April 1 - Non-degree applicants

International Students:

January 15 - MPPM applicants

School-Based Funding

GSPIA offers competitive, merit-based scholarships to its most outstanding master's degree applicants. All applicants for fall admission are automatically considered for merit funding, as long as they are planning to pursue full-time study and have submitted a complete application by the February 1 deadline. There is no separate application for GSPIA merit funding.

Typically, awards are renewed for the student's second year, as long as the student has earned at least 24 credits and maintained an overall GPA of 3.5 or better.

Tuition

2018-2019 Academic Year Tuition*

Per Term Rate for Fall & Spring

PA Resident - \$11,145

Out-of-State - \$18,490

Per Credit and Summer Term

PA Resident - \$898

Out-of-State - \$1,512

2018-2019 Academic Year Mandatory Fees*

Fall & Spring Term

	Full-time	Part-time
Computer/Network Service Fee	\$175	\$100
Security & Transportation Fee	\$90	\$90
Student Activity Fee	\$30	\$15
Wellness Fee	\$130	\$65

Summer Term

	Full-time	Part-time
Computer/Network Service Fee	\$175	\$100
Security & Transportation Fee	\$90	\$90
Student Activity Fee	\$12	\$6
Wellness Fee	\$130	\$65

*Subject to change based on University of Pittsburgh tuition rates and fees

Academic Standards

Students are in good academic standing when they earn acceptable grades for graduate work and make normal progress toward the degree. Specifically, full-time students must earn a minimum of 9 credits per term with a minimum cumulative GPA of 3.5 in all courses. Part-time students are held to the same standards. However, they are expected to do so while carrying less than 9 credits per term. Full- or part-time students admitted with provisional status must maintain a minimum cumulative GPA of 3.0 in all courses in their first 12 credits.

Students receiving school-based funding are held to higher standards. Master's students must earn, after two terms, 24 credits and a cumulative GPA of 3.5. Doctoral students must earn 24 credits and a cumulative GPA of 3.0.

Probation

Students are automatically placed on academic probation when they fail to maintain a minimum GPA of 3.00 and earn the appropriate number of credits for their status. Students are also placed on academic probation automatically if they receive two G or I grades in one term and/or earn a grade of U, C- or lower.

Dismissal

Students who fail to correct the deficiencies of their academic probation within a specified time period (normally one term) are subject to dismissal. Should a student be dismissed, students may appeal the decision to the associate dean.

For additional information on academic standards and procedures, students are referred to GSPIA's Handbook of Academic Policies and Procedures for Master's Degree Programs, GSPIA's Handbook of Academic Policies and Procedures for the Doctor of Philosophy, and the University's Guidelines on Academic Integrity: Student and Faculty Obligations and Hearing Procedures.

Acceptance of Transfer Credits from Outside Institutions

Students who have completed graduate courses in degree-granting graduate programs at other accredited institutions prior to admission to GSPIA should submit official transcripts from those institutions at the time they apply so that the courses can be evaluated for transfer credits or waivers. If the source institution is located in the United States, the institution must be regionally accredited in order for the credits to be transferrable. Graduate-level courses taken while a student was enrolled in an undergraduate program are generally not eligible to be transferred into GSPIA. Under normal circumstances, only graduate-level courses taken after a student has earned a bachelor's degree may be evaluated as transfer credits. (See "Enrollment in Graduate Courses as an Undergraduate" above.) A maximum of 12 credits can be transferred for students enrolled in the MPA, MPA, and MID degree programs. A maximum of 6 credits can be transferred for students enrolled in the MPPM program. Students admitted with provisional status cannot transfer credits until full graduate student status has been granted.

Official transcripts certifying graduate courses completed at another regionally accredited institution can be evaluated for acceptability as transfer credits, provided grades of B or better (GPA = 3.0) or its equivalent has been earned. Other documentation such as course syllabi and descriptions will be required to support the student's request. The documents must prove that the course(s) are substantially similar in content to existing GSPIA course(s) in order for the transfer to be approved. Transfer (advanced standing) credits are entered as block transfer credits (advanced standing) on the student's transcript. Grades and quality points are not recorded for credits accepted by transfer.

The completion of requirements for advanced degrees must be satisfied through registration at the Pittsburgh campus of the University. Graduate students already enrolled, may, when approved in advance by the director of student services, spend a term or more at another graduate institution, to obtain training or experience not available at the University, and transfer those credits toward the requirements for a GSPIA degree. In such instances, neither the University nor GSPIA is responsible for any financial assistance to the graduate student.

No credits will be granted toward a GSPIA degree for work completed in extension courses, correspondence courses, or those offered in the off-campus center of another institution unless those credits are approved for equivalent graduate degrees at that institution, and provided that the institution has a regionally accredited program.

Acceptance of Transfer Credits from Other Graduate Schools at the University of Pittsburgh

With the exception of students enrolled in formal joint-degree programs, students who earn/have earned credits while enrolled as a graduate student at another University of Pittsburgh school may petition for some of their credits to count toward the GSPIA degree. Typically, no more than six credits earned while enrolled in another graduate program at the University of Pittsburgh may be counted toward the GSPIA degree. In most cases,

such credits will not be listed as transfer credits on the student's GSPIA transcript, and will count only as free electives. The final decision on course acceptability rests with the GSPIA director of student services and the University of Pittsburgh Registrar.

Statute of Limitations

The purpose of the statute of limitations is to ensure that a graduate degree from GSPIA represents mastery of current knowledge in the student's field of study.

Requirements for the professional master's degrees must be completed within a period of five consecutive calendar years from the students' initial registration for graduate study. Joint degrees that require coursework in excess of 50 credits may be granted a longer statute of limitations.

Under exceptional circumstances a candidate may apply for an extension of the statute of limitations. The request must be approved by the division director and submitted to the dean for final action. Each student who requests an extension of the statute of limitations must be prepared to demonstrate proper preparation for the completion of all current degree requirements.

Advising and Career Services

Academic Advising: Each student is assigned a faculty advisor based on, whenever possible, the compatibility of student and faculty academic interests. Faculty advisors assure that students, through proper course selection, can make productive use of the resources of the school and the University during their period of residence. In addition, faculty advisors are responsible for counseling their advisees about career opportunities in the student's area of study; for counseling advisees who have been placed on probation; and for approving the advisee's school-wide required and elective courses, proposed thesis or dissertation topics, and supervised internships. Advisors and students monitor academic progress and identify areas where corrective action on the part of students may be required. It is essential, therefore, that students consult periodically with their advisors. Unless students subsequently request a change, faculty members originally assigned will continue as advisors throughout the students' program of study. If, however, a change in faculty advisor is requested, students must obtain the signed approval of the new advisors. . Based on a student-focused approach, we provide students with a Graduate Enrollment Counselor who serves as the first point of contact for class registration, financial aid application and preparation for graduation. Additionally, graduate enrollment counselors support students by providing information necessary to navigate the logistical challenges of graduate school and connect students to resources at the University of Pittsburgh.

Professional Development and Career Services: GSPIA places great emphasis on assisting students in determining the best and most appropriate positions available. In addition to faculty advisors, the school provides resources and guidance for students throughout their course of study as they devise strategies to identify professional opportunities. Among the many services offered through the Office of Career Services are individual career advising, internship and job search assistance, and a series of career-related workshops and special events. Extensive reference materials on jobs, fellowships, and internships are made available in a variety of ways, including Career Connections, GSPIA's online career management system for students and alumni. Workshops cover such topics as resume preparation, job search strategies, negotiation skills, networking, and using technology in securing employment. Special events include Foreign Service information sessions, mock interviews for the Presidential Management Fellowship Program, an internship fair, and networking events with alumni, foundations, and agency representatives on campus and in Washington, D.C. All students are required to participate in the Professional Development Program. In this course, students will gain the knowledge and resources necessary to begin to plan their career and internship searches. This graduation requirement covers job search techniques, resume and cover letter review, interviewing skills, internship and company searches and much more.

Major and Degree Options

GSPIA offers the following degrees:

Master of Public Administration (MPA), including majors in:

Energy & Environment
Governance & International Public Management
Policy Research & Analysis

Public & Nonprofit Management
Urban Affairs & Planning

This is a 48 credit program. The average length of time normally required to obtain this degree is 2 years.

Master of Public and International Affairs (MPIA), including majors in:

International Political Economy
Security and Intelligence Studies
Human Security

This is a 48 credit program. The average length of time normally required to obtain this degree is 2 years.

Master of International Development (MID), including majors in:

Human Security
Urban Affairs & Planning
Governance and International Public Management
Energy & Environment
Nongovernmental Organizations & Civil Society

This is a 48 credit program. The average length of time normally required to obtain this degree is 2 years.

Master of Public Policy and Management (MPPM) -

Traditional accelerated mid-career master program or

Online mid-career master program

This is a 30 credit program. The average length of time normally required to obtain this degree is 2 years.

Doctor of Philosophy (PhD)

Joint degrees

Minors

Students have the flexibility to customize their education as any major can be taken as a minor. Adding a minor will help differentiate your education, deepen your knowledge base and broaden professional marketability. Each minor consists of a 9-credit sequence of courses within your chosen subject area. This is taken in addition to general required courses and courses for your major area of study. Any course taken to fulfill a requirement for your degree or major cannot count towards your minor. A course may not be double-counted. An approved course must be substituted.

MID, MPIA, and MPA students may select a minor from among the nine listed below.

Civil Security & Disaster Management
Governance & International Public Management
Energy & Environment
International Political Economy
Nongovernmental Organizations & Civil Society
Policy Research & Analysis
Public & Nonprofit Management
Security & Intelligence Studies
Urban Affairs & Planning

Joint Degrees

GSPIA students may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements (including entrance exams like the GRE, GMAT, and LSAT, where applicable). If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed on year 9or, in the case of current law students, two years) of full-time study.

Full-time students in the MPA, MPIA, or MID programs are eligible to participate in the following joint programs:

Juris Doctor with University of Pittsburgh School of Law: The joint JD allows students to combine the study of law and policy, preparing them equally well for employment in the judicial or executive branches of government. Graduates are positioned to work in international law firms, nonprofit advocacy, and in public or nonprofit agencies that require knowledge of legal issues such as refugee services and the Department of Justice. Pitt Law School also partners with GSPIA in the University of Pittsburgh's Washington Center.

Master of Business Administration with University of Pittsburgh Katz Graduate School of Business - MPIA and MID students only: Combining a GSPIA degree with an MBA opens many opportunities for a career in international finance, government financial regulation, or multinational corporations. Students with both degrees are highly marketable in the fields of international business and international economic policy.

Master of Public Health with University of Pittsburgh Graduate School of Public Health: Students pursuing a joint MPH gain a unique perspective on public management, government responses to epidemics, and the effect of sanitation on international development. They study health policy and the science behind it, both at the local level and on the world stage, where disease recognizes no borders. Graduates are employed by medical relief agencies, nonprofit organizations that distribute vaccines, and government authorities responsible for protecting society from epidemics.

Master of Social Work with University of Pittsburgh School of Social Work: Today's community building arena demands well-trained professionals across a wider array of skills and systems than one degree program may offer. That's why the joint degree program between GSPIA and School of Social Work provides students with focused professional education in the community building arena to prepare them for careers in non-profit and government organizations, community development, social policy, and urban and regional affairs.

Master of Science in Information Science with University of Pittsburgh School of Information Science: The joint MSIS degree allows GSPIA students to combine the study of public management and information technology management, at a time when both fields are increasingly interconnected. Students are prepared to pursue public or nonprofit-sector careers that require strong knowledge of modern information systems.

International Organizations MBA with University of Geneva, Switzerland - MPIA and MID students only: In this unique program, students spend one year in Pittsburgh followed by a year in Switzerland. There, they pursue an internship in Geneva's thriving diplomatic community while completing the requirements for the University of Geneva's IO-MBA, a unique management program which focuses on the needs of international organizations. After returning to Pittsburgh for one semester, students receive degrees from both universities. Both degrees are taught in English.

Joint Degrees at Kobe University, Japan: Through a special partnership, students may combine their GSPIA degrees with one of several degrees offered by the Graduate School of International Cooperative Studies at Kobe University: the Master of International Affairs, Master of Laws, Master of Economics, or Master of Political Science. The Kobe GSICS curriculum is in English.

Early Admission Program for Pitt undergraduate students to complete their bachelor's degree while working on a master's degree at GSPIA. Once a student has completed 24 credits in GSPIA, they may apply and obtain their bachelor's degree.

To be eligible undergraduate University of Pittsburgh students must be enrolled in The Dietrich School of Arts and Sciences or the College of General Studies, be in good academic standing with a minimum overall GPA of 3.5, have a minimum of 96 credits, have completed all Skills and General Education requirements and have no "I" or "G" grades.

Applicants must submit an online application through www.gspia.pitt.edu, in essay #3 make reference that you are applying for the Early Admission Program, submit a letter from your Academic/Faculty Advisor stating that you have completed all courses in your major(s). Dietrich SAS applicants must submit a letter from Ms. Susan Crain, Dietrich SAS office of the Dean, stating that they satisfy the above eligibility requirements and may enter our masters program. CGS applicants must submit a letter from Timothy Carr, 459A Cathedral of Learning, stating that they satisfy the above eligibility requirements and may enter our masters program.

Special Academic Opportunities/Programs

GSPIA offers a variety of academic programs to complement the degree programs offered, including area studies, exchange programs, and research and travel grants.

Centers, Institutes and Initiatives

The Matthew B. Ridgway Center for International Security Studies - educates the next generation of security analysts and produces scholarship and impartial analysis that informs the options available to policymakers who must confront diverse challenges to international and human security on a global scale.

The Ford Institute for Human Security - conducts research that focuses on a series of transnational threats to the human rights of civilian populations and makes independent research and policy papers available to both domestic and international policymakers.

The Center for Metropolitan Studies - connects the academic programs at GSPIA with state and local governments, federal agencies, regional governance institutions, and nonprofit organizations in the United States to address real time problems they are confronting.

Johnson Institute for Responsible Leadership - reaffirms GSPIA's commitment to creating ethical leaders and provides an institutional platform from which to launch an innovative program of teaching, research, and public service on issues of ethics and accountability in all areas of public life.

Center for Disaster Management - provides a school-wide focus to support research, education, and training projects that focus on extreme events. The goal of the Center is to develop a coherent approach for research and analysis on policy issues related to disaster risk reduction and management that cross inter-organizational, interdisciplinary, and inter-jurisdictional boundaries.

Shale Gas Governance Center - The mission of the Shale Gas Governance Center is to promote research, teaching and outreach on the governance issues posed in Pennsylvania, the United States and around the world by the emergence of the "shale gas revolution."

The Roscoe Robinson Jr. Memorial Lecture Series - promotes discussion and understanding of key issues related to diversity in public service. The series features at least two lectures per year in honor of the late Roscoe Robinson Jr, the first African American, U.S. Army four-star general.

The Philanthropy Forum - provides a university-based platform for national dialogue with leading thinkers and practitioners in the field of philanthropy and engages in significant research on the history and contemporary contributions of philanthropy to our local, national, and global communities.

International Political Economy Colloquium (IPEC) - provides a forum for IPE scholars to present their best new works in progress.

Pittsburgh International Trade and Development Seminar Series - is a joint undertaking sponsored by the University of Pittsburgh's Department of Economics, Graduate School of Public and International Affairs and Carnegie Mellon University of Pittsburgh's Heinz College.

The Governance Group is an interdisciplinary research center at the University of Pittsburgh, focusing on governance, institutional design and program evaluation. A joint initiative of the Graduate School of Public and International Affairs (GSPIA) and the Department of Political Science, the Group is comprised of over a dozen faculty members from five different departments with the University.

The Symposium on Political Violence is a joint undertaking sponsored by the Graduate School of Public and International Affairs (GSPIA), the Department of Political Science, and the Matthew B. Ridgway Center for International Security at the University of Pittsburgh. The Symposium provides a forum both for external scholars and for faculty and graduate students in GSPIA and the Department of Political Science at Pitt to present their research on political science.

Area Studies

The University of Pittsburgh is home to several internationally recognized area studies centers. Many of these centers have been designated National Resource Centers (NRCs) by the US Department of Education, certifying their status as leading centers of their kind in the United States. The NRCs sponsor numerous programs and offer Foreign Language and Area Studies (FLAS) Fellowships for which GSPIA students (U.S. citizens only) are eligible. The area studies centers and programs include:

- African Studies
- Asian Studies Center
- Center for Latin American Studies
- Center for Russian and East European Studies
- European Studies Center

In addition, UCIS is home to a European Union Center of Excellence, one of only ten so designated and partially funded by the European Union in the United States. The Study Abroad Office and the Nationality Rooms and Intercultural Exchange Programs round out the UCIS component programs.

UCIS offers graduate certificates that GSPIA students can pursue concurrently with their degrees, allowing them to focus their studies on a particular region or theme. UCIS's constituent units offer nine certificate programs. It is normally possible to complete the requirements for a GSPIA master's degree and a UCIS certificate in two years. For further information, see UCIS' section of this catalog.

GSPIA Programs Abroad

GSPIA has developed a number of international partnerships that offer students the possibility to study abroad for a regular academic term, during the summer, or-in a double degree program-for an entire year or more:

International Organizations MBA in Geneva, Switzerland

This program provides students with the opportunity to earn a master's degree from GSPIA as well as an IO-MBA from the University of Geneva (Switzerland) in 28 months. Students spend a year in Geneva and normally pursue an internship in Europe at an international organization. This is an ideal option for anyone interested in working at the United Nations or a similar multilateral body. Coursework is in English.

Summer Studying the EU in Brussels, Belgium

This program enables GSPIA students to earn credits toward their degree while studying EU policies and interacting with EU officials at the Free University of Brussels (ULB). Courses are taught in English.

International Development and Asian Affairs in Kobe, Japan

This program enables students to earn a Certificate in International Development and Asian Affairs from GSICS at Kobe University while completing their masters degree from GSPIA.

Public Administration and/or International Studies in Seoul, Korea

This program enables students to earn credits toward their GSPIA degree by taking courses in the Graduate School of Public Administration and/or the Graduate School of International Studies at Seoul National University. Coursework can be completed in English or Korean.

Public Policy and International Affairs in Paris, France

This program enables students to earn credits toward their GSPIA degree by taking courses at the Institut d'Etudes Politiques de Paris (in French), or at its English-language wing, the Paris School of International Affairs.

Government or Political Science in Bogota, Colombia

This program enables students to earn credits toward their GSPIA degree by taking courses at the Department of Political Science at the University of the Andes, one of Latin America's leading institutions. Coursework is in Spanish.

Public Management in Nanjing, China

This program enables students to earn credits toward their GSPIA degree by taking courses at Nanjing University's School of Public Management. Coursework is in Chinese.

International Relations, Madrid, Spain

This program allows students to earn credits toward their GSPIA degree by taking courses at the School of International Relations, IE University. Coursework is in English.

Budget permitting, each year the Office of the Dean and the school's academic programs make available small grants to students. Uses for these grants can include attending professional development conferences, presenting papers, and supporting internships and study abroad activities. These grants are awarded through a highly competitive selection process.

Faculty

Lisa S. Alfredson, Professor, PhD, London School of Economics

Ariel Armony, Professor, PhD, University of Pittsburgh

Luke Condra, Assistant Professor, PhD, Stanford University

Sabina E. Deitrick, Associate Professor, PhD, University of California, Berkeley

George W. Dougherty, Assistant Professor, PhD, University of Georgia

William N. Dunn, Professor, PhD, Claremont Graduate University

Gary Hollibaugh, Assistant Professor, PhD, University of Rochester

Muge Kokten Finkel, Assistant Professor, PhD, University of Virginia

Shanti Gamper-Rabindra, Associate Professor, PhD, Massachusetts Institute of Technology

Marcela Gonzalez Rivas, Assistant Professor, PhD, University of North Carolina, Chapel Hill

Ryan Grauer, Assistant Professor, PhD, University of Pennsylvania

Daniel Jones, Assistant Professor, PhD, University of Pittsburgh

Kevin Kearns, Professor, PhD, University of Pittsburgh

John T.S. Keeler, Dean and Professor, PhD, Harvard University

Michael Kenney, Associate Professor, PhD, University of Florida

Michael Lewin, Lecturer, PhD, Johns Hopkins University

Sera Linardi, Assistant Professor, PhD, California Institute of Technology

Jerome B. McKinney, Professor, PhD, University of Missouri, Columbia

John Mendeloff, Professor, PhD, University of California, Berkeley

David Y. Miller, Professor, PhD, University of Pittsburgh

Jennifer B. Murtazashvili, Assistant Professor, PhD, University of Wisconsin, Madison

Ilia Murtazashvili, Assistant Professor, PhD, University of Wisconsin, Madison

Lisa Nelson, Associate Professor, PhD, University of Wisconsin, Madison

Paul J. Nelson, Associate Dean, PhD, University of Wisconsin

Erica Owen, Assistant Professor, PhD, University of Minnesota

Louis A. Picard, Professor, PhD, University of Wisconsin, Madison

Michael Poznansky, Assistant Professor, PhD, University of Virginia

Taylor Seybolt, Associate Professor, PhD, Massachusetts Institute of Technology

Nuno Themudo, Associate Professor, PhD, London School of Economics

Jeremy Weber, Assistant Professor, PhD, University of Wisconsin, Madison

Meredith Wilf, Assistant Professor, PhD, Princeton University

Phil Williams, Wesley W. Posvar Chair for International Security Studies, University of Southampton

Part-time and Visiting Faculty

Kathleen Buechel, Senior Lecturer, MA, Kennedy School of Government, Harvard University

Julie Santucci, Senior Lecturer, MA, University of Arizona

Program and Course Offerings

Certificate

Certificate in Cybersecurity, Policy and Law

To be a leader in cybersecurity requires more than just technical knowledge - it also requires a deeper understanding of the of the cyber challenges surrounding law, policy, regulations, and ethics. We are offering a Graduate Certificate in Cybersecurity, Policy and Law from three schools within the University of Pittsburgh: the Graduate School of Public & International Affairs, School of Law and the School of Computing and Information.

Cybersecurity is a multidisciplinary field that involves technical issues, security policies, regulation and law. Our integrated curriculum provides students with the skills to develop comprehensive cybersecurity policies and strengthen cybersecurity environments to minimize risk.

As part of the certificate's multidisciplinary approach, the certificate requires courses to be taken from all three Pitt schools. Students must complete a minimum of three courses from the School of Computing and Information, one course from the Graduate School of Public and International Affairs, and one course from the School of Law to earn the certificate.

Applicants must have a Bachelor's degree. All students are expected to complete the program within one to two years.

Students enrolled in a Graduate School of Public & International (GSPIA) degree program may count no more than six (6) of the certificate credits (two courses) toward their degrees.

Students will need to contact the School of Law or School of Computing & Information to obtain permission to take courses from those schools.

The Certificate curriculum, comprising of 15 credits, follows:

Graduate School of Public & International Affairs: 3 credits

- PIA 2156 - ETHICS AND POLICY IN CYBER SPACE
- PIA 2360 - CYBER SECURITY POLICY
- PIA 2379 - INTRODUCTION TO CYBER CRIMES
- PIA 2389 - CRIMINAL OPERATIONS IN THE CYBERWORLD
- PIA 2327 - TERRORISM AND COUNTER TERRORISM
- PIA 2346 - INTRODUCTION TO AMERICAN INTELLIGENCE
- PIA 2365 - TRANSNATIONAL CRIME
- or
- PIA 2xxx Policy Analysis for Cyber Security & Intelligence Studies

School of Law requirements: 3 credits

- LAW 5623 - CYBER LAW AND POLICY
- LAW 5380 - CYBERCRIME
- LAW 5620 - CYBERSECURITY & PRIVACY REGLN
- LAW 5404 - CYBERSPACE AND THE LAW
- LAW 5430 - INFO PRIVACY LAW AND PRACTICE
- LAW 5260 - INTELLECTUAL PROPERTY
- LAW 5877 - LAW MAKING SEMINAR

School of Computing & Information

- INFSCI 2150 - INFORMATION SECURITY AND PRIVACY
- INFSCI 2621 - SECURITY MANAGEMENT AND COMPUTER FORENSICS
- INFSCI 2620 - DEVELOPING SECURE SYSTEMS
- INFSCI 2731 - SECURITY IN E-COMMERCE
- INFSCI 2625 - CYBERSECURITY AND PRIVACY REGULATION
- TELCOM 2821 - NETWORK SECURITY
- TELCOM 2811 - HACKING FOR DEFENSE

- CS 2053 - APPLIED CRYPTOGRAPHY AND NETWORK SECURITY
- CS 2530 - COMPUTER AND NETWORK SECURITY
- CS 3525 - ADVANCED TOPICS IN SECURITY AND PRIVACY

Doctoral

Public and International Affairs, PhD

Requirements

The PhD program requires the completion of 72 credits of course work and 6 credits for the dissertation for a total of 78 credits. The curriculum for doctoral students is outlined as follows:

Doctoral Core Courses: 12 credits

- PIA 3000 - INTERMEDIATE QUANTITATIVE METHODS
- PIA 3004 - SEMINAR IN RESEARCH DESIGN AND METHODS
- PIA 3050 - QUALITATIVE RESEARCH: DESIGN AND METHODS
- PIA 2025 - MICROECONOMICS
or
- PIA 2028 - PUBLIC POLICY ANALYSIS

Field Seminars: 6 credits

Students must take two (2) of the following four field seminars.

- PIA ---- IA (International Affairs) FIELD SEMINAR
- PIA ---- ID (International Development) FIELD SEMINAR
- PIA ---- PA (Public Administration) FIELD SEMINAR
- PIA ---- PP (Public Policy) FIELD SEMINAR

Note: Field Seminars are only offered once every two (2) years, so students must register for the chosen seminars as soon as they are offered.

Electives: 24 credits

Students must take eight (8) additional graduate level courses.

PIA 3099 Dissertation: 6 credits

Students must be admitted to candidacy and must be writing their dissertation to be eligible to register for PIA 3099 Dissertation. Six (6) credits of PIA 3099 Dissertation are required to graduate.

- PIA 3099 - DISSERTATION PHD

Minimum Required Credits: 78 credits

Students must complete 72 credits of course work, excluding the 6 dissertation credits, with a minimum GPA of 3.0. Students must meet this requirement in order to qualify for final approval of their comprehensive examinations. Students are required to maintain full-time status while completing the 72 credits of coursework.

Doctoral Milestones

Plan of Study Meeting

After electing field and subfields early in the first term of study, students will meet with the faculty advisers representing their field and primary subfield. This meeting's aim is to structure a program that best serves the student's interests and ensures that the degree requirements are met in a timely and stipulated manner. At this meeting, the acceptance of course credits from previous graduate studies is also discussed.

Annual Progress Evaluation: First and Second Years

Held with the student's field and primary subfield advisers, the review serves the following purposes:

- To identify any necessary adjustments to the student's original plan of study
- In exceptional circumstances, to signal that a student's performance points to a reconsideration of his/her doctoral status.

The annual review should be scheduled near the end of each academic year. The student is responsible for scheduling this meeting, and should be fully aware that many professors may be unavailable after the end of the term. Failure to schedule this meeting in a timely manner may lead to the review being undertaken without student participation.

It is expected that the two faculty advisers will solicit comments from those faculty with whom the student has taken coursework during the year, especially in relation to courses in which the student did not perform adequately (i.e., received a G, I or lower than B grade).

Annual Dissertation Progress Evaluation: Third and Later Years

At the end of the third and later years, the student must undergo an annual evaluation of their progress toward the dissertation. As stated in the Regulations Governing Graduate Study at the University of Pittsburgh, "meetings of the doctoral candidate and his/her dissertation committee must occur at least annually from the time the student gains admission to doctoral candidacy. During these meetings, the committee should assess the student's progress toward the degree and discuss objectives for the following year and a timetable for completing degree requirements.

The student's dissertation committee, or academic advisers if a dissertation committee has not been approved by the end of the third year of studies, will undertake the evaluation. Unjustified failure to make sufficient progress toward the dissertation will be grounds for suspension of funding and, possibly, dismissal from the program.

Comprehensive Examinations

The comprehensive examination is designed to assess the student's mastery of two general fields of doctoral study. Unless an exception is granted by the Doctoral Program Director, Comprehensive Examinations are taken in May following a student's fourth semester, after the student completes all required courses and earns at least 72 credits (including advanced standing credits). In addition, all incomplete grades must be removed by meeting the requirements to complete the courses; even if the course is viewed by the student as not being relevant to his or her degree program.

Two Comprehensive Exams must be taken, corresponding to two of the four PhD fields (Public Policy, Public Administration, International Development, International Affairs). Students may change their chosen fields up until the registration for the Comprehensive Exams in the spring term of their second year. Each exam will be 60-hour take-home exam that require responses to three questions out of a pool of up to nine potential questions. Answers are limited to 2,000 words per question (not including references or footnotes). During the 60-hour period, students cannot communicate with others about the exam questions. Students' evaluation in comprehensive exams will be based on their mastery of the relevant literatures only.

Faculty will provide reading lists for each field that will be used to clarify expectations about the literatures that students are expected to master. The lists must be of reasonable length as determined by the field committee in consultation with the PhD program director. The PhD program director will provide incoming students with the most updated readings lists for all fields. No changes can be made to reading lists within 6 months of the comprehensive exam date.

Establishing the Dissertation Committee

During the third year of studies, and before admission to candidacy for the PhD degree, the major academic adviser (i.e., committee chair) proposes, for the approval of the director of the school's doctoral program and the dean, a committee of four or more persons, including at least one from another department in the University of Pittsburgh or from an appropriate graduate program at another academic institution, to serve as the dissertation committee. The majority of the committee, including the major adviser, must be full or adjunct members of the Graduate Faculty. This committee must review and approve the proposed research project before the student may be admitted to candidacy. A published Graduate Faculty Membership Roster is updated three times a year. *Only a GSPIA faculty member is eligible to serve as the chair of the committee.*

This dissertation committee has the responsibility to advise the student on his/her research and has the authority to require high-quality research and/or the rewriting of any portion or the entire dissertation. It conducts the final oral examination and determines whether the dissertation meets accepted standards.

The student must meet with his/her dissertation committee at least once a year (see Annual Dissertation Progress Evaluation above).

The membership of the dissertation committee may be changed whenever it is appropriate or necessary, subject to the approval of the Doctoral Program Director and the Dean.

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

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

The completed and signed Dissertation Committee Approval Form and/ or the Change in Dissertation Committee Form should be submitted to the Office of Student Services for posting and filing.

All coordination between Dissertation Committee members is the responsibility of the student.

Dissertation Proposal

Immediately after passing the comprehensive examinations, and establishing the dissertation committee, the students should meet with the chair to discuss the development of a dissertation proposal, which outlines the goals and objectives, theoretical argument, policy implications, literature, research design, and timetable for the dissertation research.

The student will submit the Announcement of Dissertation Proposal Meeting Form, available from the Office of Student Services, to the Doctoral Program Director ten days prior to the proposal meeting. The announcement will be sent to the faculty and graduate student email lists. Proposal defense meetings are open to all faculty and students.

There must be a minimum of three members present for the meeting to be convened, and the absent member is required to submit a written evaluation of the proposal to the Committee Chair. Under no circumstances can the meeting be held without the Chair. If the Committee accepts the proposal, all Committee members will sign the Approval of Dissertation Proposal Form, available from the Office of Student Services. The completed and signed form is then submitted along with a copy of the approved proposal to the Ph.D. Program Director, who has final approval. According to University guidelines, only after the proposal has been accepted as final by the Doctoral Program Director does the student advance to candidacy. The signed and completed form is to be returned to the Office of Student Services for posting and filing.

Dissertation

The Dissertation Committee must meet a minimum of once a year; however, students are strongly encouraged to schedule more frequent committee meetings.

An appropriate dissertation should be a substantive piece of original and independent research grounded in an appropriate body of literature. The characteristics which a dissertation should demonstrate are:

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

Oral Defense of the Dissertation

At the oral defense, the student will be asked to explain and justify dissertation research and to assess its relation and contribution to the literature and policy in the field. The final oral examination in defense of the doctoral dissertation is conducted by the dissertation committee and need not be confined to materials in and related to the dissertation. Any member of the Graduate Faculty of the University may attend and participate in the examination. The date, place, and time of the examination should be published well in advance in the University Times. Other qualified individuals may be invited by the committee to participate in the examination. Only members of the dissertation committee may be present during the final deliberations and may vote on the passing of the candidate. A report of this examination, signed by all the members of the dissertation committee, must be sent to the Office of Student Services for posting and filing. If the decision of the committee is not unanimous, the case is referred to the dean for resolution. The chair of the dissertation committee should ensure that the dissertation is in final form, i.e., all required changes have been made, before requesting signatures of the members of the committee.

Electronic Thesis and Dissertation (ETD)

After approval of the dissertation, all candidates are required to publish the document electronically via d-scholarship. For access to more information on ETD and training, go to www.pitt.edu/~graduate/etd/training.html.

Minor

Social Policy Minor

The Social Policy minor is 9 credits (three courses). Because some of the listed courses are required for some students in MPA, there will be some variation in requirements for the minor. Students must complete either of the required courses. For students who are not in the MPA program, the Social Policy minor requires PIA 2117 - PUBLIC PROGRAM EVALUATION. Students in MPA (who already take Program Evaluation as a required course) will be required to complete three course from the list of courses above. No more than one methods course can be used to complete the Social Policy minor.

Public Administration Program

Master of Public Administration (MPA)

Public administration is a field practiced at the intersection of the government, nonprofit, and private sectors. GSPIA's MPA program trains managers to balance the needs of each community with its resources, promoting neighborhood development, effective local government, ethical leadership, and

responsible business practices. Students acquire an incredibly diverse and flexible set of professional skills appropriate for careers in nonprofit agencies, government offices, and private businesses worldwide.

The 48-credit MPA degree is designed to advance the core value of social equity fundamental to today's public management. GSPIA's programs in urban affairs and nonprofit management are consistently ranked among the very best in the country. Additionally, GSPIA's Center for Metropolitan Studies and the Johnson Institute for Responsible Leadership bridge the gap between theory and practice, allowing students to work directly with local government and nonprofit leaders. In 2012 US News ranked GSPIA #19 among all MPA programs for "City Management and Urban Policy." A major reason for this strength is GSPIA's relationship with Pitt's University Center for Social and Urban Research (UCSUR), where students and faculty engage in scholarly analysis of urban and regional issues. UCSUR promotes a multidisciplinary research agenda centered on economic, demographic, and social change in cities and regions.

Degree Requirements and Majors

MPA students may choose one of five majors: Energy and Environment, Public & Nonprofit Management, Urban Affairs & Planning, Governance & International Public Management or Policy Research & Analysis. Students may also pursue a minor in any of these fields, or in any of the following fields offered by GSPIA's other degree programs.

Prior to graduation, students must also complete a 300-hour internship with an approval from GSPIA career services.

Joint Degree Options

MPA students are eligible to pursue one of several joint degrees at the University of Pittsburgh, including a joint MPA/law degree (JD), MPA/Master of Public Health (MPH), MPA/Master of Science in Information Science (MSIS), and MPA/Master of Social Work (MSW). They may also pursue a joint master's degree through the Graduate School of International Cooperative Studies at Kobe University in Japan. An accelerated, five-year bachelor's/master's degree program is available to select University of Pittsburgh undergraduates.

Area Studies Certificate Options

MPIA students are eligible to combine their master's degree with a graduate certificate from the University Center for International Studies, specializing in Africa, Asia, western Europe, eastern Europe, the European Union, Latin America, or Russia.

Accreditation

GSPIA's Master of Public Administration degree is accredited by the National Association of Schools of Public Affairs and Administration (NASPAA). NASPAA accreditation recognizes that a master's program in public affairs has gone through a rigorous process of voluntary peer review conducted by the Commission on Peer Review and Accreditation (COPRA), and has met NASPAA's Standards for Professional Master's Degree Programs in Public Affairs, Policy, and Administration.

Joint Degree

Energy and Environment, JD/MPA

Joint Degree

Full-time GSPIA students in the MPA, MPIA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students

spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public Administration and Juris Doctor

The joint JD allows students to combine the study of law and policy, preparing them equally well for employment in the judicial or executive branches of government. Graduates are positioned to work in international law firms, nonprofit advocacy, and in public or nonprofit agencies that require knowledge of legal issues, such as refugee services and the Department of Justice. Pitt Law School also partners with GSPIA in the University of Pittsburgh's Washington Center.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPA/JD

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)

- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2104 - FINANCIAL MANAGEMENT
- PIA 2117 - PUBLIC PROGRAM EVALUATION (pre-requisite: PIA 2022)
- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Juris Doctor requirements: 79 credits

(see Law's website for requirements)

Total Number of Credits for Joint Degree: 115

Major Specific Requirements:

Students must take three of the following five courses & one additional approved E&E major courses.

Energy and Environment

- PIA 2231 - CONTEMPORARY US ENERGY POLICY
OR
- PIA 2115 - ENVIRONMENTAL ECONOMICS
OR
- PIA 2502 - POLITICAL ECONOMY OF GLOBAL ENVIRONMENT
OR
- PIA 2164 - NATURAL RESOURCES GOVERNANCE AND MANAGEMENT

- PIA 2xxx - Approved E&E Major Course

Energy and Environment, MPA/MIS

Joint Degree

Full-time GSPIA students in the MPA, MPA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public Administration and Master of Science in Information Science

The joint MSIS degree allows GSPIA students to combine the study of public management and information technology management, at a time when both fields are increasingly interconnected. Students are prepared to pursue public or nonprofit-sector careers that require strong knowledge of modern information systems.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPA/MIS

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)

- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS
- PIA 2104 - FINANCIAL MANAGEMENT
- PIA 2117 - PUBLIC PROGRAM EVALUATION (pre-requisite: PIA 2022)

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Master of Information Science requirements: 30 credits

(see Information Science website for requirements)

Total Number of Credits for Joint Degree: 66

Major Specific Requirements:

Students must take three of the following five courses & one additional approved E&E major courses.

Energy and Environment

- PIA 2231 - CONTEMPORARY US ENERGY POLICY
OR
- PIA 2115 - ENVIRONMENTAL ECONOMICS
OR
- PIA 2502 - POLITICAL ECONOMY OF GLOBAL ENVIRONMENT
OR
- PIA 2164 - NATURAL RESOURCES GOVERNANCE AND MANAGEMENT

- PIA 2xxx - Approved E&E Major Course

Energy and Environment, MPA/MPH

Joint Degree

Full-time GSPIA students in the MPA, MPA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public Administration and Master of Public Health

Students pursuing a joint MPH gain a unique perspective on public management, government responses to epidemics, and the effect of sanitation on international development. They study health policy and the science behind it, both at the local level and on the world stage, where disease recognizes no borders. Graduates are employed by medical relief agencies, nonprofit organizations that distribute vaccines, and government authorities responsible for protecting society from epidemics.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPA/MPH

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)

- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior = PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2104 - FINANCIAL MANAGEMENT
- PIA 2117 - PUBLIC PROGRAM EVALUATION (pre-requisite: PIA 2022)
- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Master of Public Health requirements: 42 credits

(see Public Health website for requirements)

Total Number of Credits for Joint Degree: 78

Major Specific Requirements:

Students must take three of the following five courses & one additional approved E&E major courses.

Energy and Environment

- PIA 2231 - CONTEMPORARY US ENERGY POLICY
OR
- PIA 2115 - ENVIRONMENTAL ECONOMICS
OR
- PIA 2502 - POLITICAL ECONOMY OF GLOBAL ENVIRONMENT
OR
- PIA 2164 - NATURAL RESOURCES GOVERNANCE AND MANAGEMENT

- PIA 2xxx - Approved E&E Major Course

Energy and Environment, MPA/MSW

Joint Degree

Full-time GSPIA students in the MPA, MPIA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public Administration and Master of Social Work

Today's community building arena demands well-trained professionals across a wider array of skills and systems than one degree program may offer. That's why the joint degree program between GSPIA and School of Social Work provides students with focused professional education in the community building arena to prepare them for careers in non-profit and government organizations, community development, social policy, and urban and regional affairs.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPA/MSW

GSPIA Core Requirements: 18 credits

- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS
- PIA 2021 - INTERNATIONAL AFFAIRS *
- PIA 2022 - QUANTITATIVE METHODS
- PIA 2024 - ECONOMICS FOR PUBLIC AFFAIRS *
- PIA 2025 - MICROECONOMICS or
- PIA 2028 - PUBLIC POLICY ANALYSIS
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM
- PIA 2098 - INTERNSHIP

Degree Core Courses: 9 credits

- PIA 2104 - FINANCIAL MANAGEMENT
- PIA 2117 - PUBLIC PROGRAM EVALUATION
- PIA 2096 - CAPSTON SEMINAR: or
- PIA 2099 - THESIS (pre-req. PIA 2028 + PIA 2003 + approval)

Major Courses: 9-12 credits

(see Major-Specific requirements)

Minimum Required GSPIA Credits: 36 credits

Master of Social Work requirements: 51 credits

(see Social Work website for requirements)

Total Number of Credits for Joint Degree: 87

Major Specific Requirements:

Students must take three of the following five courses & one additional approved E&E major courses.

Energy and Environment

- PIA 2231 - CONTEMPORARY US ENERGY POLICY
OR
- PIA 2115 - ENVIRONMENTAL ECONOMICS
OR
- PIA 2502 - POLITICAL ECONOMY OF GLOBAL ENVIRONMENT
OR
- PIA 2164 - NATURAL RESOURCES GOVERNANCE AND MANAGEMENT
- PIA 2xxx - Approved E&E Major Course

Governance & International Public Management, JD/MPA

Requirements for the joint degree MPA/JD

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2104 - FINANCIAL MANAGEMENT
- PIA 2117 - PUBLIC PROGRAM EVALUATION (pre-requisite: PIA 2022)
- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Juris Doctor requirements: 79 credits

(see Law's website for requirements)

Total Number of Credits for Joint Degree: 115

Major Specific Requirements:

Governance & International Public Management (GIPM)

- PIA 2xxx - Approved GIPM Major Course
- PIA 2xxx - Approved GIPM Major Course
- PIA 2528 - GOVERNANCE, LOCAL GOVERNMENT AND CIVIL SOCIETY
OR
- PIA 2124 - COMPARATIVE METROPOLITAN GOVERNANCE
- PIA 2552 - MANAGING ORGANIZATIONS IN DEVELOPMENT
OR
- PIA 2011 - MANAGING INTERNATIONAL ORGANIZATIONS
OR
- PIA 3393 - COMPARATIVE PUBLIC ADMINISTRATION

Governance & International Public Management, MPA/MIS

Requirements for the joint degree MPA/MIS

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS
- PIA 2104 - FINANCIAL MANAGEMENT
- PIA 2117 - PUBLIC PROGRAM EVALUATION (pre-requisite: PIA 2022)

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Master of Information Science requirements: 30 credits

(see Information Science website for requirements)

Total Number of Credits for Joint Degree: 66

Major Specific Requirements:

Governance & International Public Management (GIPM)

- PIA 2xxx - Approved GIPM Major Course
- PIA 2xxx - Approved GIPM Major Course
- PIA 2528 - GOVERNANCE, LOCAL GOVERNMENT AND CIVIL SOCIETY
OR
- PIA 2124 - COMPARATIVE METROPOLITAN GOVERNANCE
- PIA 2552 - MANAGING ORGANIZATIONS IN DEVELOPMENT
OR
- PIA 2011 - MANAGING INTERNATIONAL ORGANIZATIONS
OR
- PIA 3393 - COMPARATIVE PUBLIC ADMINISTRATION

Governance & International Public Management, MPA/MPH

Requirements for the joint degree MPA/MPH

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior = PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2104 - FINANCIAL MANAGEMENT
- PIA 2117 - PUBLIC PROGRAM EVALUATION (pre-requisite: PIA 2022)
- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Master of Public Health requirements: 42 credits

(see Public Health website for requirements)

Total Number of Credits for Joint Degree: 78

Major Specific Requirements:

Governance & International Public Management (GIPM)

- PIA 2xxx - Approved GIPM Major Course
- PIA 2xxx - Approved GIPM Major Course

- PIA 2528 - GOVERNANCE, LOCAL GOVERNMENT AND CIVIL SOCIETY
OR
- PIA 2124 - COMPARATIVE METROPOLITAN GOVERNANCE

- PIA 2552 - MANAGING ORGANIZATIONS IN DEVELOPMENT
OR
- PIA 2011 - MANAGING INTERNATIONAL ORGANIZATIONS
OR
- PIA 3393 - COMPARATIVE PUBLIC ADMINISTRATION

Policy Research and Analysis, JD/MPA

Joint Degree

Full-time GSPIA students in the MPA, MPJA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public Administration and Juris Doctor

The joint JD allows students to combine the study of law and policy, preparing them equally well for employment in the judicial or executive branches of government. Graduates are positioned to work in international law firms, nonprofit advocacy, and in public or nonprofit agencies that require knowledge of legal issues, such as refugee services and the Department of Justice. Pitt Law School also partners with GSPIA in the University of Pittsburgh's Washington Center.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPA/JD

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)

- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2104 - FINANCIAL MANAGEMENT
- PIA 2117 - PUBLIC PROGRAM EVALUATION (pre-requisite: PIA 2022)
- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Juris Doctor requirements: 79 credits

(see Law's website for requirements)

Total Number of Credits for Joint Degree: 115

Major Specific Requirements:

Policy Research & Analysis

- PIA 2023 - INTERMEDIATE QUANTITATIVE METHODS (pre-requisites: PIA 2022)
- PIA 2xxx - Approved PRA Major Course
- PIA 2xxx - Approved PRA Major Course
- PIA 2xxx - Approved PRA Major Course

Policy Research and Analysis, MPA/MIS

Joint Degree

Full-time GSPIA students in the MPA, MPPIA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public Administration and Master of Science in Information Science

The joint MSIS degree allows GSPIA students to combine the study of public management and information technology management, at a time when both fields are increasingly interconnected. Students are prepared to pursue public or nonprofit-sector careers that require strong knowledge of modern information systems.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPA/MIS

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS
- PIA 2104 - FINANCIAL MANAGEMENT
- PIA 2117 - PUBLIC PROGRAM EVALUATION (pre-requisite: PIA 2022)

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Master of Information Science requirements: 30 credits

(see Information Science website for requirements)

Total Number of Credits for Joint Degree: 66

Major Specific Requirements:

Policy Research & Analysis

- PIA 2023 - INTERMEDIATE QUANTITATIVE METHODS
(pre-requisites: PIA 2022)
- PIA 2xxx - Approved PRA Major Course
- PIA 2xxx - Approved PRA Major Course
- PIA 2xxx - Approved PRA Major Course

Policy Research and Analysis, MPA/MPH

Joint Degree

Full-time GSPIA students in the MPA, MPIA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

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Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public Administration and Master of Public Health

Students pursuing a joint MPH gain a unique perspective on public management, government responses to epidemics, and the effect of sanitation on international development. They study health policy and the science behind it, both at the local level and on the world stage, where disease recognizes no borders. Graduates are employed by medical relief agencies, nonprofit organizations that distribute vaccines, and government authorities responsible for protecting society from epidemics.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPA/MPH

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)

- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior = PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2104 - FINANCIAL MANAGEMENT
- PIA 2117 - PUBLIC PROGRAM EVALUATION (pre-requisite: PIA 2022)
- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Master of Public Health requirements: 42 credits

(see Public Health website for requirements)

Total Number of Credits for Joint Degree: 78

Major Specific Requirements:

Policy Research & Analysis

- PIA 2023 - INTERMEDIATE QUANTITATIVE METHODS
(pre-requisites: PIA 2022)
- PIA 2xxx - Approved PRA Major Course
- PIA 2xxx - Approved PRA Major Course
- PIA 2xxx - Approved PRA Major Course

Policy Research and Analysis, MPA/MSW

Joint Degree

Full-time GSPIA students in the MPA, MPJA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public Administration and Master of Social Work

Today's community building arena demands well-trained professionals across a wider array of skills and systems than one degree program may offer. That's why the joint degree program between GSPIA and School of Social Work provides students with focused professional education in the community building arena to prepare them for careers in non-profit and government organizations, community development, social policy, and urban and regional affairs.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPA/MSW

GSPIA Core Requirements: 18 credits

- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS
- PIA 2021 - INTERNATIONAL AFFAIRS *
- PIA 2022 - QUANTITATIVE METHODS
- PIA 2024 - ECONOMICS FOR PUBLIC AFFAIRS *
- PIA 2025 - MICROECONOMICS or
- PIA 2028 - PUBLIC POLICY ANALYSIS
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM
- PIA 2098 - INTERNSHIP

Degree Core Courses: 9 credits

- PIA 2104 - FINANCIAL MANAGEMENT
- PIA 2117 - PUBLIC PROGRAM EVALUATION
- PIA 2096 - CAPSTON SEMINAR: or
- PIA 2099 - THESIS (pre-req. PIA 2028 + PIA 2003 + approval)

Major Courses: 9-12 credits

(see Major-Specific requirements)

Minimum Required GSPIA Credits: 36 credits

Master of Social Work requirements: 51 credits

(see Social Work website for requirements)

Total Number of Credits for Joint Degree: 87

Major Specific Requirements:

Policy Research & Analysis

- PIA 2023 - INTERMEDIATE QUANTITATIVE METHODS
(pre-requisites: PIA 2022)
- PIA 2xxx - Approved PRA Major Course
- PIA 2xxx - Approved PRA Major Course
- PIA 2xxx - Approved PRA Major Course

Public and Nonprofit Management, JD/MPA

Joint Degree

Full-time GSPIA students in the MPA, MPJA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public Administration and Juris Doctor

The joint JD allows students to combine the study of law and policy, preparing them equally well for employment in the judicial or executive branches of government. Graduates are positioned to work in international law firms, nonprofit advocacy, and in public or nonprofit agencies that require knowledge of legal issues, such as refugee services and the Department of Justice. Pitt Law School also partners with GSPIA in the University of Pittsburgh's Washington Center.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPA/JD

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)

- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2104 - FINANCIAL MANAGEMENT
- PIA 2117 - PUBLIC PROGRAM EVALUATION (pre-requisite: PIA 2022)
- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Juris Doctor requirements: 79 credits

(see Law's website for requirements)

Total Number of Credits for Joint Degree: 115

Major Specific Requirements:

Public & Nonprofit Management

- PIA 2103 - MANAGING PEOPLE IN THE PUBLIC AND NON-PROFIT SECTOR
- PIA 2185 - STRATEGIC MANAGEMENT
(pre-requisites: PIA 2020 or 2170)
- PIA 2xxx - Approved PNM Major Course
- PIA 2xxx - Approved PNM Major Course

Public and Nonprofit Management, MPA/MIS

Joint Degree

Full-time GSPIA students in the MPA, MPJA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public Administration and Master of Science in Information Science

The joint MSIS degree allows GSPIA students to combine the study of public management and information technology management, at a time when both fields are increasingly interconnected. Students are prepared to pursue public or nonprofit-sector careers that require strong knowledge of modern information systems.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPA/MIS

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS
- PIA 2104 - FINANCIAL MANAGEMENT
- PIA 2117 - PUBLIC PROGRAM EVALUATION (pre-requisite: PIA 2022)

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Master of Information Science requirements: 30 credits

(see Information Science website for requirements)

Total Number of Credits for Joint Degree: 66

Major Specific Requirements:

Public & Nonprofit Management

- PIA 2103 - MANAGING PEOPLE IN THE PUBLIC AND NON-PROFIT SECTOR
- PIA 2185 - STRATEGIC MANAGEMENT
(pre-requisites: PIA 2020 or 2170)
- PIA 2xxx - Approved PNM Major Course
- PIA 2xxx - Approved PNM Major Course

Public and Nonprofit Management, MPA/MPH

Joint Degree

Full-time GSPIA students in the MPA, MPIA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public Administration and Master of Public Health

Students pursuing a joint MPH gain a unique perspective on public management, government responses to epidemics, and the effect of sanitation on international development. They study health policy and the science behind it, both at the local level and on the world stage, where disease recognizes no borders. Graduates are employed by medical relief agencies, nonprofit organizations that distribute vaccines, and government authorities responsible for protecting society from epidemics.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPA/MPH

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)

- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior = PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2104 - FINANCIAL MANAGEMENT
- PIA 2117 - PUBLIC PROGRAM EVALUATION (pre-requisite: PIA 2022)
- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Master of Public Health requirements: 42 credits

(see Public Health website for requirements)

Total Number of Credits for Joint Degree: 78

Major Specific Requirements:

Public & Nonprofit Management

- PIA 2103 - MANAGING PEOPLE IN THE PUBLIC AND NON-PROFIT SECTOR
- PIA 2185 - STRATEGIC MANAGEMENT
(pre-requisites: PIA 2020 or 2170)
- PIA 2xxx - Approved PNM Major Course
- PIA 2xxx - Approved PNM Major Course

Public and Nonprofit Management, MPA/MSW

Joint Degree

Full-time GSPIA students in the MPA, MPJA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public Administration and Master of Social Work

Today's community building arena demands well-trained professionals across a wider array of skills and systems than one degree program may offer. That's why the joint degree program between GSPIA and School of Social Work provides students with focused professional education in the community building arena to prepare them for careers in non-profit and government organizations, community development, social policy, and urban and regional affairs.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPA/MSW

GSPIA Core Requirements: 18 credits

- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS
- PIA 2021 - INTERNATIONAL AFFAIRS *
- PIA 2022 - QUANTITATIVE METHODS
- PIA 2024 - ECONOMICS FOR PUBLIC AFFAIRS *
- PIA 2025 - MICROECONOMICS or
- PIA 2028 - PUBLIC POLICY ANALYSIS
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM
- PIA 2098 - INTERNSHIP

Degree Core Courses: 9 credits

- PIA 2104 - FINANCIAL MANAGEMENT
- PIA 2117 - PUBLIC PROGRAM EVALUATION
- PIA 2096 - CAPSTON SEMINAR: or
- PIA 2099 - THESIS (pre-req. PIA 2028 + PIA 2003 + approval)

Major Courses: 9-12 credits

(see Major-Specific requirements)

Minimum Required GSPIA Credits: 36 credits

Master of Social Work requirements: 51 credits

(see Social Work website for requirements)

Total Number of Credits for Joint Degree: 87

Major Specific Requirements:

Public & Nonprofit Management

- PIA 2103 - MANAGING PEOPLE IN THE PUBLIC AND NON-PROFIT SECTOR
- PIA 2185 - STRATEGIC MANAGEMENT
(pre-requisites: PIA 2020 or 2170)
- PIA 2xxx - Approved PNM Major Course
- PIA 2xxx - Approved PNM Major Course

Urban Affairs & Planning, JD/MPA

Joint Degree

Full-time GSPIA students in the MPA, MPJA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public Administration and Juris Doctor

The joint JD allows students to combine the study of law and policy, preparing them equally well for employment in the judicial or executive branches of government. Graduates are positioned to work in international law firms, nonprofit advocacy, and in public or nonprofit agencies that require knowledge of legal issues, such as refugee services and the Department of Justice. Pitt Law School also partners with GSPIA in the University of Pittsburgh's Washington Center.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPA/JD

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)

- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2104 - FINANCIAL MANAGEMENT
- PIA 2117 - PUBLIC PROGRAM EVALUATION (pre-requisite: PIA 2022)
- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Juris Doctor requirements: 79 credits

(see Law's website for requirements)

Total Number of Credits for Joint Degree: 115

Major Specific Requirements:

Urban Affairs & Planning (UAP)

- PIA 2125 - CITY AND REGION THEORY AND PRACTICE
- PIA 2715 - GIS FOR PUBLIC POLICY
- PIA 2740 - PLN & ANAL SUSTAINABLE REGIONS
- PIA 2xxx - Approved UAP Major Course

Urban Affairs & Planning, MPA/MIS

Joint Degree

Full-time GSPIA students in the MPA, MPPIA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public Administration and Master of Science in Information Science

The joint MSIS degree allows GSPIA students to combine the study of public management and information technology management, at a time when both fields are increasingly interconnected. Students are prepared to pursue public or nonprofit-sector careers that require strong knowledge of modern information systems.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPA/MIS

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS
- PIA 2104 - FINANCIAL MANAGEMENT
- PIA 2117 - PUBLIC PROGRAM EVALUATION (pre-requisite: PIA 2022)

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Master of Information Science requirements: 30 credits

(see Information Science website for requirements)

Total Number of Credits for Joint Degree: 66

Major Specific Requirements:

Urban Affairs & Planning (UAP)

- PIA 2125 - CITY AND REGION THEORY AND PRACTICE
- PIA 2715 - GIS FOR PUBLIC POLICY
- PIA 2740 - PLN & ANAL SUSTAINABLE REGIONS
- PIA 2xxx - Approved UAP Major Course

Urban Affairs & Planning, MPA/MPH

Joint Degree

Full-time GSPIA students in the MPA, MPA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public Administration and Master of Public Health

Students pursuing a joint MPH gain a unique perspective on public management, government responses to epidemics, and the effect of sanitation on international development. They study health policy and the science behind it, both at the local level and on the world stage, where disease

recognizes no borders. Graduates are employed by medical relief agencies, nonprofit organizations that distribute vaccines, and government authorities responsible for protecting society from epidemics.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPA/MPH

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)

- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior = PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2104 - FINANCIAL MANAGEMENT
- PIA 2117 - PUBLIC PROGRAM EVALUATION (pre-requisite: PIA 2022)
- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Master of Public Health requirements: 42 credits

(see Public Health website for requirements)

Total Number of Credits for Joint Degree: 78

Major Specific Requirements:

Urban Affairs & Planning (UAP)

- PIA 2125 - CITY AND REGION THEORY AND PRACTICE
- PIA 2715 - GIS FOR PUBLIC POLICY
- PIA 2740 - PLN & ANAL SUSTAINABLE REGIONS
- PIA 2xxx - Approved UAP Major Course

Urban Affairs & Planning, MPA/MSW

Joint Degree

Full-time GSPIA students in the MPA, MPA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public Administration and Master of Social Work

Today's community building arena demands well-trained professionals across a wider array of skills and systems than one degree program may offer. That's why the joint degree program between GSPIA and School of Social Work provides students with focused professional education in the community building arena to prepare them for careers in non-profit and government organizations, community development, social policy, and urban and regional affairs.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPA/MSW

GSPIA Core Requirements: 18 credits

- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS
- PIA 2021 - INTERNATIONAL AFFAIRS *
- PIA 2022 - QUANTITATIVE METHODS
- PIA 2024 - ECONOMICS FOR PUBLIC AFFAIRS *
- PIA 2025 - MICROECONOMICS or
- PIA 2028 - PUBLIC POLICY ANALYSIS
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM
- PIA 2098 - INTERNSHIP

Degree Core Courses: 9 credits

- PIA 2104 - FINANCIAL MANAGEMENT
- PIA 2117 - PUBLIC PROGRAM EVALUATION
- PIA 2096 - CAPSTON SEMINAR: or
- PIA 2099 - THESIS (pre-req. PIA 2028 + PIA 2003 + approval)

Major Courses: 9-12 credits

(see Major-Specific requirements)

Minimum Required GSPIA Credits: 36 credits

Master of Social Work requirements: 51 credits

(see Social Work website for requirements)

Total Number of Credits for Joint Degree: 87

Major Specific Requirements:

Urban Affairs & Planning (UAP)

- PIA 2125 - CITY AND REGION THEORY AND PRACTICE
- PIA 2715 - GIS FOR PUBLIC POLICY
- PIA 2740 - PLN & ANAL SUSTAINABLE REGIONS
- PIA 2xxx - Approved UAP Major Course

Master's

Energy and Environment, MPA

Energy & Environment (E&E)

Energy & Environment explores the politics and policies of the worldwide energy industry, examining ways to meet global energy needs in a sustainable, environmentally conscious way. Pittsburgh is a global epicenter of one of the biggest energy revolutions of the 21st century - the shale gas boom. New technologies like "fracking" are making billions of dollars of natural gas accessible to world markets for the first time, generating thousands of new jobs from Europe to North America. Western Pennsylvania sits atop one of the largest and most productive shale deposits anywhere on the planet, raising major questions about how to extract the gas responsibly, how to protect communities from environmental harm, and how to tax and regulate the rapid growth. GSPIA Students study the economics of the global energy industry, environmental sustainability, and regulatory policy in one of the world's best living laboratories. Graduates are prepared for jobs at environmental protection agencies, energy corporations, and a host of local, state, and national government offices that make energy policy.

The major curriculum, comprising 12 credits, follows:

GSPIA core Requirements (See Master's Degree Requirements): 12 credits

Degree Core Courses: 9 credits

- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS
- PIA 2104 - FINANCIAL MANAGEMENT
- PIA 2117 - PUBLIC PROGRAM EVALUATION (pre-requisite: PIA 2022)

Major Courses: 12 credits

- PIA 2xxx - Approved E&E Major Course

Three of the following five courses:

- PIA 2231 - CONTEMPORARY US ENERGY POLICY
- PIA 2115 - ENVIRONMENTAL ECONOMICS
- PIA 2502 - POLITICAL ECONOMY OF GLOBAL ENVIRONMENT
- PIA 2164 - NATURAL RESOURCES GOVERNANCE AND MANAGEMENT
- PIA 2522 - POLITICAL ECONOMY OF GLOBAL ENERGY

Electives: 15 credits

Minimum Required Credits: 48 credits

Governance & International Public Management, GIPM/MPA

Governance and International Public Management provides a comparative perspective on international development, focusing on the ways in which public and nonprofit organizations must adapt to meet the different cultural, political, and economic circumstances of the communities they serve.

It explores how public agencies around the globe, faced with similar problems like poverty, illiteracy, and inequality, have addressed those issues differently in different countries. Students confront the challenges of implementing complex policies in a global, multicultural context. This major focuses on developing the management and analytical skills necessary to take leadership roles in the multilateral sector, governments abroad, or any organization that delivers services internationally. Graduates are well-prepared to pursue careers at the United Nations, the U.S. Agency for International Development, and similar organizations.

Core: Governance & International Public Management(GIPM)

The major curriculum, comprising 12 credits, follows:

GSPIA core Requirements (See Master's Degree Requirements): 12 credits

Degree Core Courses: 9 credits

- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS
- PIA 2104 - FINANCIAL MANAGEMENT
- PIA 2117 - PUBLIC PROGRAM EVALUATION (pre-requisite: PIA 2022)

Major Courses: 12 credits

- PIA 2xxx - Approved GIPM Major Course
- PIA 2xxx - Approved GIPM Major Course

Two of the following four courses:

- PIA 2528 Governance & Local Government and Civil Society
- PIA 2519 Comparative Governance

- PIA 2552 Managing Organizations in Development
- PIA 2180 Comparative Public Administration

Electives: 15 credits

Minimum Required Credits: 48 credits

Policy Research and Analysis, MPA

Policy Research and Analysis (PRA)

Today's policymakers require analytical skills from a variety of disciplines: quantitative, economic, political, and organizational. Students in the policy research & analysis major enjoy access to a rich array of resources to help them prepare for careers in both the public and private sectors. Recent graduates of our program have gone on to work in such careers as budget examiners for the state of New York, analysts for the Government Accountability Office and the U.S. Mint and consultants for the leading firm Booz Allen Hamilton.

Motivated and inquisitive people looking to acquire the technical skills and knowledge to contribute to research and policymaking decisions will appreciate our curriculum. It is infused with a rich variety of interdisciplinary viewpoints to give students a well-informed view of policy analysis that is both national and international in scope.

The major curriculum, comprising 12 credits, follows:

GSPIA Core Requirements (See Master's Degree Requirements): 12 credits

Degree Core Courses: 9 credits

- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS
- PIA 2104 - FINANCIAL MANAGEMENT
- PIA 2117 - PUBLIC PROGRAM EVALUATION (pre-req: PIA 2022)

Major Courses: 12 credits

- PIA 2023 - INTERMEDIATE QUANTITATIVE METHODS (pre-requisite PIA 2022)
- PIA XXXX Approved PRA major course
- PIA XXXX Approved PRA major course
- PIA XXXX Approved PRA major course

Electives: 15 credits

Minimum Required Credits: 48 credits

Public and Nonprofit Management, MPA

Public and Nonprofit Management (PNM)

Public service is a discipline practiced at many levels: local, national and international often with ripple effects across each. Through grassroots contributions and global applications, GSPIA students pursuing a public & nonprofit management major acquire a deep understanding of the many contexts in which public and nonprofit organizations operate. Many look forward to the opportunity to leverage change in a mixed economy.

Our curriculum stresses responsible leadership and our students develop the skills to diagnose leadership challenges and opportunities from a variety of ethical and moral frameworks. Our interdisciplinary approach draws from a variety of fields such as philosophy, law, organizational design and political science. Our approach gives students the skills they need to meet the challenges of a world in which services increasingly span boundaries among business, government and nonprofit organizations.

The major curriculum, comprising 12 credits, follows:

GSPIA Core Requirements (See Master's Degree Requirements): 12 credits

Degree Core Courses: 9 credits

- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS
- PIA 2104 - FINANCIAL MANAGEMENT
- PIA 2117 - PUBLIC PROGRAM EVALUATION (pre-req: PIA 2022)

Major Courses: 12 credits

- PIA 2103 - MANAGING PEOPLE IN THE PUBLIC AND NON-PROFIT SECTOR
- PIA 2185 - STRATEGIC MANAGEMENT (pre-req. PIA 2020 or PIA 2170)
- PIA XXXX Approved PNM major course
- PIA XXXX Approved PNM major course

Electives: 15 credits

Minimum Required Credits: 48 credits

Urban Affairs & Planning, MPA

Urban Affairs & Planning (UAP)

The major in Urban Affairs and Planning takes a city-focused perspective on international development. More than half of the world's people now live in urban areas, raising important questions about how governments should meet the public's needs for transportation, health and sanitation, education, and other essential services.

As the developing world urbanizes, booming cities like Shanghai, Mumbai, Buenos Aires, and Johannesburg face critical challenges, including poverty, homelessness, and pollution. The major prepares students to confront those problems on an international scale, while developing valuable skills in Geographic Information Systems (GIS), regional economic planning, and sustainable development management. Students take advantage of GSPIA's highly regarded Center for Metropolitan Studies, participating in cutting-edge research alongside faculty experts.

The major curriculum, comprising 12 credits, follows:

GSPIA Core Requirements (See Master's Degree Requirements): 12 credits

Degree Core Courses: 9 credits

- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS
- PIA 2104 - FINANCIAL MANAGEMENT
- PIA 2117 - PUBLIC PROGRAM EVALUATION (pre-req: PIA 2022)

Major Courses: 12 credits

- PIA 2125 - CITY AND REGION THEORY AND PRACTICE
- PIA 2715 - GIS FOR PUBLIC POLICY
- PIA 2740 - PLN & ANAL SUSTAINABLE REGIONS
- PIA 2xxx - Approved UAP Major Course

Electives: 15 credits

Minimum Required Credits: 48 credits

Minor

Energy and Environment Minor

The required courses for the Energy & Environment Minor are:

PIA 2523 Global Energy Policy (3cr)

or

PIA 2231 Current Controversies - U.S. Energy Policy (3cr)

PIA 2502 Global Environmental Policy (3cr)

or

PIA 2115 Environmental Economics (3cr)

PIA 2XXX Approved E&E course (3cr)

With approval, appropriate courses may be substituted for those listed above. No course may be double-counted. Any course taken to fulfill a requirement for your degree or major cannot also count toward your minor. In such cases, an approved course must be substituted. Please consult with your graduate enrollment counselor.

Policy Research and Analysis Minor

The requirements for the Policy Research and Analysis minor are:

PIA 2023 Intermediate Quantitative Methods (3cr)

PIA 2025 Microeconomics (3cr)

PIA 2117 Program Evaluation (3cr)

With approval, appropriate courses may be substituted for those listed above. No course may be double-counted. Any course taken to fulfill a requirement for your degree or major cannot also count toward your minor. In such cases, an approved course must be substituted. Please consult with your graduate enrollment counselor.

Public and Nonprofit Management Minor

The requirements for the Public and Nonprofit Management minor are:

PIA 2103 Managing People in the Public/Nonprofit Sector (3cr)

PIA 2117 Program Evaluation (3cr)

PIA 2185 Strategic Management (3cr)

With approval, appropriate courses may be substituted for those listed above. No course may be double-counted. Any course taken to fulfill a requirement for your degree or major cannot also count toward your minor. In such cases, an approved course must be substituted. Please consult with your graduate enrollment counselor.

Urban Affairs & Planning Minor

The requirements for the Urban Affairs and Planning minor are:

PIA 2025 Microeconomics (3cr)

PIA 2125 City & Regional Theory & Practice (3cr)

PIA 2715 GIS for Public Policy (3cr)

With approval, appropriate courses may be substituted for those listed above. No course may be double-counted. Any course taken to fulfill a requirement for your degree or major cannot also count toward your minor. In such cases, an approved course must be substituted. Please consult with your graduate enrollment counselor.

Public and International Affairs Program

Master of Public and International Affairs (MPIA)

From the halls of the United Nations to the streets of war-torn conflict zones, the modern international system is in a state of rapid flux that demands versatile, well-educated professionals. The MPIA degree is a multidisciplinary program designed to prepare students for careers of influence in the international arena - as government policymakers, diplomats, intelligence officials, global business leaders, nonprofit managers, and policy researchers. The program emphasizes practical skills and knowledge necessary to participate in the world policy process and shape its future. The MPIA curriculum includes traditional courses on world history, economics, and international relations theory, along with practical courses on intelligence collection and analysis, diplomacy, and international finance. It also includes one of the country's only graduate specializations in Human Security - a unique field that focuses on the security of civilian populations and human rights.

Degree Requirements and Majors

Students must complete at least 48 credits in public and international affairs and may choose one of three majors: International Political Economy, Human Security, or Security & Intelligence Studies. Students may also pursue a minor in any of these fields, or in any of the following fields offered by GSPIA's other degree programs.

Prior to graduation, students must also complete a 300-hour internship with an approval from GSPIA career services.

Joint Degree Options

MPIA students are eligible to pursue one of several joint degrees at the University of Pittsburgh, including a joint MPIA/law degree (JD), MPIA/Master of Business Administration (MBA), MPIA/Master of Public Health (MPH), MPIA/Master of Science in Information Science (MSIS),

and MPIA/Master of Social Work (MSW). They may also pursue a joint master's degree through the University of Geneva in Switzerland or the Graduate School of International and Cooperative Studies at Kobe University in Japan. An accelerated, five-year bachelor's/master's degree program is available to select University of Pittsburgh undergraduates.

Area Studies Certificate Options

MPIA students are eligible to combine their master's degree with a graduate certificate from the University Center for International Studies, specializing in Africa, Asia, western Europe, eastern Europe, the European Union, Latin America, or Russia.

Joint Degree

Human Security, JD/MPIA

Joint Degree

Full-time GSPIA students in the MPA, MPIA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public & International Affairs and Juris Doctor

The joint JD allows students to combine the study of law and policy, preparing them equally well for employment in the judicial or executive branches of government. Graduates are positioned to work in international law firms, nonprofit advocacy, and in public or nonprofit agencies that require knowledge of legal issues, such as refugee services and the Department of Justice. Pitt Law School also partners with GSPIA in the University of Pittsburgh's Washington Center.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPIA/JD

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional lecture)
- PIA 2025 - MICROECONOMICS
OR
- PIA 2027 - MACROECONOMICS

- PIA 2028 - PUBLIC POLICY ANALYSIS (pre-req. PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2021 - INTERNATIONAL AFFAIRS
- PIA 2363 - INTERNATIONAL HISTORY

One of the following based on major:

- PIA 2301 - INTERNATIONAL POLITICAL ECONOMY or
- PIA 2303 - SECURITY AND INTELLIGENCE STUDIES or
- PIA 2307 - HUMAN SECURITY

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Juris Doctor requirements: 79 credits

(see Law website for requirements)

Total Number of Credits for Joint Degree: 115

Major Specific Requirements:

Human Security

- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course

Human Security, MBA/MPIA

Joint Degree

Full-time GSPIA students in the MPA, MPIA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public & International Affairs and Master of Business Administration

For MPIA and MID students only: Combining a GSPIA degree with an MBA opens many opportunities for a career in international finance, government financial regulation, or multinational corporations. Students with both degrees are highly marketable in the fields of international business and international economic policy.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPIA/MBA

Student is required to take one of the following depending on major:

If SIS major: PIA 2303 Security & Intelligence Studies

If IPE major: PIA 2301 International Political Economy

If HS major: PIA 2307 Human Security

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
OR
- PIA 2027 - MACROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre-req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR

- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2363 - INTERNATIONAL HISTORY
- PIA 2021 - INTERNATIONAL AFFAIRS

One of the following based on major:

- PIA 2301 - INTERNATIONAL POLITICAL ECONOMY or
- PIA 2303 - SECURITY AND INTELLIGENCE STUDIES or
- PIA 2307 - HUMAN SECURITY

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Master of Business Administration requirements: 39 or 40.5 credits

(see Business Administration website for requirements)

Total Number of Credits for Joint Degree: 75.5 or 76

Major Specific Requirements:

Human Security

- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course

Human Security, MPIA/MIS

Joint Degree

Full-time GSPIA students in the MPA, MPIA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE

requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public and International Affairs and Master of Science in Information Science

The joint MSIS degree allows GSPIA students to combine the study of public management and information technology management, at a time when both fields are increasingly interconnected. Students are prepared to pursue public or nonprofit-sector careers that require strong knowledge of modern information systems.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPIA/MIS

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waive exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
OR
- PIA 2027 - MACROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre-req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career counselor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career counselor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses

- PIA 2021 - INTERNATIONAL AFFAIRS
- PIA 2363 - INTERNATIONAL HISTORY

One of the following based on major:

- PIA 2301 - INTERNATIONAL POLITICAL ECONOMY or
- PIA 2303 - SECURITY AND INTELLIGENCE STUDIES or
- PIA 2307 - HUMAN SECURITY

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Master of Information Science requirements: 30

(see Information Science website for requirements)

Total Number of Credits for Joint Degree: 66

Major Specific Requirements:

Human Security

- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course

Human Security, MPIA/MPH

Joint Degree

Full-time GSPIA students in the MPA, MPIA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public and International Affairs and Master of Public Health

Students pursuing a joint MPH gain a unique perspective on public management, government responses to epidemics, and the effect of sanitation on international development. They study health policy and the science behind it, both at the local level and on the world stage, where disease recognizes no borders. Graduates are employed by medical relief agencies, nonprofit organizations that distribute vaccines, and government authorities responsible for protecting society from epidemics.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPIA/MPH

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. if waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
OR
- PIA 2027 - MACROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre-req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2021 - INTERNATIONAL AFFAIRS
- PIA 2363 - INTERNATIONAL HISTORY

One of the following based on major:

- PIA 2301 - INTERNATIONAL POLITICAL ECONOMY or
- PIA 2303 - SECURITY AND INTELLIGENCE STUDIES or
- PIA 2307 - HUMAN SECURITY

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Master of Public Health requirements: 42 credits

(see Public Health website for requirements)

Total Number of Credits for Joint Degree: 78

Major Specific Requirements:

Human Security

- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course

Human Security, MPIA/MSW

Joint Degree

Full-time GSPIA students in the MPA, MPIA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public and International Affairs and Master of Science in Information Science

The joint MSIS degree allows GSPIA students to combine the study of public management and information technology management, at a time when both fields are increasingly interconnected. Students are prepared to pursue public or nonprofit-sector careers that require strong knowledge of modern information systems.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPIA/MSW

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced with an additional elective)
- PIA 2025 - MICROECONOMICS
OR

- PIA 2027 - MACROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre-req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2021 - INTERNATIONAL AFFAIRS
- PIA 2363 - INTERNATIONAL HISTORY

One of the following based on major:

- PIA 2301 - INTERNATIONAL POLITICAL ECONOMY or
- PIA 2303 - SECURITY AND INTELLIGENCE STUDIES or
- PIA 2307 - HUMAN SECURITY

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Master of Social Work requirements: 51 credits

(see Social Work website for requirements)

Total Number of Credits for Joint Degree: 87

Major Specific Requirements:

Human Security

- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course

Security and Intelligence Studies, JD/MPIA

Joint Degree

Full-time GSPIA students in the MPA, MPIO, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public & International Affairs and Juris Doctor

The joint JD allows students to combine the study of law and policy, preparing them equally well for employment in the judicial or executive branches of government. Graduates are positioned to work in international law firms, nonprofit advocacy, and in public or nonprofit agencies that require knowledge of legal issues, such as refugee services and the Department of Justice. Pitt Law School also partners with GSPIA in the University of Pittsburgh's Washington Center.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPIO/JD

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional lecture)
- PIA 2025 - MICROECONOMICS
OR
- PIA 2027 - MACROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre-req. PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2021 - INTERNATIONAL AFFAIRS
- PIA 2363 - INTERNATIONAL HISTORY

One of the following based on major:

- PIA 2301 - INTERNATIONAL POLITICAL ECONOMY or
- PIA 2303 - SECURITY AND INTELLIGENCE STUDIES or
- PIA 2307 - HUMAN SECURITY

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Juris Doctor requirements: 79 credits

(see Law website for requirements)

Total Number of Credits for Joint Degree: 115

Major Specific Requirements:

Security & Intelligence Studies

- PIA 2xxx - Approved SIS Major Course
- PIA 2xxx - Approved SIS Major Course
- PIA 2xxx - Approved SIS Major Course
- PIA 2xxx - Approved SIS Major Course

Security and Intelligence Studies, MBA/MPIA

Joint Degree

Full-time GSPIA students in the MPA, MPIA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public & International Affairs and Master of Business Administration

For MPIA and MID students only: Combining a GSPIA degree with an MBA opens many opportunities for a career in international finance, government financial regulation, or multinational corporations. Students with both degrees are highly marketable in the fields of international business and international economic policy.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPIA/MBA

Student is required to take one of the following depending on major:

If SIS major: PIA 2303 Security & Intelligence Studies

If IPE major: PIA 2301 International Political Economy

If HS major: PIA 2307 Human Security

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
OR
- PIA 2027 - MACROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre-req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2363 - INTERNATIONAL HISTORY
- PIA 2021 - INTERNATIONAL AFFAIRS

One of the following based on major:

- PIA 2301 - INTERNATIONAL POLITICAL ECONOMY or
- PIA 2303 - SECURITY AND INTELLIGENCE STUDIES or

- PIA 2307 - HUMAN SECURITY

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Master of Business Administration requirements: 39 or 40.5 credits

(see Business Administration website for requirements)

Total Number of Credits for Joint Degree: 75.5 or 76

Major Specific Requirements:

Security & Intelligence Studies

- PIA 2xxx - Approved SIS Major Course
- PIA 2xxx - Approved SIS Major Course
- PIA 2xxx - Approved SIS Major Course
- PIA 2xxx - Approved SIS Major Course

Security and Intelligence Studies, MPIA/MIS

Joint Degree

Full-time GSPIA students in the MPA, MPIA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public & International Affairs and Master of Science in Information Science

The joint MSIS degree allows GSPIA students to combine the study of public management and information technology management, at a time when both fields are increasingly interconnected. Students are prepared to pursue public or nonprofit-sector careers that require strong knowledge of modern information systems.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPIA/MIS

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waive exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
OR
- PIA 2027 - MACROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre-req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career counselor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career counselor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses

- PIA 2021 - INTERNATIONAL AFFAIRS
- PIA 2363 - INTERNATIONAL HISTORY

One of the following based on major:

- PIA 2301 - INTERNATIONAL POLITICAL ECONOMY or
- PIA 2303 - SECURITY AND INTELLIGENCE STUDIES or
- PIA 2307 - HUMAN SECURITY

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Master of Information Science requirements: 30

(see Information Science website for requirements)

Total Number of Credits for Joint Degree: 66

Major Specific Requirements:

Security & Intelligence Studies

- PIA 2xxx - Approved SIS Major Course
- PIA 2xxx - Approved SIS Major Course
- PIA 2xxx - Approved SIS Major Course
- PIA 2xxx - Approved SIS Major Course

Security and Intelligence Studies, MPIA/MPH

Joint Degree

Full-time GSPIA students in the MPA, MPIA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public & International Affairs and Master of Public Health

Students pursuing a joint MPH gain a unique perspective on public management, government responses to epidemics, and the effect of sanitation on international development. They study health policy and the science behind it, both at the local level and on the world stage, where disease recognizes no borders. Graduates are employed by medical relief agencies, nonprofit organizations that distribute vaccines, and government authorities responsible for protecting society from epidemics.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPIA/MPH

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. if waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
OR
- PIA 2027 - MACROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre-req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2021 - INTERNATIONAL AFFAIRS
- PIA 2363 - INTERNATIONAL HISTORY

One of the following based on major:

- PIA 2301 - INTERNATIONAL POLITICAL ECONOMY or
- PIA 2303 - SECURITY AND INTELLIGENCE STUDIES or
- PIA 2307 - HUMAN SECURITY

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Master of Public Health requirements: 42 credits

(see Public Health website for requirements)

Total Number of Credits for Joint Degree: 78

Major Specific Requirements:

Security & Intelligence Studies

- PIA 2xxx - Approved SIS Major Course
- PIA 2xxx - Approved SIS Major Course
- PIA 2xxx - Approved SIS Major Course
- PIA 2xxx - Approved SIS Major Course

Security and Intelligence Studies, MPIA/MSW

Joint Degree

Full-time GSPIA students in the MPA, MPIA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public & International Affairs and Master of Social Work

Today's community building arena demands well-trained professionals across a wider array of skills and systems than one degree program may offer. That's why the joint degree program between GSPIA and School of Social Work provides students with focused professional education in the community building arena to prepare them for careers in non-profit and government organizations, community development, social policy, and urban and regional affairs.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPIA/MSW

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced with an additional elective)
- PIA 2025 - MICROECONOMICS
OR
- PIA 2027 - MACROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre-req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2021 - INTERNATIONAL AFFAIRS
- PIA 2363 - INTERNATIONAL HISTORY

One of the following based on major:

- PIA 2301 - INTERNATIONAL POLITICAL ECONOMY or
- PIA 2303 - SECURITY AND INTELLIGENCE STUDIES or
- PIA 2307 - HUMAN SECURITY

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Master of Social Work requirements: 51 credits

(see Social Work website for requirements)

Total Number of Credits for Joint Degree: 87

Major Specific Requirements:

Security & Intelligence Studies

- PIA 2xxx - Approved SIS Major Course
- PIA 2xxx - Approved SIS Major Course
- PIA 2xxx - Approved SIS Major Course
- PIA 2xxx - Approved SIS Major Course

Master's

Human Security, MPIA

Human Security

Because the globalization process has made the world seem exponentially smaller, threats from tsunamis, earthquakes, disease and starvation are arriving faster and in more dramatic fashion than ever before. One of the most innovative, forward-thinking disciplines in international affairs today, the human security major covers a wide swath of issues critical to the safety of people worldwide.

GSPIA's program, one of the first of its kind in the United States, emphasizes the development of peacekeeping and peace-building skills. Students study threats to individuals from nongovernmental, nonmilitary sources. Examples of threats include civil wars, international migration and crime, global climate changes and natural disasters. We teach students to focus on the human condition as a planet, resulting in a new generation of leaders able to guide our global community through some of the most perilous times it has ever experienced.

The major curriculum, comprising 12 credits, follows:

GSPIA Core Requirements (See Master's Degree Requirements): 12 credits

Degree Core Courses: 9 credits

- PIA 2021 - INTERNATIONAL AFFAIRS
- PIA 2307 - HUMAN SECURITY
- PIA 2363 - INTERNATIONAL HISTORY

HS Major Courses: 12 credits

- PIA XXXX Approved HS major course
- PIA XXXX Approved HS major course
- PIA XXXX Approved HS major course
- PIA XXXX Approved HS major course

Electives: 15 credits

Minimum Required Credits: 48 credits

International Political Economy, MPIA

International Political Economy

From the Euro to the yen, today's global economy operates in a climate of change. The international global political economy (IPE) major teaches students to understand globalization and the role the state plays, as well as market strategies for corporations and their corporate identities. Courses target competencies in finance, economics, international trade and development. Specific topics range from the work of nongovernmental organizations (NGOs) to political climates in post-Communist states and the role of women in developing countries.

GSPIA IPE students are idealistic, curious about the world and eager to put their vision into practice. Recent IPE graduates include a treasury expert with the Republic of Turkey, a project manager specialist for the U.S. Agency for International Development's Mission in Moscow, a presidential management fellow with the U.S. Department of Commerce, and a United Nations Fulbright Fellow with the Department of Social and Economic Affairs.

The major curriculum, comprising 12 credits, follows:

GSPIA Core Requirements (See Master's Degree Requirements): 12 credits

Degree Core Courses: 9 credits

- PIA 2021 - INTERNATIONAL AFFAIRS
- PIA 2301 - INTERNATIONAL POLITICAL ECONOMY
- PIA 2363 - INTERNATIONAL HISTORY

Major Courses: 12 credits

- PIA 2xxx - Approved IPE Major Course
- PIA 2xxx - Approved IPE Major Course

- PIA 2xxx - Approved IPE Major Course
- PIA 2xxx - Approved IPE Major Course

Electives: 15 credits

Minimum Required Credits: 48 credits

Security and Intelligence Studies, MPIA

Security and Intelligence Studies

The post-9/11 world has brought remarkable change to national and international security. Issues of strategy, weapons systems, national defense and the role of government are being redefined every day. GSPIA's major in security & intelligence studies (SIS) approaches issues within an international context and covers a variety of topics including transnational organized crime, terrorism, weapons of mass destruction and competition for natural resources.

SIS students are interested in the use of technology, investigation and discovery and often have a desire to travel internationally. Our program prepares students for careers in the security or intelligence fields with various think tanks or intelligence agencies, such as the FBI or CIA.

The major curriculum, comprising 12 credits, follows:

GSPIA Core Requirements (See Master's Degree Requirements): 12 credits

Degree Core Courses: 9 credits

- PIA 2021 - INTERNATIONAL AFFAIRS
- PIA 2303 - SECURITY AND INTELLIGENCE STUDIES
- PIA 2363 - INTERNATIONAL HISTORY

Major Courses: 12 credits

- PIA XXXX Approved SIS major course
- PIA XXXX Approved SIS major course
- PIA XXXX Approved SIS major course
- PIA XXXX Approved SIS major course

Electives: 15 credits

Minimum Required Credits: 48 credits

Minor

Security and Intelligence Studies Minor

The requirements for the Security and Intelligence minor are:

PIA 2303 Security & Intelligence (3cr)

PIA 2XXX Approved SIS course (3cr)

With approval, appropriate courses may be substituted for those listed above. No course may be double-counted. Any course taken to fulfill a requirement for your degree or major cannot also count toward your minor. In such cases, an approved course must be substituted. Please consult with your graduate enrollment counselor.

International Development Program

Master of International Development (MID)

MID students promote respect for human life and human rights, often working behind the scenes to bring real improvements to the human condition through hands-on careers in public service. They work face-to-face with underprivileged and vulnerable populations, in the front offices of aid agencies, and in international organizations dedicated to protecting those who need help most.

The 48-credit MID degree is designed to prepare students to make a difference locally, nationally, and globally by emphasizing intellectual rigor and practical skills. Students study development theoretically, but also learn concrete technical and managerial skills necessary to work in organizations that promote equality in the developing world. Graduates exit the program prepared for professional work in the United Nations, public aid agencies, and charities of all sizes. Often, they pursue work in the private sector, research groups, and prominent nongovernmental organizations.

Degree Requirements and Majors

Students must complete at least 48 credits in international development and may choose one of five majors: Energy & Environment, Human Security, Nongovernmental Organizations & Civil Society, Urban Affairs & Planning, or Governance & International Public Management. Students may also pursue a minor in any of these fields, or in any of the following fields offered by GSPIA's other degree programs.

Prior to graduation, students must also complete a 300-hour internship with an approval from GSPIA career services.

Joint Degree Options

MID students are eligible to pursue one of several joint degrees at the University of Pittsburgh, including a joint MID/law degree (JD), MID/Master of Business Administration (MBA), MID/Master of Public Health (MPH), MID/Master of Science in Information Science (MSIS), and MID/Master of Social Work (MSW). They may also pursue a joint master's degree through the University of Geneva in Switzerland or the Graduate School of International Cooperative Studies at Kobe University in Japan. An accelerated, five-year bachelor's/master's degree program is available to select University of Pittsburgh undergraduates.

Area Studies Certificate Options

MPIA students are eligible to combine their master's degree with a graduate certificate from the University Center for International Studies, specializing in Africa, Asia, western Europe, eastern Europe, the European Union, Latin America, or Russia.

Joint Degree

Energy & Environment, JD/MID

Requirements for the joint degree MID/JD

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2002 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION
- PIA 2510 - ECONOMICS OF DEVELOPMENT (pre-req: PIA 2025)

Major Courses: 12 credits

(see for Major-Specific requirements)

Electives: 6 credits

Minimum Required GSPIA Credits: 36 credits

Juris Doctor requirements: 79 credits

(see Law website for requirements)

Total Number of Credits for Joint Degree: 115

Major Specific Requirements:

Students must take three of the following five courses & one additional approved E&E major courses.

Energy and Environment

- PIA 2231 - CONTEMPORARY US ENERGY POLICY
OR
- PIA 2115 - ENVIRONMENTAL ECONOMICS
OR
- PIA 2502 - POLITICAL ECONOMY OF GLOBAL ENVIRONMENT
OR
- PIA 2164 - NATURAL RESOURCES GOVERNANCE AND MANAGEMENT
- PIA 2xxx - Approved E&E Major Course

Energy & Environment, MID/MBA

Requirements for the joint degree MID/MBA

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS
(students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career counselor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career counselor in first term)

- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2002 + approval by graduate enrollment counselor)

Degree Core Courses: 6 credits

- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION
- PIA 2510 - ECONOMICS OF DEVELOPMENT (pre-req: PIA 2025)

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 6 credits

Minimum Required GSPIA Credits: 36 credits

Master of Business Administration requirements: 39 or 40.5 credits

(see Business Administration website for requirements)

Total Number of Credits for Joint Degree: 75.5 or 76

Major Specific Requirements:

Students must take three of the following five courses & one additional approved E&E major courses.

Energy and Environment

- PIA 2231 - CONTEMPORARY US ENERGY POLICY
OR
- PIA 2115 - ENVIRONMENTAL ECONOMICS
OR
- PIA 2502 - POLITICAL ECONOMY OF GLOBAL ENVIRONMENT
OR
- PIA 2164 - NATURAL RESOURCES GOVERNANCE AND MANAGEMENT

- PIA 2xxx - Approved E&E Major Course

Energy & Environment, MID/MIS

Requirements for the joint degree MID/MIS

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career counselor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career counselor in first term)

- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 6 credits

- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION
- PIA 2510 - ECONOMICS OF DEVELOPMENT
(pre-req: PIA 2025)

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 6 credits

Minimum Required GSPIA Credits: 36 credits

Master of Information Science requirements: 30 credits

(see Information Science website for requirements)

Total Number of Credits for Joint Degree: 66

Major Specific Requirements:

Students must take three of the following five courses & one additional approved E&E major courses.

Energy and Environment

- PIA 2231 - CONTEMPORARY US ENERGY POLICY
OR
- PIA 2115 - ENVIRONMENTAL ECONOMICS
OR
- PIA 2502 - POLITICAL ECONOMY OF GLOBAL ENVIRONMENT
OR
- PIA 2164 - NATURAL RESOURCES GOVERNANCE AND MANAGEMENT

- PIA 2xxx - Approved E&E Major Course

Energy & Environment, MID/MPH

Requirements for the joint degree MID/MPH

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)
- PIA 2096 - CAPSTON SEMINAR: (see 24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 6 credits

- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION
- PIA 2510 - ECONOMICS OF DEVELOPMENT (pre-req: PIA 2025)

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 6 credits

Minimum Required GSPIA Credits: 36 credits

Master of Public Health requirements: 42 credits

(see Public Health website for requirements)

Total Number of Credits for Joint Degree: 78

Major Specific Requirements:

Students must take three of the following five courses & one additional approved E&E major courses.

Energy and Environment

- PIA 2231 - CONTEMPORARY US ENERGY POLICY
OR
- PIA 2115 - ENVIRONMENTAL ECONOMICS
OR

- PIA 2502 - POLITICAL ECONOMY OF GLOBAL ENVIRONMENT
OR
- PIA 2164 - NATURAL RESOURCES GOVERNANCE AND MANAGEMENT
- PIA 2xxx - Approved E&E Major Course

Energy & Environment, MID/MSW

Requirements for the joint degree MID/SW

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career counselor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career counselor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 6 credits

- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION
- PIA 2510 - ECONOMICS OF DEVELOPMENT (pre-requisites: PIA 2024 & PIA 2025 or 2026 or 2027)

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 6 credits

Minimum Required GSPIA Credits: 36 credits

Master of Social Work requirements: 51 credits

(see Social Work website for requirements)

Total Number of Credits for Joint Degree: 87

Major Specific Requirements:

Students must take three of the following five courses & one additional approved E&E major courses.

Energy and Environment

- PIA 2231 - CONTEMPORARY US ENERGY POLICY
OR
- PIA 2115 - ENVIRONMENTAL ECONOMICS
OR
- PIA 2502 - POLITICAL ECONOMY OF GLOBAL ENVIRONMENT
OR
- PIA 2164 - NATURAL RESOURCES GOVERNANCE AND MANAGEMENT
- PIA 2xxx - Approved E&E Major Course

Governance & International Public Management, JD/MID

Requirements for the joint degree MID/JD

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2002 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION
- PIA 2510 - ECONOMICS OF DEVELOPMENT (pre-req: PIA 2025)

Major Courses: 12 credits

(see for Major-Specific requirements)

Electives: 6 credits

Minimum Required GSPIA Credits: 36 credits

Juris Doctor requirements: 79 credits

(see Law website for requirements)

Total Number of Credits for Joint Degree: 115

Major Specific Requirements:

Governance & International Public Management (GIPM)

- PIA 2xxx - Approved GIPM Major Course
- PIA 2xxx - Approved GIPM Major Course
- PIA 2528 - GOVERNANCE, LOCAL GOVERNMENT AND CIVIL SOCIETY
OR
- PIA 2124 - COMPARATIVE METROPOLITAN GOVERNANCE
- PIA 2552 - MANAGING ORGANIZATIONS IN DEVELOPMENT
OR
- PIA 2011 - MANAGING INTERNATIONAL ORGANIZATIONS
OR
- PIA 3393 - COMPARATIVE PUBLIC ADMINISTRATION

Governance & International Public Management, MID/MBA

Requirements for the joint degree MID/MBA

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS
(students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career counselor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career counselor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2002 + approval by graduate enrollment counselor)

Degree Core Courses: 6 credits

- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION
- PIA 2510 - ECONOMICS OF DEVELOPMENT (pre-req: PIA 2025)

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 6 credits

Minimum Required GSPIA Credits: 36 credits

Master of Business Administration requirements: 39 or 40.5 credits

(see Business Administration website for requirements)

Total Number of Credits for Joint Degree: 75.5 or 76

Major Specific Requirements:

Governance & International Public Management (GIPM)

- PIA 2xxx - Approved GIPM Major Course
- PIA 2xxx - Approved GIPM Major Course
- PIA 2528 - GOVERNANCE, LOCAL GOVERNMENT AND CIVIL SOCIETY
OR
- PIA 2124 - COMPARATIVE METROPOLITAN GOVERNANCE
- PIA 2552 - MANAGING ORGANIZATIONS IN DEVELOPMENT
OR
- PIA 2011 - MANAGING INTERNATIONAL ORGANIZATIONS
OR
- PIA 3393 - COMPARATIVE PUBLIC ADMINISTRATION

Governance & International Public Management, MID/MIS

Requirements for the joint degree MID/MIS

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career counselor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career counselor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 6 credits

- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION
- PIA 2510 - ECONOMICS OF DEVELOPMENT
(pre-req: PIA 2025)

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 6 credits

Minimum Required GSPIA Credits: 36 credits

Master of Information Science requirements: 30 credits

(see Information Science website for requirements)

Total Number of Credits for Joint Degree: 66

Major Specific Requirements:

Governance & International Public Management (GIPM)

- PIA 2xxx - Approved GIPM Major Course
- PIA 2xxx - Approved GIPM Major Course
- PIA 2528 - GOVERNANCE, LOCAL GOVERNMENT AND CIVIL SOCIETY
OR
- PIA 2124 - COMPARATIVE METROPOLITAN GOVERNANCE
- PIA 2552 - MANAGING ORGANIZATIONS IN DEVELOPMENT
OR
- PIA 2011 - MANAGING INTERNATIONAL ORGANIZATIONS
OR
- PIA 3393 - COMPARATIVE PUBLIC ADMINISTRATION

Governance & International Public Management, MID/MPH

Requirements for the joint degree MID/MPH

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)
- PIA 2096 - CAPSTON SEMINAR: (see 24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 6 credits

- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION
- PIA 2510 - ECONOMICS OF DEVELOPMENT (pre-req: PIA 2025)

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 6 credits

Minimum Required GSPIA Credits: 36 credits

Master of Public Health requirements: 42 credits

(see Public Health website for requirements)

Total Number of Credits for Joint Degree: 78

Major Specific Requirements:

Governance & International Public Management (GIPM)

- PIA 2xxx - Approved GIPM Major Course
- PIA 2xxx - Approved GIPM Major Course
- PIA 2528 - GOVERNANCE, LOCAL GOVERNMENT AND CIVIL SOCIETY
OR
- PIA 2124 - COMPARATIVE METROPOLITAN GOVERNANCE
- PIA 2552 - MANAGING ORGANIZATIONS IN DEVELOPMENT
OR
- PIA 2011 - MANAGING INTERNATIONAL ORGANIZATIONS
OR
- PIA 3393 - COMPARATIVE PUBLIC ADMINISTRATION

Governance & International Public Management, MID/MSW

Requirements for the joint degree MID/SW

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career counselor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career counselor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 6 credits

- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION
- PIA 2510 - ECONOMICS OF DEVELOPMENT (pre-requisites: PIA 2024 & PIA 2025 or 2026 or 2027)

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 6 credits

Minimum Required GSPIA Credits: 36 credits

Master of Social Work requirements: 51 credits

(see Social Work website for requirements)

Total Number of Credits for Joint Degree: 87

Major Specific Requirements:

Governance & International Public Management (GIPM)

- PIA 2xxx - Approved GIPM Major Course
- PIA 2xxx - Approved GIPM Major Course
- PIA 2528 - GOVERNANCE, LOCAL GOVERNMENT AND CIVIL SOCIETY
OR
- PIA 2124 - COMPARATIVE METROPOLITAN GOVERNANCE
- PIA 2552 - MANAGING ORGANIZATIONS IN DEVELOPMENT
OR
- PIA 2011 - MANAGING INTERNATIONAL ORGANIZATIONS
OR
- PIA 3393 - COMPARATIVE PUBLIC ADMINISTRATION

Human Security, JD/MID

Joint Degree

Full-time GSPIA students in the MPA, MPA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of International Development and Juris Doctor

The joint JD allows students to combine the study of law and policy, preparing them equally well for employment in the judicial or executive branches of government. Graduates are positioned to work in international law firms, nonprofit advocacy, and in public or nonprofit agencies that require knowledge of legal issues, such as refugee services and the Department of Justice. Pitt Law School also partners with GSPIA in the University of Pittsburgh's Washington Center.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MID/JD

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)

- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2002 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION
- PIA 2510 - ECONOMICS OF DEVELOPMENT (pre-req: PIA 2025)

Major Courses: 12 credits

(see for Major-Specific requirements)

Electives: 6 credits

Minimum Required GSPIA Credits: 36 credits

Juris Doctor requirements: 79 credits

(see Law website for requirements)

Total Number of Credits for Joint Degree: 115

Major Specific Requirements:

Human Security

- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course

Human Security, MBA/MID

Joint Degree

Full-time GSPIA students in the MPA, MPIA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of International Development and Master of Business Administration

For MPIA and MID students only: Combining a GSPIA degree with an MBA opens many opportunities for a career in international finance, government financial regulation, or multinational corporations. Students with both degrees are highly marketable in the fields of international business and international economic policy.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MID/MBA

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS
(students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career counselor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career counselor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2002 + approval by graduate enrollment counselor)

Degree Core Courses: 6 credits

- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION
- PIA 2510 - ECONOMICS OF DEVELOPMENT (pre-req: PIA 2025)

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 6 credits

Minimum Required GSPIA Credits: 36 credits

Master of Business Administration requirements: 39 or 40.5 credits

(see Business Administration website for requirements)

Total Number of Credits for Joint Degree: 75.5 or 76

Major Specific Requirements:

Human Security

- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course

Human Security, MID/MIS

Joint Degree

Full-time GSPIA students in the MPA, MPIA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of International Development and Master of Science in Information Science

The joint MSIS degree allows GSPIA students to combine the study of public management and information technology management, at a time when both fields are increasingly interconnected. Students are prepared to pursue public or nonprofit-sector careers that require strong knowledge of modern information systems.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Major Specific Requirements:

Human Security

- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course

Requirements for the joint degree MID/MIS

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career counselor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career counselor in first term)

- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 6 credits

- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION
- PIA 2510 - ECONOMICS OF DEVELOPMENT
(pre-req: PIA 2025)

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 6 credits

Minimum Required GSPIA Credits: 36 credits

Master of Information Science requirements: 30 credits

(see Information Science website for requirements)

Total Number of Credits for Joint Degree: 66

Human Security, MID/MPH

Joint Degree

Full-time GSPIA students in the MPA, MPiA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of International Development and Master of Public Health

Students pursuing a joint MPH gain a unique perspective on public management, government responses to epidemics, and the effect of sanitation on international development. They study health policy and the science behind it, both at the local level and on the world stage, where disease recognizes no borders. Graduates are employed by medical relief agencies, nonprofit organizations that distribute vaccines, and government authorities responsible for protecting society from epidemics.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MID/MPH

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)

- PIA 2096 - CAPSTON SEMINAR: (see 24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 6 credits

- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION
- PIA 2510 - ECONOMICS OF DEVELOPMENT (pre-req: PIA 2025)

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 6 credits

Minimum Required GSPIA Credits: 36 credits

Master of Public Health requirements: 42 credits

(see Public Health website for requirements)

Total Number of Credits for Joint Degree: 78

Major Specific Requirements:

Human Security

- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course

Human Security, MID/MSW

Joint Degree

Full-time GSPIA students in the MPA, MPIA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of International Development and Master of Social Work

Today's community building arena demands well-trained professionals across a wider array of skills and systems than one degree program may offer. That's why the joint degree program between GSPIA and School of Social Work provides students with focused professional education in the community building arena to prepare them for careers in non-profit and government organizations, community development, social policy, and urban and regional affairs.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Major Specific Requirements:

Human Security

- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course
- PIA 2xxx - Approved HS Major Course

Requirements for the joint degree MID/SW

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career counselor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career counselor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 6 credits

- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION
- PIA 2510 - ECONOMICS OF DEVELOPMENT (pre-requisites: PIA 2024 & PIA 2025 or 2026 or 2027)

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 6 credits

Minimum Required GSPIA Credits: 36 credits

Master of Social Work requirements: 51 credits

(see Social Work website for requirements)

Total Number of Credits for Joint Degree: 87

Nongovernmental Organizations and Civil Societies, JD/MID

Joint Degree

Full-time GSPIA students in the MPA, MPJA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of International Development and Juris Doctor

The joint JD allows students to combine the study of law and policy, preparing them equally well for employment in the judicial or executive branches of government. Graduates are positioned to work in international law firms, nonprofit advocacy, and in public or nonprofit agencies that require knowledge of legal issues, such as refugee services and the Department of Justice. Pitt Law School also partners with GSPIA in the University of Pittsburgh's Washington Center.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MID/JD

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)

- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2002 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION
- PIA 2510 - ECONOMICS OF DEVELOPMENT (pre-req: PIA 2025)

Major Courses: 12 credits

(see for Major-Specific requirements)

Electives: 6 credits

Minimum Required GSPIA Credits: 36 credits

Juris Doctor requirements: 79 credits

(see Law website for requirements)

Total Number of Credits for Joint Degree: 115

Major Specific Requirements:

Nongovernmental Organizations & Civil Societies

- PIA 2526 - NGOS CIVIL SOCIETY AND DEVELOPMENT
OR
- PIA 2528 - GOVERNANCE, LOCAL GOVERNMENT AND CIVIL SOCIETY
- PIA 2xxx - Approved NGOCS Major Course
- PIA 2xxx - Approved NGOCS Major Course
- PIA 2xxx - Approved NGOCS Major Course

Nongovernmental Organizations and Civil Societies, MBA/MID

Joint Degree

Full-time GSPIA students in the MPA, MPA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of International Development and Master of Business Administration

For MPIA and MID students only: Combining a GSPIA degree with an MBA opens many opportunities for a career in international finance, government financial regulation, or multinational corporations. Students with both degrees are highly marketable in the fields of international business and international economic policy.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MID/MBA

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS
(students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career counselor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career counselor in first term)

- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2002 + approval by graduate enrollment counselor)

Degree Core Courses: 6 credits

- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION
- PIA 2510 - ECONOMICS OF DEVELOPMENT (pre-req: PIA 2025)

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 6 credits

Minimum Required GSPIA Credits: 36 credits

Master of Business Administration requirements: 39 or 40.5 credits

(see Business Administration website for requirements)

Total Number of Credits for Joint Degree: 75.5 or 76

Major Specific Requirements:

Nongovernmental Organizations & Civil Societies

- PIA 2526 - NGOS CIVIL SOCIETY AND DEVELOPMENT

OR

- PIA 2528 - GOVERNANCE, LOCAL GOVERNMENT AND CIVIL SOCIETY
- PIA 2xxx - Approved NGOCS Major Course
- PIA 2xxx - Approved NGOCS Major Course
- PIA 2xxx - Approved NGOCS Major Course

Nongovernmental Organizations and Civil Societies, MID/MIS

Joint Degree

Full-time GSPIA students in the MPA, MPA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of International Development and Master of Science in Information Science

The joint MSIS degree allows GSPIA students to combine the study of public management and information technology management, at a time when both fields are increasingly interconnected. Students are prepared to pursue public or nonprofit-sector careers that require strong knowledge of modern information systems.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MID/MIS

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
 - PIA 2025 - MICROECONOMICS
 - PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
 - PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career counselor in first term)
 - PIA 2098 - INTERNSHIP (may be waived, see career counselor in first term)
 - PIA 2096 - CAPSTON SEMINAR: (24 credits)
- OR

- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 6 credits

- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION
- PIA 2510 - ECONOMICS OF DEVELOPMENT
(pre-req: PIA 2025)

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 6 credits

Minimum Required GSPIA Credits: 36 credits

Master of Information Science requirements: 30 credits

(see Information Science website for requirements)

Total Number of Credits for Joint Degree: 66

Major Specific Requirements:

Nongovernmental Organizations & Civil Societies

- PIA 2526 - NGOS CIVIL SOCIETY AND DEVELOPMENT
OR
- PIA 2528 - GOVERNANCE, LOCAL GOVERNMENT AND CIVIL SOCIETY
- PIA 2xxx - Approved NGOCS Major Course
- PIA 2xxx - Approved NGOCS Major Course
- PIA 2xxx - Approved NGOCS Major Course

Nongovernmental Organizations and Civil Societies, MID/MPH

Joint Degree

Full-time GSPIA students in the MPA, MPJA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of International Development and Master of Public Health

Students pursuing a joint MPH gain a unique perspective on public management, government responses to epidemics, and the effect of sanitation on international development. They study health policy and the science behind it, both at the local level and on the world stage, where disease recognizes no borders. Graduates are employed by medical relief agencies, nonprofit organizations that distribute vaccines, and government authorities responsible for protecting society from epidemics.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MID/MPH

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)

- PIA 2096 - CAPSTON SEMINAR: (see 24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 6 credits

- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION
- PIA 2510 - ECONOMICS OF DEVELOPMENT (pre-req: PIA 2025)

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 6 credits

Minimum Required GSPIA Credits: 36 credits

Master of Public Health requirements: 42 credits

(see Public Health website for requirements)

Total Number of Credits for Joint Degree: 78

Major Specific Requirements:

Nongovernmental Organizations & Civil Societies

- PIA 2526 - NGOS CIVIL SOCIETY AND DEVELOPMENT
OR
- PIA 2528 - GOVERNANCE, LOCAL GOVERNMENT AND CIVIL SOCIETY

- PIA 2xxx - Approved NGOCS Major Course
- PIA 2xxx - Approved NGOCS Major Course
- PIA 2xxx - Approved NGOCS Major Course

Nongovernmental Organizations and Civil Societies, MID/MSW

Joint Degree

Full-time GSPIA students in the MPA, MPIA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of International Development and Master of Social Work

Today's community building arena demands well-trained professionals across a wider array of skills and systems than one degree program may offer. That's why the joint degree program between GSPIA and School of Social Work provides students with focused professional education in the community building arena to prepare them for careers in non-profit and government organizations, community development, social policy, and urban and regional affairs.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MID/SW

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (PIA 2022)

- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career counselor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career counselor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 6 credits

- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION
- PIA 2510 - ECONOMICS OF DEVELOPMENT (pre-requisites: PIA 2024 & PIA 2025 or 2026 or 2027)

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 6 credits

Minimum Required GSPIA Credits: 36 credits

Master of Social Work requirements: 51 credits

(see Social Work website for requirements)

Total Number of Credits for Joint Degree: 87

Major Specific Requirements:

Nongovernmental Organizations & Civil Societies

- PIA 2526 - NGOS CIVIL SOCIETY AND DEVELOPMENT
OR
- PIA 2528 - GOVERNANCE, LOCAL GOVERNMENT AND CIVIL SOCIETY
- PIA 2xxx - Approved NGOCS Major Course
- PIA 2xxx - Approved NGOCS Major Course
- PIA 2xxx - Approved NGOCS Major Course

Urban Affairs & Planning, JD/MID

Requirements for the joint degree MID/JD

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)

- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2002 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION
- PIA 2510 - ECONOMICS OF DEVELOPMENT (pre-req: PIA 2025)

Major Courses: 12 credits

(see for Major-Specific requirements)

Electives: 6 credits

Minimum Required GSPIA Credits: 36 credits

Juris Doctor requirements: 79 credits

(see Law website for requirements)

Total Number of Credits for Joint Degree: 115

Major Specific Requirements:

Urban Affairs & Planning (UAP)

- PIA 2125 - CITY AND REGION THEORY AND PRACTICE
- PIA 2715 - GIS FOR PUBLIC POLICY
- PIA 2740 - PLN & ANAL SUSTAINABLE REGIONS
- PIA 2xxx - Approved UAP Major Course

Urban Affairs & Planning, MID/MBA

Requirements for the joint degree MID/MBA

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS
(students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career counselor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career counselor in first term)

- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2002 + approval by graduate enrollment counselor)

Degree Core Courses: 6 credits

- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION
- PIA 2510 - ECONOMICS OF DEVELOPMENT (pre-req: PIA 2025)

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 6 credits

Minimum Required GSPIA Credits: 36 credits

Master of Business Administration requirements: 39 or 40.5 credits

(see Business Administration website for requirements)

Total Number of Credits for Joint Degree: 75.5 or 76

Major Specific Requirements:

Urban Affairs & Planning (UAP)

- PIA 2125 - CITY AND REGION THEORY AND PRACTICE
- PIA 2715 - GIS FOR PUBLIC POLICY
- PIA 2740 - PLN & ANAL SUSTAINABLE REGIONS
- PIA 2xxx - Approved UAP Major Course

Urban Affairs & Planning, MID/MIS

Requirements for the joint degree MID/MIS

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career counselor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career counselor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 6 credits

- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION
- PIA 2510 - ECONOMICS OF DEVELOPMENT
(pre-req: PIA 2025)

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 6 credits

Minimum Required GSPIA Credits: 36 credits

Master of Information Science requirements: 30 credits

(see Information Science website for requirements)

Total Number of Credits for Joint Degree: 66

Major Specific Requirements:

Urban Affairs & Planning (UAP)

- PIA 2125 - CITY AND REGION THEORY AND PRACTICE
- PIA 2715 - GIS FOR PUBLIC POLICY
- PIA 2740 - PLN & ANAL SUSTAINABLE REGIONS
- PIA 2xxx - Approved UAP Major Course

Urban Affairs & Planning, MID/MPH

Requirements for the joint degree MID/MPH

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)

- PIA 2096 - CAPSTON SEMINAR: (see 24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 6 credits

- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION
- PIA 2510 - ECONOMICS OF DEVELOPMENT (pre-req: PIA 2025)

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 6 credits

Minimum Required GSPIA Credits: 36 credits

Master of Public Health requirements: 42 credits

(see Public Health website for requirements)

Total Number of Credits for Joint Degree: 78

Major Specific Requirements:

Urban Affairs & Planning (UAP)

- PIA 2125 - CITY AND REGION THEORY AND PRACTICE
- PIA 2715 - GIS FOR PUBLIC POLICY
- PIA 2740 - PLN & ANAL SUSTAINABLE REGIONS
- PIA 2xxx - Approved UAP Major Course

Urban Affairs & Planning, MID/MSW

Requirements for the joint degree MID/SW

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career counselor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career counselor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 6 credits

- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION
- PIA 2510 - ECONOMICS OF DEVELOPMENT (pre-requisites: PIA 2024 & PIA 2025 or 2026 or 2027)

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 6 credits

Minimum Required GSPIA Credits: 36 credits

Master of Social Work requirements: 51 credits

(see Social Work website for requirements)

Total Number of Credits for Joint Degree: 87

Major Specific Requirements:

Urban Affairs & Planning (UAP)

- PIA 2125 - CITY AND REGION THEORY AND PRACTICE
- PIA 2715 - GIS FOR PUBLIC POLICY
- PIA 2740 - PLN & ANAL SUSTAINABLE REGIONS
- PIA 2xxx - Approved UAP Major Course

Master's

Energy & Environment, MID

Energy and Environment explores the politics and policies of the worldwide energy industry, examining ways to meet global energy needs in a sustainable, environmentally conscious way. Pittsburgh is a global epicenter of one of the biggest energy revolutions of the 21st century - the shale gas boom. New technologies like "fracking" are making billions of dollars of natural gas accessible to world markets for the first time, generating thousands of new jobs from Europe to North America. Western Pennsylvania sits atop one of the largest and most productive shale deposits anywhere on the planet, raising major questions about how to extract the gas responsibly, how to protect communities from environmental harm, and how to tax and regulate the rapid growth. GSPIA Students study the economics of the global energy industry, environmental sustainability, and regulatory policy in one of the world's best living laboratories. Graduates are prepared for jobs at environmental protection agencies, energy corporations, and a host of local, state, and national government offices that make energy policy.

Energy & Environment (E&E)

The major curriculum, comprising 12 credits, follows:

GSPIA core Requirements (See Master's Degree Requirements): 12 credits

Degree Core Courses: 6 credits

- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION
- PIA 2510 - ECONOMICS OF DEVELOPMENT

Major Courses: 12 credits

- PIA 2xxx - Approved E&E Major Course

Three of the following five courses:

- PIA 2231 - CONTEMPORARY US ENERGY POLICY
- PIA 2115 - ENVIRONMENTAL ECONOMICS
- PIA 2502 - POLITICAL ECONOMY OF GLOBAL ENVIRONMENT
- PIA 2164 - NATURAL RESOURCES GOVERNANCE AND MANAGEMENT
- PIA 2522 - POLITICAL ECONOMY OF GLOBAL ENERGY

Electives: 18 credits

Minimum Required Credits: 48 credits

Governance & International Public Management, GIPM/MID

Governance and International Public Management provides a comparative perspective on international development, focusing on the ways in which public and nonprofit organizations must adapt to meet the different cultural, political, and economic circumstances of the communities they serve.

It explores how public agencies around the globe, faced with similar problems like poverty, illiteracy, and inequality, have addressed those issues differently in different countries. Students confront the challenges of implementing complex policies in a global, multicultural context. This major focuses on developing the management and analytical skills necessary to take leadership roles in the multilateral sector, governments abroad, or any organization that delivers services internationally. Graduates are well-prepared to pursue careers at the United Nations, the U.S. Agency for International Development, and similar organizations.

Core: Governance & International Public Management(GIPM)

The major curriculum, comprising 12 credits, follows:

GSPIA core Requirements (See Master's Degree Requirements): 12 credits

Degree Core Courses: 6 credits

- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION
- PIA 2510 - ECONOMICS OF DEVELOPMENT (pre-req: PIA 2025)

Major Courses: 12 credits

- PIA 2xxx - Approved GIPM Major Course
- PIA 2xxx - Approved GIPM Major Course

Two of the following four courses:

- PIA 2528 - GOVERNANCE, LOCAL GOVERNMENT AND CIVIL SOCIETY
OR
- PIA 2552 - MANAGING ORGANIZATIONS IN DEVELOPMENT
OR
- PIA 2519 - COMPARATIVE GOVERNANCE
or
- PIA 2180 - COMPARATIVE PUBLIC ADMINISTRATION

Electives: 18 credits

Minimum Required Credits: 48 credits

Human Security, MID

Human Security (HS)

Because the globalization process has made the world seem exponentially smaller, threats from tsunamis, earthquakes, disease and starvation are arriving faster and in more dramatic fashion than ever before. One of the most innovative, forward-thinking disciplines in international affairs today, the human security major covers a wide swath of issues critical to the safety of people worldwide.

GSPIA's program, one of the first of its kind in the United States, emphasizes the development of peacekeeping and peace-building skills. Students study threats to individuals from nongovernmental, nonmilitary sources. Examples of threats include civil wars, international migration and crime, global climate changes and natural disasters. We teach students to focus on the human condition as a planet, resulting in a new generation of leaders able to guide our global community through some of the most perilous times it has ever experienced.

The major curriculum, comprising 12 credits, follows:

GSPIA Core Requirements: 12 credits

(See Master's Degree Requirements)

Degree Core Courses: 6 credits

- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION
- PIA 2510 - ECONOMICS OF DEVELOPMENT
(pre req: PIA 2025)

HS Major Courses: 12 credits

- PIA 2307 - HUMAN SECURITY
- PIA XXXX Approved HS major course
- PIA XXXX Approved HS major course
- PIA XXXX Approved HS major course

Electives: 18 credits

Minimum Required Credits: 48 credits

Nongovernmental Organizations and Civil Society, MID

NGOs and Civil Society (NGOCS)

Much of the work that has defined change around the world has been the domain of nongovernmental organizations (NGO's). The nongovernmental organizations and civil society (NGOCS) major prepares students for a future in a world where NGO's are committed to social change in the shifting landscape of the human condition. Students acquire knowledge in management strategies and politics and courses cover such topics as alleviating hunger, advocating for human rights and promoting public health.

GSPIA NGOCS students have the opportunity to develop experience through internships, both domestic and international, as well as the change to build expertise in issues such as grant writing, education or health care that will serve them well following graduation. Our approach is to act as

advocates of change with our courses and faculty inspiring and empowering students to make a difference. Graduates go on to work with individual governments, regions and communities around the globe to improve the quality of life.

The major curriculum, comprising 12 credits, follows:

GSPIA Core Requirements: 12 credits

(See Master's Degree Requirements)

Degree Core Courses: 6 credits

- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION
- PIA 2510 - ECONOMICS OF DEVELOPMENT (pre-req: PIA 2025)

NGOCS Major Courses: 12 credits

- PIA 2526 - NGOS CIVIL SOCIETY AND DEVELOPMENT
OR
- PIA 2528 - GOVERNANCE, LOCAL GOVERNMENT AND CIVIL SOCIETY
- PIA XXXX Approved NGOCS major course
- PIA XXXX Approved NGOCS major course
- PIA XXXX Approved NGOCS major course

Electives: 18 credits

Minimum Required Credits: 48 credits

Social Policy, MPA/MID

MPA Track:

- PIA 2210 - RACE, GENDER, LAW AND POLICY
- PIA 2216 - ECONOMICS OF SOCIAL POLICY

Recommend

- PIA 2032 - ADVANCED QUANTITATIVE METHODS: CAUSAL INFERENCE FOR POLICY ANALYSIS OR
- PIA 2145 - BENEFIT COST ANALYSIS

MID Track:

- PIA 2512 - POVERTY AND INEQUALITY
- PIA 2117 - PUBLIC PROGRAM EVALUATION

For Both Tracks

Choose two social policy electives.

- PIA 2210 - RACE, GENDER, LAW AND POLICY
- PIA 2512 - POVERTY AND INEQUALITY

- PIA 2187 - INEQUALITY, POVERTY AND PUBLIC POLICY
- PIA 2449 - HUMANITARIAN INTERVENTION
- PIA 2202 - BEHAVIORAL ECONOMICS AND GAME THEORY
- PIA 2023 - INTERMEDIATE QUANTITATIVE METHODS
- PIA 2032 - ADVANCED QUANTITATIVE METHODS: CAUSAL INFERENCE FOR POLICY ANALYSIS
- PIA 2145 - BENEFIT COST ANALYSIS
- PIA 2705 - NEIGHBORHOOD AND COMMUNITY DEVELOPMENT
- PIA 2510 - ECONOMICS OF DEVELOPMENT
- PIA 2507 - HUMAN RIGHTS: POLITICS AND PRACTICE
- PIA 2307 - HUMAN SECURITY
- PIA 2520 - FOOD SECURITY: AGRICULTURE & RURAL DEVELOPMENT
- PIA 2096 - CAPSTON SEMINAR:

Urban Affairs & Planning, MID

Urban Affairs & Planning (UAP)

Urban Affairs and Planning takes a city-focused perspective on international development. More than half of the world's people now live in urban areas, raising important questions about how governments should meet the public's needs for transportation, health and sanitation, education, and other essential services.

As the developing world urbanizes, booming cities like Shanghai, Mumbai, Buenos Aires, and Johannesburg face critical challenges, including poverty, homelessness, and pollution. The major prepares students to confront those problems on an international scale, while developing valuable skills in Geographic Information Systems (GIS), regional economic planning, and sustainable development management. Students take advantage of GSPIA's highly regarded Center for Metropolitan Studies, participating in cutting-edge research alongside faculty experts.

The major curriculum, comprising 12 credits, follows:

GSPIA Core Requirements (See Master's Degree Requirements): 12 credits

Degree Core Courses: 6 credits

Major Courses: 12 credits

- PIA 2125 - CITY AND REGION THEORY AND PRACTICE
- PIA 2715 - GIS FOR PUBLIC POLICY
- PIA 2740 - PLN & ANAL SUSTAINABLE REGIONS
- PIA 2xxx - Approved UAP Major Course

Electives: 18 credits

Minimum Required Credits: 48 credits

Minor

Nongovernmental Organizations and Civil Society Minor

The requirements for the Nongovernmental Organizations & Civil Society Minor are:

PIA 2526 Micropolitics: NGO's, Development & Civil Society (3cr)

With approval, appropriate courses may be substituted for those listed above. No course may be double-counted. Any course taken to fulfill a requirement for your degree or major cannot also count toward your minor. In such cases, an approved course must be substituted. Please consult with your graduate enrollment counselor.

Public Policy and Management Program

Master of Public Policy & Management (MPPM)

- Traditional Master of Public Policy and Management (MPPM)

The accelerated, 30-credit Master of Public Policy and Management (MPPM) degree provides mid-career professionals an opportunity to expand their knowledge, develop new analytic tools and professional skills, explore new ideas and theories, and interact with experienced faculty and practitioners. The program is designed to help enhance and advance the careers of professionals in the public and nonprofit sectors. It is also ideal for professionals in other fields looking to change careers, and begin a new, rewarding life in public service. Degree requirements can be completed within one year of full-time study or two years of part-time study.

- Online Master of Public Policy and Management (MPPM)

The online Master of Public Policy and Management (MPPM) degree is a part-time, 30-credit program for mid-career professionals with at least five years of full-time work experience. It is an online version of the MPPM program that GSPIA has offered to talented mid-career students for more than a decade. Students who apply to the MPPM program may now choose whether they want to pursue the degree in its traditional, on-campus format or in a 100% online format.

Special Admissions Requirements

The MPPM program seeks applicants with a bachelor's degree and a minimum of five or more years of experience beyond an entry-level position. Candidates' experience should demonstrate increasing levels of responsibility, leadership, and professional competence, particularly in areas such as budgeting and finance, human resource management, or policy formulation or implementation. Candidates with fewer than five years of such experience should not apply to the MPPM program, but should apply instead to one of GSPIA's other, 48-credit master's degree programs. The flexible curriculum of the MPPM program is ideal for full-time and part-time students, as it allows them to take any of the courses offered at GSPIA. Students are free to study international affairs, international development, or public administration, and may focus their course selection on any of the fields of study offered under GSPIA's traditional, 48-credit master's degree programs.

Joint Degree

International Political Economy, JD/MPIA

Joint Degree

Full-time GSPIA students in the MPA, MPIA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public and International Affairs and Juris Doctor

The joint JD allows students to combine the study of law and policy, preparing them equally well for employment in the judicial or executive branches of government. Graduates are positioned to work in international law firms, nonprofit advocacy, and in public or nonprofit agencies that require knowledge of legal issues, such as refugee services and the Department of Justice. Pitt Law School also partners with GSPIA in the University of Pittsburgh's Washington Center.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPIA/JD

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional lecture)
- PIA 2025 - MICROECONOMICS
OR
- PIA 2027 - MACROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre-req. PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2021 - INTERNATIONAL AFFAIRS
- PIA 2363 - INTERNATIONAL HISTORY

One of the following based on major:

- PIA 2301 - INTERNATIONAL POLITICAL ECONOMY or
- PIA 2303 - SECURITY AND INTELLIGENCE STUDIES or
- PIA 2307 - HUMAN SECURITY

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Juris Doctor requirements: 79 credits

(see Law website for requirements)

Total Number of Credits for Joint Degree: 115

Major Specific Requirements:

International Political Economy

- PIA 2xxx - Approved IPE Major Course
- PIA 2xxx - Approved IPE Major Course
- PIA 2xxx - Approved IPE Major Course
- PIA 2xxx - Approved IPE Major Course

International Political Economy, MBA/MPIA

Joint Degree

Full-time GSPIA students in the MPA, MPIA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public and International Affairs and Master of Business Administration

For MPIA and MID students only: Combining a GSPIA degree with an MBA opens many opportunities for a career in international finance, government financial regulation, or multinational corporations. Students with both degrees are highly marketable in the fields of international business and international economic policy.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPIA/MBA

Student is required to take one of the following depending on major:

If SIS major: PIA 2303 Security & Intelligence Studies

If IPE major: PIA 2301 International Political Economy

If HS major: PIA 2307 Human Security

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
OR
- PIA 2027 - MACROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre-req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2363 - INTERNATIONAL HISTORY
- PIA 2021 - INTERNATIONAL AFFAIRS

One of the following based on major:

- PIA 2301 - INTERNATIONAL POLITICAL ECONOMY or
- PIA 2303 - SECURITY AND INTELLIGENCE STUDIES or
- PIA 2307 - HUMAN SECURITY

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Master of Business Administration requirements: 39 or 40.5 credits

(see Business Administration website for requirements)

Total Number of Credits for Joint Degree: 75.5 or 76

Major Specific Requirements:

International Political Economy

- PIA 2xxx - Approved IPE Major Course
- PIA 2xxx - Approved IPE Major Course
- PIA 2xxx - Approved IPE Major Course
- PIA 2xxx - Approved IPE Major Course

International Political Economy, MPIA/MIS

Joint Degree

Full-time GSPIA students in the MPA, MPIA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public & International Affairs and Master of Science in Information Science

The joint MSIS degree allows GSPIA students to combine the study of public management and information technology management, at a time when both fields are increasingly interconnected. Students are prepared to pursue public or nonprofit-sector careers that require strong knowledge of modern information systems.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPIA/MIS

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waive exam. If waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
OR
- PIA 2027 - MACROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre-req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career counselor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career counselor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses

- PIA 2021 - INTERNATIONAL AFFAIRS
- PIA 2363 - INTERNATIONAL HISTORY

One of the following based on major:

- PIA 2301 - INTERNATIONAL POLITICAL ECONOMY or
- PIA 2303 - SECURITY AND INTELLIGENCE STUDIES or
- PIA 2307 - HUMAN SECURITY

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Master of Information Science requirements: 30

(see Information Science website for requirements)

Total Number of Credits for Joint Degree: 66

Major Specific Requirements:

International Political Economy

- PIA 2xxx - Approved IPE Major Course
- PIA 2xxx - Approved IPE Major Course
- PIA 2xxx - Approved IPE Major Course
- PIA 2xxx - Approved IPE Major Course

International Political Economy, MPIA/MPH

Joint Degree

Full-time GSPIA students in the MPA, MPIA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public & International Affairs and Master of Public Health

Students pursuing a joint MPH gain a unique perspective on public management, government responses to epidemics, and the effect of sanitation on international development. They study health policy and the science behind it, both at the local level and on the world stage, where disease recognizes no borders. Graduates are employed by medical relief agencies, nonprofit organizations that distribute vaccines, and government authorities responsible for protecting society from epidemics.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools.

Requirements for the joint degree MPIA/MPH

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. if waived, the class must be replaced by an additional elective)
- PIA 2025 - MICROECONOMICS
- OR
- PIA 2027 - MACROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre-req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
- OR

- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2021 - INTERNATIONAL AFFAIRS
- PIA 2363 - INTERNATIONAL HISTORY

One of the following based on major:

- PIA 2301 - INTERNATIONAL POLITICAL ECONOMY or
- PIA 2303 - SECURITY AND INTELLIGENCE STUDIES or
- PIA 2307 - HUMAN SECURITY

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Master of Public Health requirements: 42 credits

(see Public Health website for requirements)

Total Number of Credits for Joint Degree: 78

Major Specific Requirements:

International Political Economy

- PIA 2xxx - Approved IPE Major Course
- PIA 2xxx - Approved IPE Major Course
- PIA 2xxx - Approved IPE Major Course
- PIA 2xxx - Approved IPE Major Course

International Political Economy, MPIA/MSW

Joint Degree

Full-time GSPIA students in the MPA, MPIA, or MID programs may pursue two graduate degrees simultaneously, through GSPIA's partnerships with other professional schools at the University of Pittsburgh (and two foreign universities). Joint programs reduce the number of credits needed for each degree, allowing students to earn two master's degrees in just three years, or a master's degree and a law degree in just four years.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements. Those applying to the joint JD program with the University of Pittsburgh School of Law may submit an LSAT score as a substitute for GSPIA's GRE requirement. Those applying to the joint MBA program may submit the GMAT as a substitute for the GRE. If admitted to both schools, students

spend one full year in GSPIA followed by a second full year in the other program (or vice versa). During the third and/or fourth year, they spend a minimum of one additional term in GSPIA, earning a total of 36 GSPIA credits.

Although it is possible to apply to both schools at the same time, currently enrolled students may still apply for a joint degree as long as they have not yet completed one year (or, in the case of current law students, two years) of full-time study.

Master of Public & International Affairs and Master of Social Work

Today's community building arena demands well-trained professionals across a wider array of skills and systems than one degree program may offer. That's why the joint degree program between GSPIA and School of Social Work provides students with focused professional education in the community building arena to prepare them for careers in non-profit and government organizations, community development, social policy, and urban and regional affairs.

Note

Joint-degree students take a minimum of 36 credits and must have 3 terms of GSPIA residency. Students must graduate from both schools at the same time. No course may be double-counted. Any course taken to fulfill a requirement for the degree in one program cannot also count toward the degree in the other program. Joint degree students should contact their GSPIA Graduate Enrollment Counselor once a term for advising. Graduate Enrollment Counselors advise for GSPIA programs only. Joint degree students must meet with an advisor from both schools

Requirements for the joint degree MPIA/MSW

GSPIA Core Requirements: 12 credits

- PIA 2022 - QUANTITATIVE METHODS (students may waive PIA 2022 if they pass the waiver exam. If waived, the class must be replaced with an additional elective)
- PIA 2025 - MICROECONOMICS
OR
- PIA 2027 - MACROECONOMICS
- PIA 2028 - PUBLIC POLICY ANALYSIS (pre-req: PIA 2022)
- PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM (may be waived, see career advisor in first term)
- PIA 2098 - INTERNSHIP (may be waived, see career advisor in first term)
- PIA 2096 - CAPSTON SEMINAR: (24 credits)
OR
- PIA 2099 - THESIS (24 credits prior + PIA 2003 + approval by graduate enrollment counselor)

Degree Core Courses: 9 credits

- PIA 2021 - INTERNATIONAL AFFAIRS
- PIA 2363 - INTERNATIONAL HISTORY

One of the following based on major:

- PIA 2301 - INTERNATIONAL POLITICAL ECONOMY or
- PIA 2303 - SECURITY AND INTELLIGENCE STUDIES or
- PIA 2307 - HUMAN SECURITY

Major Courses: 12 credits

(see Major-Specific requirements)

Electives: 3 credits

Minimum Required GSPIA Credits: 36 credits

Master of Social Work requirements: 51 credits

(see Social Work website for requirements)

Total Number of Credits for Joint Degree: 87

Major Specific Requirements:

International Political Economy

- PIA 2xxx - Approved IPE Major Course
- PIA 2xxx - Approved IPE Major Course
- PIA 2xxx - Approved IPE Major Course
- PIA 2xxx - Approved IPE Major Course

Master's

International Political Economy Minor

The requirements for the International Political Economy major are:

PIA 2301 International Political Economy (3cr)

PIA 2302 International Financial Policy (3cr)

PIA 2310 States & Markets (3cr)

or

PIA 2319 International Trade (3r)

Public Policy and Management, MPPM

Master of Public Policy and Management (MPPM)

Accelerated Mid-Career Masters (Traditional)

The accelerated mid-career, 30-credit Master of Public Policy and Management (MPPM) degree provides mid-career professionals an opportunity to expand their knowledge, develop new analytic tools and professional skills, explore new ideas and theories, and interact with experienced faculty and practitioners.

The program is designed to help enhance and advance the careers of professionals in the public and nonprofit sectors. It is also ideal for professionals in other fields looking to change careers, and begin a new, rewarding life in public service. Degree requirements can be completed within one year of full-time study or two years of part-time study. Students may specialize in security & intelligence, global political economy, human security,

development planning & environmental sustainability, non-governmental organizations & civil society, urban & regional planning, public & nonprofit management, and policy research & analysis.

The MPPM program seeks applicants with a bachelor's degree and a minimum of five or more years of experience beyond an entry-level position. Candidates' experience should demonstrate increasing levels of responsibility, leadership, and professional competence, particularly in areas such as budgeting and finance, human resource management, or policy formulation or implementation. Candidates with fewer than five years of such experience should not apply to the MPPM program, but should apply instead to one of GSPIA's other, 48-credit master's degree programs.

Online Accelerated Mid-Career Masters

The online Master of Public Policy and Management (MPPM) degree is a part-time, 30-credit program for mid-career professionals with at least five years of full-time work experience. It is an online version of the MPPM program that GSPIA has offered to talented mid-career students for more than a decade. Students who apply to the MPPM program may now choose whether they want to pursue the degree in its traditional, on-campus format or in a 100% online format.

The program provides mid-career professionals with an opportunity to expand their knowledge, develop new analytic tools and professional skills, explore new ideas and theories, and interact with experienced faculty and practitioners. It is designed to help enhance and advance the careers of working professionals in the public and nonprofit sectors, but is also ideal for professionals in other fields looking to change careers, and begin a new, rewarding life in public service.

Online Program Structure

As an online MPPM student, you will enroll in two web-based courses (for a total of 6 credits) per term. You will be able to complete the 30-credit degree in just five terms. By taking courses during the spring, summer, and fall terms, you can earn your degree in just 20 months. You may, if you prefer, complete the program at a slower pace by taking just one course at a time.

You will follow a set curriculum of online courses, all of which are taught by regular GSPIA faculty who are dedicated to your success, wherever you are. You will complete your coursework using the Pitt Online Website, where you can login at your convenience to view course material and submit assignments.

In addition to the professors teaching your courses, you will be assigned to a faculty advisor and a full-time enrollment counselor who will be able to assist you by phone, Skype, or email with any questions you may have. Your advisor and enrollment counselor will help you navigate the registration process and work with you throughout your time at GSPIA to ensure your success.

Traditional Requirements:

MPPM Core Courses: 12 credits

- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS
OR
- PIA 2021 - INTERNATIONAL AFFAIRS
OR
- PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION

- PIA 2117 - PUBLIC PROGRAM EVALUATION
- PIA 2896 - MPPM POLICY SEMINAR

- PIA 2025 - MICROECONOMICS
OR
- PIA 2027 - MACROECONOMICS

Specialization Courses (six courses): 18 credits

- PIA 2xxx - MPPM specialization course
- PIA 2xxx - MPPM specialization course
- PIA 2xxx - MPPM specialization course
- PIA 2xxx - MPPM specialization course
- PIA 2xxx - MPPM specialization course
- PIA 2xxx - MPPM specialization course

Minimum Required Credits: 30 credits

Online Requirements

Online MPPM Core Courses: 12 credits

- PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS
- PIA 2025 - MICROECONOMICS
- PIA 2117 - PUBLIC PROGRAM EVALUATION
- PIA 2896 - MPPM POLICY SEMINAR

Online specialization courses (six courses): 18 credits

Online MPPM students must take an additional 18 credits beyond the core.

- PIA 2xxx - MPPM specialization course
- PIA 2xxx - MPPM specialization course
- PIA 2xxx - MPPM specialization course
- PIA 2xxx - MPPM specialization course
 - PIA 2xxx - MPPM specialization course
 - PIA 2xxx - MPPM specialization course

Minimum Required Credits: 30 credits

Graduate School of Public Health

Note: Students should refer to the catalog in use in their year of matriculation for course and credit requirements. All other information should be obtained from the current catalog.

The Graduate School of Public Health consists of programs offered by the Departments of Behavioral and Community Health Sciences, Biostatistics, Environmental and Occupational Health, Epidemiology, Health Policy and Management, Human Genetics, and Infectious Diseases and Microbiology, the multidisciplinary MPH program for doctoral-level health professionals, and nine certificates. Programs and specialty tracks, including joint programs, are detailed under individual department sections.

The mission of the Graduate School of Public Health (Pitt Public Health) is to promote health, prevent disease, and achieve health equity for everyone through leadership in education, research, and service. Visit our Web site, www.publichealth.pitt.edu, for more information.

Contact Information

Office of Student Affairs
G009 Public Health
412-624-3002
Fax: 412-624-3755
E-mail: stuaff@pitt.edu
www.publichealth.pitt.edu

Degree Programs

Degrees

Behavioral and Community Health Sciences	MPH, DrPH, PhD
Biostatistics	MS, PhD
Environmental and Occupational Health	MS, MPH, PhD
Epidemiology	MS, MPH, PhD, DrPH
Genetic Counseling	MS
Genome Bioinformatics	MS
Health Policy and Management	MHA, MPH
Health Services Research and Policy	MS, PhD
Human Genetics	MS, PhD
Infectious Diseases and Microbiology	MS, MPH, PhD
Multidisciplinary MPH	MPH
Public Health Genetics	MPH

Joint, Dual, and Cooperative Degree Programs

Behavioral and Community Health Sciences/Arts and Sciences (Anthropology)	MPH and PhD
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Behavioral and Community Health Sciences/Social Work	MPH and PhD or MPH and MSW
Behavioral and Community Health Sciences/Public and International Affairs	MPH and MPA or MPH and MID or MPH and MPIA
Epidemiology/Medicine	PhD and MD
Genetic Counseling and Public Health Genetics	MS AND MPH
Health Policy and Management/Business	MHA and MBA
Health Policy and Management/Law	MPH and JD
Human Genetics/Medicine	PhD and MD

Certificate Programs

Community-Based Participatory Research and Practice
Environmental Health Risk Assessment
Evaluation of Public Health Promotion and Health Education Programs
Global Health
Health Equity
Healthcare Systems Engineering
Health Systems Leadership and Management
Lesbian, Gay, Bisexual, and Transgender Individuals' (LGBT) Health and Wellness
Public Health Genetics
Public Health Preparedness and Disaster Response (Admission to this program has been suspended until further notice.)

Admissions

Application instructions differ depending on whether you are applying for a degree, a certificate, or for non-degree coursework. Please follow the application instructions for your plan of study when applying to Pitt Public Health.

Pitt Public Health has general admission requirements for all applicants, plus each department has requirements specific to their programs. It's important to review both requirements before applying.

Accelerated 3+2 Master's Degree Program

University of Pittsburgh undergraduates may apply for admission to a number of accelerated master's programs. Designed to allow students to complete a bachelor's and master's degree in approximately 5 years. Students must have completed the number of undergraduate credits required by their program (minimum of 96 credits) before they can become a Pitt Public Health student. Besides the regular admission requirements, undergraduates must also meet additional requirements, which are specific to this program.

Non-Degree Status

You can take up to 12 credits (cumulative maximum) as a non-degree student. If you are later accepted into a degree program, that program will decide which of those credits may be applied to your requirements.

Requirements

You must have a U.S. bachelor's degree or the equivalent foreign degree to become a non-degree student. You will have to submit transcripts for all education, as well as a WES evaluation for study outside of the U.S. and TOEFL scores, if applicable.

Non-degree applicants must be U.S. citizens or permanent residents. In some cases, local applicants currently holding an F or J visa status may be eligible to apply; however, these applicants must contact the Office of Student Affairs for approval before submitting an application. Pitt Public Health does not sponsor I-20s for non-degree study.

How to Apply

- Apply online through SOPHAS Express and complete required sections only
 - Pay application fee online directly to SOPHAS Express
 - Submit official transcripts for all education in the United States and/or Canada to Pitt Public Health Office of Student Affairs
 - Submit a course-by-course WES evaluation for all education outside of the United States (excluding study abroad but including non-English speaking Canadian institutions) to Pitt Public Health Office of Student Affairs
 - Submit official TOEFL scores (if applicable) to the University of Pittsburgh institution code 2927, with no department code
- Note:** *Non-degree applicants are not required to submit recommendations, upload transcripts through SOPHAS Express, submit test scores, or submit any non-required sections of the SOPHAS Express application.*

What classes should I take?

If you're planning to apply and you know which department you're interested in, you may want to contact that department directly for suggestions about classes. Many non-degree students choose to enroll in the Pitt Public Health core courses (unless restricted) as a way to learn more about our various programs and/or to start working towards a degree.

Here's a sample of courses that may interest you:

- Principles of Epidemiology (EPIDEM 2110)*
 - Public Health Genetics (HUGEN 2049)
 - Public Health Biology (PUBHLT 2015)*
 - Social and Behavioral Sciences and Public Health (BCHS 2509)*
 - Health Policy and Management in Public Health (HPM 2001)*
 - Environmental Health and Disease (EOH 2013)*
 - Principles of Statistical Reasoning (BIOST 2011)*
- *part of the Pitt Public Health Core Curriculum*

Note: *Pitt Public Health encourages non-degree students to apply to a degree program, but acceptance as a non-degree student does not guarantee admission to a degree program.*

Financial Aid

Almost all Pitt Public Health doctoral students and many master's students receive financial aid. Most financial aid is provided through the departments, and the amount of aid available varies among programs. Applicants should contact departments directly for information about available financial aid.

Academic Standards and Academic Integrity

Students are expected to exhibit academic honesty and to uphold the ethical standards of public health professionals. A student who is not in satisfactory academic standing will be placed on probation and may be subject to dismissal. Students should refer to the Pitt Public Health Academic Handbook for complete information on the school's academic performance standards.

Grading Policies

The Graduate School of Public Health follows the University's letter grade system in evaluating student performance in course work, though a variety of options are detailed below.

Pitt Public Health school-wide core courses are graded A, B, C, etc.

Students electing to audit a course must register for the course as for any other course, and must also complete a grade option form in the Office of Student Affairs and obtain the instructor's permission to audit the course. Students receive a grade of N for audited courses and receive no academic credit for the course.

See the Grading and Records section of this bulletin for detailed discussion of University Grading System and Grading Options.

Withdrawal and Resignation

To withdraw from a class after the official add/drop period while still enrolled in other classes, you must process a Monitored Withdrawal Request Form through the dean's office of the school offering the class.

If you wish to drop all of your classes after the end of the add/drop period, you must resign from the term. Adjustments to tuition charges resulting from official resignation (dropping of all courses for the term) are based on the effective date of resignation and in accordance with the federally mandated calculation. If you decide to resign, call the resignation hotline immediately to leave your name and contact information (412-624-7585), as the refund amount is calculated from the date of resignation.

Course Repeat

A student may repeat a course in which a grade of B- or lower is received if authorized by the student's advisor. Students may not repeat a school-wide core course or required departmental course more than once (i.e., course may only be taken twice), and students who fail a school-wide core course or required departmental course twice are subject to dismissal. *(See Pitt Public Health academic dismissal and probation guidelines in the Pitt Public Health Academic Handbook. See also Repeating Courses for more information.)*

GPA Calculation

In general, a student's Grade Point Average (GPA) is obtained by dividing the total number of letter grade credits taken in the graduate program into the total number of quality points earned in the graduate program.

All University of Pittsburgh courses taken as a Pitt Public Health student are included in the calculation of GPA.

Advanced Standing and Transfer Credits

For details on advanced standing and transfer credits, students should consult the Pitt Public Health Academic Handbook and their academic advisor. Acceptance of transfer credits is at the discretion of the program.

Acceptance of a maximum of 12 credits taken as a non-degree student at Pitt Public Health is at the discretion of the program.

Students enrolled at Pitt Public Health may take credits in another school or institution, providing that their department has approved application of those credits to the degree requirements. In all cases, any combination of advanced standing credits and credits taken from another school or institution during enrollment at Pitt Public Health may not exceed the limits established by the University or the Regulations Governing Graduate Study at the University of Pittsburgh.

Academic Advising

The Graduate School of Public Health considers effective academic advising an essential component of educating students. Departments have the primary responsibility for identifying and assigning to each student a major advisor, who, in consultation with the student, plans a program of study and research in accord with school and departmental guidelines. Departments are expected to provide students with a copy of school and departmental regulations appropriate for their program, and students are expected to become familiar with University, Pitt Public Health, and department regulations concerning graduate study and to accept responsibility for the completion of all degree requirements.

The student's academic advisor is to direct and assist the student in the selection of classes and the conduct of research. Waivers from program requirements are processed at the program level, and waivers from school requirements by the Office of Student Affairs. The Application for Graduation is processed through the Pitt Public Health Office of Student Affairs after clearance has been received from the academic advisor. A student will be certified for graduation only after the academic advisor has confirmed that all degree requirements have been met.

For students required to take preliminary, comprehensive, or defense examinations, the academic advisor, in consultation with the student, designates faculty members to act as the examining committee.

Each doctoral student is required to complete an Independent Development Plan per year and to submit it to his/her advisor. A suggested template is provided.

Each doctoral student, together with the student's doctoral committee, is responsible for assuring accomplishment of all elements of the student's course of studies, including the core requirements, the research tools requirement, course work in the field of specialization, advanced standing, the qualifying and comprehensive examinations, and the dissertation overview and its final oral defense.

Career Services

Pitt Public Health's Career Services office offers programs, services and resources to help master's and doctoral students as they prepare for employment or additional training in their chosen field of study. These services include Pitt Bridges, an online job board where jobs and training positions are posted weekly. Career counseling appointments are available to help with resume/CV critiques, cover letters, and mock interviews. Students can also register for skills-based workshops that are held regularly on a variety of topics. Networking functions and public health job fairs are also sponsored by this office.

Faculty

GSPH Primary Faculty

Program and Course Offerings

A number of courses of general interest to all departments are offered. Course descriptions and a current schedule are available to students. A list of course offerings by department may be accessed through the departmental sections of this catalog.

Certificate

Global Health Certificate

This program educates students about current health patterns and transitions occurring globally, as well as about the role of dynamic global environmental, political, economic, health care, and social changes to these patterns.

Coursework consists of 7 credits of core courses and 8 credits of additional coursework aligned with the individual student's specific area of interest and intended skillset. Students must complete a field experience, which can be combined with the required practicum for the degree program provided the experience is relevant to global health. Students have the opportunity to complete this global health practicum in the form of local opportunities or in an international setting.

Required Courses

The certificate core courses cannot overlap with any other departmental requirement. Overlap is permitted for the remaining required courses and these may also fulfill departmental requirements.

- PUBHLT 2025 - CONCEPTS AND METHODS IN GLOBAL HEALTH
- PUBHLT 2027 - TRANSFORMING GLOBAL HEALTH EDUCATION INTO ACTION

One course from the Graduate School of Public and International Affairs is required from the list of approved classes (3 credits)

Master's

Multidisciplinary, MPH

Program Requirements

The mission of the Multidisciplinary Master of Public Health (MMPH) degree program is to prepare doctoral level health professionals to practice in community, public, and global health settings. They will use population-based concepts, health education, health promotion and the preventive components of public and personal health care and practice. The educational program provides these individuals who have varied health science backgrounds with the advanced public health training in which they can incorporate and apply the public health knowledge and skills in a public or private setting. The program is designed to foster a comprehensive overview to bridge the gaps among public health disciplines and subdisciplines. The MMPH is uniquely designed for individuals with advanced degrees (MD, RN, DDS, DO...) and allows them the freedom to self-design their MPH. Comprised of the Pitt Public Health core curriculum (19-21 credits) the students are encouraged to choose electives from varied public health departments to form an area of focus of relevance to them. This self-designed degree gives the student the flexibility necessary to work around busy clinical schedules. Upon completion of the MMPH, students will have an understanding of statistics, health policy, research design and the ability to contribute to new research in their chosen fields of interest.

In addition to the Public Health core courses, students must complete a master's essay under the guidance of a faculty committee and register for a practicum experience. The curriculum consists of 42 credits and can be completed in a year.

Although the program has a 42 credit requirement, six credits of advanced standing or transfer credits may be applied, making it possible for an eligible student to complete 36 credits.

Note:

Aside from the core requirements, the MMPH curriculum is flexible. The student should work with the program director upon admission to identify competencies (goals) for his or her program, and suggested courses for achieving those competencies. Additionally, students must complete a 200 hour practicum and a final essay.

* No more than six credits may be taken in other university graduate programs.

Pitt Public Health Core Requirements

- BCHS 2509 - SOCIAL AND BEHAVIORAL SCIENCES AND PUBLIC HEALTH
- BIOST 2011 - PRINCIPLES OF STATISTICAL REASONING

*Students must take either BIOST 2011 or BIOST 2041

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY

*Can be waived if student has a clinical degree

- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS

*Must register for two terms

- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

Department of Behavioral and Community Health Sciences

The Department of Behavioral and Community Health Sciences at the University of Pittsburgh examines the social determinants of health, that is, the set of social and behavioral factors that either promote or threaten public health. Our interventions alter these social and behavioral factors (such as housing, health literacy, or care management) to assess effects on community health. The BCHS mission statement summarizes our approach:

VISION

Healthy people living in thriving and equitable communities.

MISSION

Improve and promote health and equity by engaging individuals, communities, and systems through our research, teaching, and practice.

VALUES

Open communication; active collaboration; integrated and strength-based approaches; social justice and health equity; application of knowledge in the context of people's lives.

The primary educational mission of the Department is to prepare students for positions of responsibility and leadership in public health practice, research, and training. Our students learn to employ the most current health behavior theories and community development strategies in approaching public health challenges. They develop applied research skills in community health assessment and planning, program implementation and evaluation, health education, and health communication. They learn how to design programs and conduct community-based research, and to work as part of interdisciplinary teams examining behavioral interventions and community assessment strategies. These educational and practice experiences prepare our graduates to move into leadership positions at the local, national, and international levels.

The department has a world-class faculty that is involved in teaching, research, and community service on the local, national, and international level. We collaborate with local and regional public health systems, and many of the leadership staff in these organizations also have faculty appointments and teach classes in the department.

Contact Information

Steve Albert, PhD
6129 Parran Hall
412-383-8693
E-mail: smalbert@pitt.edu
www.bchs.pitt.edu

For additional information concerning specific degrees, contact the following: MPH-Martha Ann Terry, 6137 Parran Hall, 412-624-5887 or materry@pitt.edu; MPH/PhD in Social Work and MPH/MSW in Social Work-Sтивен Albert, 6129 Parran Hall, 412-383-8693 or smalbert@pitt.edu; PhD and DrPH-Jeanette Trauth, 6138 Parran Hall, 412-624-0968 or trauth@pitt.edu; Admission and Registration, 412-624-3107.

Admission: All Applicants

Applications for admission to the Department of Behavioral and Community Health Sciences are processed through the Office of Student Affairs at Pitt Public Health. You must apply for the MPH, PhD, and DrPH programs through SOPHAS, the centralized application service for graduate schools of public health.

Please review the Pitt Public Health requirements for admission before applying.

Application instructions differ depending on whether you are applying for a degree, a certificate, or for non-degree coursework. Please follow the application instructions for your plan of study when applying to Pitt Public Health.

Department requirements- BCHS doctoral applicants:

- PhD applicants: a master's degree in a discipline relevant to public health is required.
- DrPH applicants: A MPH degree is required.
- A minimum grade point average of 3.3.
- Official GRE scores from a test taken within three years of the application date. Scores in the 60th percentile or higher are highly desirable.
- Completed 3 credits of college math passed with a C or better

Department requirements- BCHS MPH applicants:

- At least a 3.0 GPA on a 4.0 scale
- 153 (60%) verbal GRE, 148 (31%) quantitative GRE and 4.5 (82%) analytic writing
- Completed 3 credits of college math passed with a C or better
- Completed 6 credits of social sciences passed with a C or better

The BCHS department requires a minimum TOEFL score of 100 on the IBT or a minimum IELTS score of Band 7.0, if applicable. TOEFL or IELTS must be taken within two years of application.

Financial Assistance

Although resources for master's students are limited, the program makes every effort to assist students in accessing some level of financial aid. Small grants and awards are available from the Department, the Graduate School of Public Health, and from the University, and many BCHS students have been successful in competing for these awards. In addition, a small number of Graduate Student Assistant and Graduate Student Researcher positions are available for full-time doctoral students. There are also opportunities for paid field practicum positions, and many students are able to supplement their income through part-time employment on public health-related service or research projects conducted within the Graduate School, the University, or in the community.

Graduate Programs

Educational programs of the Department of Behavioral and Community Health Sciences build upon a common body of public health knowledge and social/behavioral science concepts, theories and applied research methods. The Master of Public Health (MPH) Program prepares students to assess the health status and needs of populations, develop public health interventions, and evaluate these interventions as well as develop recommendations for improvement. Students learn and put into practice assessment and research skills in the context of social and behavioral change at the individual, organizational, and community levels with an emphasis on social ecology and social justice. Three joint degree options are also available. Two programs with the School of Social Work, the MPH/PhD and the MPH/MSW in Public Health Social Work, train social workers for leadership positions in public health systems and prepare them for research and teaching posts. Students also have the option to receive the MPH and the Master of Public Administration (MPA), the Master of Public and International Affairs (MPIA), or the Master of International Development (MID) through a joint program with the Graduate School of Public and International Affairs. Finally, students can earn an MPH and a PhD in anthropology in cooperation with the Dietrich School of Arts and

Sciences. The Department offers two doctoral degrees: a PhD (doctor of philosophy) and DrPH (doctor of public health). See Doctoral Programs section below for description.

Research Focus

The Department of Behavioral and Community Health Sciences has an extensive array of funded research and training projects. BCHS faculty and staff are skilled in the use of both quantitative and qualitative research methods, and the Department is particularly well known for its community-based participatory research strategies and modeling-simulation efforts designed to improve the health and welfare of communities.

Areas of research strengths include:

- Diabetes and Chronic Disease Prevention
- Cancer Screening Behavior
- Health Equity
- Public Health and Aging
- HIV/AIDS and Sexually Transmitted Diseases
- Maternal and Child Health
- Evaluation Science
- Global Health
- Modeling of health behavior and linked disease dynamics
- Mental Health

Research and training projects are funded by organizations such as:

- National Institutes of Health (NIH)
- Centers for Disease Control and Prevention (CDC)
- National Cancer Institute (NCI)
- National Institute on Aging (NIA)
- National Institute of Nursing (NINR)
- Health Resources and Services Administration, U.S. Department of Health & Human Services (HRSA)
- Pennsylvania Department of Health
- Local and National Philanthropic Organizations

Doctoral Programs

The Doctor of Philosophy (PhD) Program prepares students to conduct research in the social and behavioral sciences areas of public health in a variety of settings as well as teach in academic settings. The PhD curriculum is formed by a social-ecological perspective regarding the determinants of health and opportunities for intervention. Within this overarching framework, the curriculum also emphasizes theory-driven research, addressing health issues across the developmental life span of populations, examining variation across socio-demographic categories such as gender, age, and sociocultural status as it affects health and health disparities. The curriculum addresses the following areas: individual behavior, population health, research design and methods, statistical analysis; behavioral interventions; and the integration of public health research and practice. The PhD Program is a 72 credit program designed to be completed in 2 years full-time coursework in addition to 2 years for completion of dissertation research.

The Doctor of Public Health (DrPH) Program trains individuals for positions of senior responsibility and leadership in public health practice settings. Students develop skill in the seven core areas identified by the Association of Schools of Public Health for DrPH degree programs. This includes coursework and practical experience in the following areas: 1) theory and research methods that facilitate-critical analysis, 2) community orientation, 3) communication, 4) management, 5) leadership, 6) advocacy and 7) professionalism and ethics. These skills position students to assume leadership positions in public health agencies, health departments, nongovernmental organizations, foundations, and agencies in the human services sector. The DrPH Program is a 72 credit program designed to be completed in 2 years full-time coursework in addition to 2 years for completion of dissertation research.

Master's Degree

The MPH Program is a 45-credit program requiring students to complete the Pitt Public Health core courses (18-19 credits), the departmental core courses (17-18 credits), and elective courses. The departmental core courses cover social/behavioral theory and concepts; applied social/behavioral research methods; program planning, implementation and evaluation; health communication; community development approaches and experience in applying social/behavioral theories and methods through the completion of a 200 hour practicum/internship. School core courses include Biostatistics, Epidemiology, Public Health Biology, Environmental and Occupational Health, Health Policy and Management, and Capstone.

Electives are selected from a range of approved courses that pertain to a student's area of concentration or interest. Students are required to complete a practicum in a public health setting and prepare an essay or thesis that addresses an issue of public health significance and that demonstrates the ability to synthesize information from numerous sources. The MPH program is designed to be completed in four semesters of full-time study. An option does exist for finishing in three semesters.

A number of joint degrees programs are also offered. See joint degree information below.

Joint Degrees

Students in the BCHS MPH program can pursue two graduate degrees simultaneously, through partnerships with other schools and departments at the University of Pittsburgh. Joint programs typically reduce the number of credits needed for each degree, allowing students to earn two degrees in three years for master's programs and four to five years for MPH/PhD programs.

To participate in a joint degree program, students apply separately to both schools, and must meet all of the usual admissions requirements (including entrance exams like the GRE). If admitted to both schools, students alternate their primary program of study by semester or by year.

Although it is possible to apply to both schools at the same time, currently enrolled students can still apply for a joint degree as long as they have not yet completed one year of full-time study.

Certificates/Specialized Study

The Department of Behavioral and Community Health Sciences offers opportunities for certificates or specialized study in the following areas:

- Lesbian, Gay, Bisexual, and Transgender Health and Wellness
- Health Equity
- Evaluation of Public Health Programs
- Community-Based Participatory Research and Practice (CBPRP)

Certificate

Community-Based Participatory Research and Practice Certificate

In the past 10 years, Community-based Participatory Research and Practice (CBPRP) has emerged as a core discipline in behavioral and social science departments within schools of public health. CBPRP is a collaborative process of research and practice that includes both researchers and community representatives. Communities are generally defined as those that share a unit of identity (e.g., social ties, geographical locations). The CBPRP process involves engaging community members, using local knowledge in the understanding of health problems, and a long-term commitment to partnership. CBPRP is oriented towards holistic interventions informed by social ecology modeling, a widely recognized approach that not only targets knowledge, attitudes, and behaviors of individuals, but also includes social factors such as family and friendship ties, community norms, and the structure of community services.

Requirements for the Certificate

This program provides a comprehensive set of courses that will prepare students for a career in community-based participatory research and practice. As part of the program, student interns will work with local community agencies to collaboratively address identified community public health issues.

Applicants must meet the requirements for admission to the MPH program in the Department of Behavioral and Community Health Sciences and be accepted into the certificate program.

Students must complete 15 credits, including 9 credits of coursework and a six-credit internship/ practicum. The certificate program is designed to be completed in four semesters of full-time study. An option does exist for finishing in three semesters.

Note: Some additional credits that do not apply to any degree or other certificate must be completed for each certificate program.

Required Courses

- BCHS 2554 - INTRODUCTION TO COMMUNITY HEALTH
- BCHS 2135 - LEADERSHIP
- BCHS 2608 - INTRODUCTION TO COMMUNITY BASED PARTICIPATORY RESEARCH
- BCHS 2609 - TRANSLATING RESEARCH FOR POLICY AND PRACTICE
- BCHS 2610 - CONCEPT MAPPING: A PARTICIPATORY RESEARCH METHOD
- BCHS 2503 - PRACTICUM

Evaluation of Public Health Promotion and Health Education Programs Certificate

Demand for comprehensive program evaluations is rising in a range of public and private organizations dealing with the health and social welfare needs of populations in the United States as well as worldwide. Graduates with a specialization in program evaluation in public health have expanded opportunities for employment in organizations such as health departments and ministries of health, health and hospital systems, educational programs, philanthropic foundations, and consulting firms. Students in the BCHS program evaluation certificate study under expert faculty and research staff. Students are trained in the application of both quantitative and qualitative methods for evaluation, and have the opportunity to participate directly on interdisciplinary evaluation teams on actual community-based projects. The evaluation concentration typically involves taking courses in basic and advanced evaluation methods, qualitative approaches, health survey methods, and the evaluation practicum.

Requirements for the Certificate

This program trains students to apply both quantitative and qualitative methods for interdisciplinary evaluation of a range of community-based public health projects.

Applicants must meet the requirements for admission to Pitt Public Health.

- Masters students must complete 15 graduate credits, including a 3-credit (400 hours) applied evaluation internship under the supervision of a designated faculty member, and 6 credits of electives.
- Doctoral students must complete 15 graduate credits, including a 3 credit (320 hour) applied evaluation internship under the supervision of a designated faculty member, and 6 credits of electives including 3 credits of seminar in advanced evaluation techniques.
- The certificate program is designed to be completed in four semesters of full-time study, but completion time may vary.

Note: Some additional credits that do not apply to any degree or other certificate must be completed for each certificate program.

Required Courses

- BCHS 2525 - INTRODUCTION TO APPLIED RESEARCH
- BCHS 2558 - HEALTH PROGRAM EVALUATION
- BCHS 2503 - PRACTICUM (masters students) or

- BCHS 3703 - EXECUTIVE MANAGEMENT PRACTICUM (doctoral students)

*Doctoral students enrolled in the certificate are required to take as 3 of the elective credits:

- BCHS 3003 - SEMINAR IN ADVANCED EVALUATION TECHNIQUES

Certificate Electives

Students choose 6 credits from the following courses for their evaluation electives requirement:

- BCHS 2608 - INTRODUCTION TO COMMUNITY BASED PARTICIPATORY RESEARCH
 - BCHS 2610 - CONCEPT MAPPING: A PARTICIPATORY RESEARCH METHOD
 - BCHS 2612 - PROJECT MANAGEMENT IN PUBLIC HEALTH
 - BCHS 2990 - SOCIAL DYNAMICS IN PUBLIC HEALTH
 - BCHS 3002 - HEALTH SURVEY METHODS
 - BCHS 3003 - SEMINAR IN ADVANCED EVALUATION TECHNIQUES
 - BCHS 3007 - ETHNOGRAPHIC AND QUALITATIVE METHODS
 - BCHS 3015 - COMMUNITY MAPPING AND INTRODUCTORY SPATIAL ANALYSIS
 - BCHS 3030 - MEASUREMENT IN THE SOCIAL AND BEHAVIORAL SCIENCES
 - PIA 2730 - COMMUNITY DEVELOPMENT AND FOCUS GROUPS
- OR
- NUR 3055 - COMMUNITY DEVELOPMENT AND FOCUS GROUPS: PREPARATION, FACILITATION AND APPLICATION
 - BCHS 2511 - INDEPENDENT STUDY

Some students may qualify for independent study in evaluation as determined by the certificate program director.

Health Equity Certificate

This innovative certificate program was created to address the systemic root causes of health disparities. While racial and ethnic health disparities are examples of the consequences of social and economic disadvantages, disparities may also be related to sexual orientation, religion, gender, native language, age, and disability status. The certificate provides students with an academic foundation for achieving health equity through assessing the complexity of inequities among diverse groups of marginalized populations, mobilizing communities where disparities exist, developing/evaluating culturally tailored interventions, and advocating for healthy public policy. The program is designed to increase the cultural competency of public health and other professionals and provide an interdisciplinary vehicle for individuals to pursue and strengthen their career interests relevant to health equity.

Requirements for the Certificate

This program addresses the systemic root causes of health disparities by providing trainees with an academic foundation for the promotion of health equity through conducting/evaluating culturally tailored community-based interventions, mobilizing communities where disparities exists, and advocating for healthy public policy.

Applicants must meet the requirements for admission to the MPH program.

Students must complete 15 credits, including Overview of Health Equity, Introduction to Community Health, Health Equity: Research and Interventions (or approved methods class substitute), and the Integrative Seminar in Health Equity. A field experience such as an equity-focused MPH practicum or participation in the Health Equity Journal Club is required. The certificate program is designed to be completed in four semesters of full-time study. An option does exist for finishing in three semesters.

Note: Some additional credits that do not apply to any degree or other certificate must be completed for each certificate program.

Required Courses

- BCHS 2554 - INTRODUCTION TO COMMUNITY HEALTH
- BCHS 2524 - OVERVIEW OF HEALTH EQUITY
- BCHS 2526 - HEALTH EQUITY RESEARCH: METHODS AND INTERVENTIONS
- BCHS 2528 - INTEGRATIVE SEMINAR IN HEALTH EQUITY

Methods Course Substitute

Students may substitute BCHS 2526 Health Equity Research: Methods and Interventions for one of the approved methods courses.

- BCHS 2523 - PUBLIC HEALTH PROGRAM PLANNING AND PROPOSAL WRITING (non-BCHS students)
- BCHS 2525 - INTRODUCTION TO APPLIED RESEARCH (non-BCHS students)
- BCHS 2558 - HEALTH PROGRAM EVALUATION
- BCHS 3003 - SEMINAR IN ADVANCED EVALUATION TECHNIQUES
- BCHS 3007 - ETHNOGRAPHIC AND QUALITATIVE METHODS

- BCHS 2608 - INTRODUCTION TO COMMUNITY BASED PARTICIPATORY RESEARCH
and
- BCHS 2609 - TRANSLATING RESEARCH FOR POLICY AND PRACTICE
and
- BCHS 2610 - CONCEPT MAPPING: A PARTICIPATORY RESEARCH METHOD

- BCHS 3030 - MEASUREMENT IN THE SOCIAL AND BEHAVIORAL SCIENCES
- BCHS 3002 - HEALTH SURVEY METHODS
- BCHS 3015 - COMMUNITY MAPPING AND INTRODUCTORY SPATIAL ANALYSIS
- BCHS 3503 - PREVENTION SCIENCE: TRANSLATING KNOWLEDGE TO PRACTICE
- BIOST 2016 - SAMPLING DESIGN AND ANALYSIS
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- BIOST 2062 - CLINICAL TRIALS: METHODS AND PRACTICE
- BIOST 2098 - AGENT BASED MODELING
- EPIDEM 2161 - METHODS INFECTIOUS DISEASES EPIDEMIOLOGY
- EPIDEM 2180 - EPIDEMIOLOGICAL METHODS 1
- EPIDEM 2187 - EPIDEMIOLOGICAL METHODS 2
- EPIDEM 2181 - DESIGN AND CONDUCT OF CLINICAL TRIALS
- EPIDEM 2220 - APPLIED SPATIAL/COMMUNITY EPIDEMIOLOGY
- EPIDEM 2981 - EPIDEMIOLOGY OF AGING-METHODS
- HPM 2064 - HEALTH POLICY ANALYSIS (master's students)
- HPM 3064 - HEALTH POLICY ANALYSIS (doctoral students)
- HPM 2063 - THE POLITICS OF HEALTH POLICY
- HPM 2028 - MICROECONOMICS APPLIED TO HEALTH
- HPM 2220 - COST EFFECTIVENESS ANALYSIS HEALTH CARE
- HPM 2905 - QUASI-EXPERIMENTAL DESIGN FOR HEALTH SERVICES RESEARCH
- HPM 3125 - INTERMEDIATE HEALTH ECONOMICS
- PIA 2730 - COMMUNITY DEVELOPMENT AND FOCUS GROUPS

Certificate Electives

- BCHS 2532 - DIMENSIONS OF AGING: CULTURE AND HEALTH
- BCHS 2560 - INTRODUCTION TO POPULATION PROBLEMS
- BCHS 2575 - SEMINAR MATERNAL AND CHILD HEALTH
- BCHS 2598 - SOCIAL INEQUALITIES IN HEALTH
- BCHS 2599 - PUBLIC HEALTH APPROACHES TO WOMEN'S HEALTH

- BCHS 2995 - GLOBAL PERSPECTIVES ON WOMEN'S HEALTH: EMPOWERMENT, GENDER EQUALITY, AND HEALTH
- EPIDEM 2143 - SOCIAL EPIDEMIOLOGY
- EPIDEM 2400 - PSYCHOSOCIAL FACTORS IN DISEASE
- EPIDEM 2710 - EPIDEMIOLOGY OF WOMEN'S HEALTH
- HPM 2143 - PUBLIC HEALTH SYSTEMS: LEGAL, ECONOMIC, AND OPERATIONAL FOUNDATIONS
- IDM 2032 - HUMAN DIVERSITY AND PUBLIC HEALTH
- CLRES 2200 - INTRODUCTION TO RESEARCH DISPARITIES ON HEALTH CARE
- MEDEDU 2240 - CULTURAL COMPETENCE MEDICAL EDUCATION
- PUBHLT 2025 - CONCEPTS AND METHODS IN GLOBAL HEALTH

Lesbian, Gay, Bisexual, and Transgender (LGBT) Health and Wellness Certificate

The interdepartmental (BCHS, EPID, IDM) Certificate Program will prepare students to collaborate and conduct independent research designed to improve the understanding of unique health concerns among lesbian, gay, bisexual, and transgender (LGBT) populations; participate in agency or organization planning, training, and delivery of health care for LGBT populations; work with local, state, and federal agencies in developing LGBT competent health care providers; provide leadership in public and private sector organizations serving the health and wellness needs of LGBT populations; and evaluate the effectiveness of health care delivery systems to meet the needs of LGBT populations.

In the United States, public health professionals seek to address health disparities. Students enrolled in this program will be prepared to address health disparities affecting subpopulations who may be experiencing a lower quality of health and wellness, due in part, to historic discrimination, with a focus on lesbian women, gay men, bisexuals, and transgender/transsexual individuals. As such, the certificate will offer courses that include information on identifying and documenting health disparities; impact of historical stigmatizing politics that contribute to development of health disparities; impact of politics and policy to improve means of addressing health disparities; design of appropriate research programs to address health disparities; theories behind intervention programs that work among disparate populations; and means to develop competency skills in working with stigmatized populations.

Requirements for the Certificate

This interdepartmental (BCHS, Epid, IDM) certificate program prepares students to conduct research designed to improve the understanding of unique health concerns among lesbian, gay, bisexual, and transgender populations, to participate in organized planning and delivery of health care for LGBT populations, and to provide leadership in organizations serving the health and wellness needs.

Applicants must meet the requirements for admission to Pitt Public Health.

Students must complete 15 graduate credits, a practicum, and a thesis or project related to LGBT health and wellness and oral presentation of the thesis or project for peers and members of the Center for LGBT Health Research, or at approved scientific meeting. The certificate program is designed to be completed in four semesters of full-time study. An option does exist for finishing in three semesters.

Note: Some additional credits that do not apply to any degree or other certificate must be completed for each certificate program.

Required Courses

- PUBHLT 2018 - OVERVIEW OF LESBIAN, GAY, BISEXUAL AND TRANSGENDER HEALTH DISPARITIES
- BCHS 3503 - PREVENTION SCIENCE: TRANSLATING KNOWLEDGE TO PRACTICE
- PUBHLT 2020 - ADVANCED TOPICS IN LESBIAN, GAY, BISEXUAL, AND TRANSGENDER RESEARCH
- PUBHLT 2019 - PUBLIC HEALTH SPECIAL STUDIES **This may be substituted with departmental independent studies/ thesis/ dissertation credits if approved by advisor.

Certificate Electives

A minimum of seven credits in elective courses must be completed. For a list of approved electives see below. Other electives may be taken with the approval of one of the certificate directors.

- BCHS 2520 - THEORIES OF HEALTH BEHAVIOR AND HEALTH EDUCATION
- BCHS 2525 - INTRODUCTION TO APPLIED RESEARCH
- BCHS 2558 - HEALTH PROGRAM EVALUATION
- BCHS 3002 - HEALTH SURVEY METHODS
- BCHS 2598 - SOCIAL INEQUALITIES IN HEALTH
- EPIDEM 2160 - EPIDEMIOLOGY OF INFECTIOUS DISEASES
- EPIDEM 2400 - PSYCHOSOCIAL FACTORS IN DISEASE
- HPM 2010 - ORGANIZATION STUDIES: THEORY AND APPLICATIONS TO HEALTH CARE SYSTEMS
- HPM 2135 - HEALTH POLICY
- IDM 2032 - HUMAN DIVERSITY AND PUBLIC HEALTH
- IDM 2034 - CONTROL AND PREVENTION OF HIV/AIDS
- IDM 2161 - METHODS OF INFECTIOUS DISEASE EPIDEMIOLOGY

Doctoral

Behavioral and Community Health Sciences, DrPH

The Doctor of Public Health (DrPH) Program trains individuals for positions of senior responsibility and leadership in public health practice settings. Students develop skill in the seven core areas identified by the Association of Schools of Public Health for DrPH degree programs. This includes coursework and practical experience in the following areas: 1) theory and research methods that facilitate-critical analysis, 2) community orientation, 3) communication, 4) management, 5) leadership, 6) advocacy and 7) professionalism and ethics. These skills position students to assume leadership positions in public health agencies, health departments, nongovernmental organizations, foundations, and agencies in the human services sector.

The minimum-credit requirement for the DrPH Program is 72 credits of completed course work and independent research. Twenty-four credits may be awarded for a previously earned master's degree. Twelve (transfer or advance standing) credits may be allowed for graduate work taken after earning the master's degree. All students must complete a common core of courses in the following categories:

- Community/Cultural Orientation in Public Health (6 credits)
- Critical Analysis (24 credits)
- Communication (3 credits)
- Management (3 credits)
- Integration of Research and Public Health Practice (3-8 credits)
- Competency area elective
- A minimum of 1 dissertation credit must be earned.

An important element of the DrPH degree is the Executive Management Practicum, which requires that students work in a setting where they will have an opportunity to develop and refine skills in leadership, advocacy and ethics. While doing so, students will also have opportunities to apply content from coursework in the other competency areas: community/cultural orientation, critical analysis, communication and management. The DrPH Program is designed to be completed in 2 years full-time coursework in addition to 2 years for completion of dissertation research.

BCHS DrPH Requirements

Community/Cultural Orientation (6 credits)

- BCHS 2554 - INTRODUCTION TO COMMUNITY HEALTH
Advanced Methods in CBPR series
- BCHS 2608 - INTRODUCTION TO COMMUNITY BASED PARTICIPATORY RESEARCH
- BCHS 2609 - TRANSLATING RESEARCH FOR POLICY AND PRACTICE
- BCHS 2610 - CONCEPT MAPPING: A PARTICIPATORY RESEARCH METHOD

Critical Analysis (24 credits)

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS or
- PSYED 2018 - STATISTICS 1: DESCRIPTIVE AND INFERENCE STATISTICS
- BIOST 2042 - INTRODUCTION TO STATISTICAL METHODS 2 or
- PSYED 2019 - STATISTICS 2: ANALYSIS OF VARIANCE
- BIOST 2049 - APPLIED REGRESSION ANALYSIS or
- PSYED 2410 - APPLIED REGRESSION ANALYSIS
- BCHS 2525 - INTRODUCTION TO APPLIED RESEARCH
- BCHS 2558 - HEALTH PROGRAM EVALUATION
- BCHS 3003 - SEMINAR IN ADVANCED EVALUATION TECHNIQUES
- BCHS 3007 - ETHNOGRAPHIC AND QUALITATIVE METHODS
- BCHS 3555 - DOCTORAL SEMINAR IN BEHAVIORAL AND COMMUNITY HEALTH SCIENCES THEORIES AND MODELS

Communication (3 credits)

- BCHS 3504 - DOCTORAL SEMINAR ON HEALTH COMMUNICATIONS

Management (3 credits)

- HPM 2081 - PUBLIC HEALTH AGENCY MANAGEMENT

Integration of Public Health Research and Practice (3-8 credits)

- BCHS 3503 - PREVENTION SCIENCE: TRANSLATING KNOWLEDGE TO PRACTICE
- BCHS 3004 - INTEGRATIVE RESEARCH SEMINAR: GRANT WRITING
- BCHS 3006 - INTEGRATIVE RESEARCH SEMINAR: WRITING FOR PUBLICATION
- BCHS 3703 - EXECUTIVE MANAGEMENT PRACTICUM
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS

Competency Area Elective (choose one out of three courses below)

Leadership

- BCHS 2135 - LEADERSHIP or
- ADMPS 2128 - LEADERSHIP or
- PIA 2131 - LEADERSHIP

Advocacy

- HPM 2063 - THE POLITICS OF HEALTH POLICY

Professionalism and Ethics

- HPM 2131 - PUBLIC HEALTH LAW AND ETHICS

Electives

Milestones (0-4 credits)

- BCHS 3888 - PREPARATION FOR COMPREHENSIVE EXAMINATION
- FTDR 3999 - FULL-TIME DISSERTATION STUDY or
- BCHS 3010 - RESEARCH AND DISSERTATION PHD

Additional Requirements

Both DrPH and PhD students take a preliminary (qualifying) examination at the end of the first year of full-time course work and a comprehensive examination when the student has completed all of the required course work. Following successful completion of the dissertation overview, the student is admitted into candidacy and begins dissertation study under the direction of a dissertation committee. The dissertation and oral defense of the dissertation must be completed within five years of the comprehensive examination. See General Requirements for Doctoral Degrees for further information.

Behavioral and Community Health Sciences, PhD

The Doctor of Philosophy (PhD) Program prepares students to conduct research in the social and behavioral sciences areas of public health in a variety of settings as well as teach in academic settings. The PhD curriculum is formed by a social-ecological perspective regarding the determinants of health and opportunities for intervention. Within this overarching framework, the curriculum also emphasizes theory-driven research, addressing health issues across the developmental life span of populations, examining variation across socio-demographic categories such as gender, age, and sociocultural status as it affects health and health disparities. The curriculum addresses the following areas: individual behavior, population health, research design and methods, statistical analysis; behavioral interventions; and the integration of public health research and practice.

The minimum credit requirement for the PhD program is 72 credits of completed course work and independent research. Twenty-four credits may be awarded for a previously earned master's degree. Twelve (transfer or advance standing) credits may be allowed for graduate work taken after earning the master's degree. All students must complete a common core of courses in the following categories:

- Theories of behavior and community (6 credits)
- Research design and methods (11 credits)
- Elective theory and methods (3 credits)
- Statistical analysis (12 credits)
- Interventions (6 credits)
- Integration of public health research and practice (3-8 credits)
- Milestones (0-4 credits)

PhD students will typically earn 3 credits preparing for their comprehensive exam and a minimum of 1 dissertation credit must be earned. All PhD students must be enrolled as a full-time student at least 1 semester during their program. Registration for FTDR (i.e. Full-time Dissertation Research) after completion of 48 credits of coursework will fulfill this requirement. The program is designed to be completed in 2 years full-time coursework in addition to 2 years for completion of dissertation research.

BCHS PhD Requirements

Behavior & Community (6 credits)

- BCHS 3555 - DOCTORAL SEMINAR IN BEHAVIORAL AND COMMUNITY HEALTH SCIENCES THEORIES AND MODELS
- BCHS 2554 - INTRODUCTION TO COMMUNITY HEALTH

Research Design & Methods (11 credits)

- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- BCHS 2525 - INTRODUCTION TO APPLIED RESEARCH

- BCHS 3007 - ETHNOGRAPHIC AND QUALITATIVE METHODS
- BCHS 3030 - MEASUREMENT IN THE SOCIAL AND BEHAVIORAL SCIENCES

Elective: Theory & Methods Examples (Choose any 3 credit graduate course at Pitt)

- BCHS 3002 - HEALTH SURVEY METHODS
- BCHS 3003 - SEMINAR IN ADVANCED EVALUATION TECHNIQUES
- BCHS 3504 - DOCTORAL SEMINAR ON HEALTH COMMUNICATIONS

Advanced Methods in CBPR series

- BCHS 2608 - INTRODUCTION TO COMMUNITY BASED PARTICIPATORY RESEARCH
- BCHS 2609 - TRANSLATING RESEARCH FOR POLICY AND PRACTICE
- BCHS 2610 - CONCEPT MAPPING: A PARTICIPATORY RESEARCH METHOD
- BCHS 2991 - MULTILEVEL ANALYSIS IN PUBLIC HEALTH

TBD: Students may choose any graduate course at the University - 3 credits

Statistical Analysis (12 credits)

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS or
- PSYED 2018 - STATISTICS 1: DESCRIPTIVE AND INFERENTIAL STATISTICS

- BIOST 2042 - INTRODUCTION TO STATISTICAL METHODS 2 or
- PSYED 2019 - STATISTICS 2: ANALYSIS OF VARIANCE

- BIOST 2049 - APPLIED REGRESSION ANALYSIS or
- PSYED 2410 - APPLIED REGRESSION ANALYSIS

- BCHS 3707 - APPLIED MULTIPLE REGRESSION ANALYSIS AND CAUSAL MODELING FOR THE BEHAVIORAL AND COMMUNITY HEALTH SCI

Interventions (6 credits)

- BCHS 2558 - HEALTH PROGRAM EVALUATION
- BCHS 3503 - PREVENTION SCIENCE: TRANSLATING KNOWLEDGE TO PRACTICE

Integration of Public Health Research and Practice (3-8 credits)

- BCHS 3004 - INTEGRATIVE RESEARCH SEMINAR: GRANT WRITING

* Students enroll in two semesters of BCHS 3004.

- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH (required if no MPH)
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS

- FACDEV 2200 - PRACTICUM ON UNIVERSITY TEACHING or
- BCHS 2511 - INDEPENDENT STUDY
- 5 CIDDE Workshops
- Research Competency Requirement

Electives

Milestones (0-4 credits)

- BCHS 3888 - PREPARATION FOR COMPREHENSIVE EXAMINATION

- FTDR 3999 - FULL-TIME DISSERTATION STUDY or
- BCHS 3010 - RESEARCH AND DISSERTATION PHD

Additional Requirements

Both DrPH and PhD students take a preliminary (qualifying) examination at the end of the first year of full-time course work and a comprehensive examination when the student has completed all of the required course work. Following successful completion of the dissertation overview, the student is admitted into candidacy and begins dissertation study under the direction of a dissertation committee. The dissertation and oral defense of the dissertation must be completed within five years of the comprehensive examination. See General Requirements for Doctoral Degrees for further information.

Joint Degree

Behavioral and Community Health Sciences, MPH/MID; MPH/MPA; MPH/MPIA

The MPH/MID, MPH/MPA and MPH/MPIA joint degree programs prepare students for careers as public health practitioners in emerging economies where health issues are closely linked to social, political, and economic problems.

The MPH/MPA, MPH/MPIA and MPH/MID joint degree requirements are listed below. Students should refer to the Graduate School of Public and International Affairs page for the most current program checklists. The joint degree programs are designed to be completed in three years of full-time study.

- 78 credits, including coursework and one 300 contact hour field placement
- Foundational public health courses
- Advanced courses in health communications, program planning, and behavioral theories
- Advanced courses in public and international affairs; international development; or public administration
- Health-related field placement experiences
- Advanced thesis or essay research synthesizing public health core concepts with issues relevant to public and international affairs

GSPH Core Requirements

- BIOST 2011 - PRINCIPLES OF STATISTICAL REASONING or
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

BCHS MPH/MID; MPH/MPA; MPH/MPIA Core Requirements

- BCHS 2520 - THEORIES OF HEALTH BEHAVIOR AND HEALTH EDUCATION
- BCHS 2992 - SYSTEMS THEORIES AND APPROACHES
- BCHS 2990 - SOCIAL DYNAMICS IN PUBLIC HEALTH
- BCHS 2525 - INTRODUCTION TO APPLIED RESEARCH
- BCHS 2554 - INTRODUCTION TO COMMUNITY HEALTH
- BCHS 2503 - PRACTICUM

- BCHS 2521 - ESSAY

Required Electives

Pick a minimum of 6 credits.

- BCHS 2504 - OVERVIEW OF HEALTH COMMUNICATION
 - BCHS 2515 - WORKSITE HEALTH PROMOTION
 - BCHS 2523 - PUBLIC HEALTH PROGRAM PLANNING AND PROPOSAL WRITING
 - BCHS 2524 - OVERVIEW OF HEALTH EQUITY
 - BCHS 2526 - HEALTH EQUITY RESEARCH: METHODS AND INTERVENTIONS
 - BCHS 2558 - HEALTH PROGRAM EVALUATION
 - BCHS 2572 - RISK COMMUNICATION
 - BCHS 2608 - INTRODUCTION TO COMMUNITY BASED PARTICIPATORY RESEARCH
 - BCHS 2609 - TRANSLATING RESEARCH FOR POLICY AND PRACTICE
 - BCHS 2610 - CONCEPT MAPPING: A PARTICIPATORY RESEARCH METHOD
 - BCHS 2612 - PROJECT MANAGEMENT IN PUBLIC HEALTH
 - BCHS 2991 - MULTILEVEL ANALYSIS IN PUBLIC HEALTH
 - BCHS 3002 - HEALTH SURVEY METHODS
 - BCHS 3003 - SEMINAR IN ADVANCED EVALUATION TECHNIQUES
 - BCHS 3015 - COMMUNITY MAPPING AND INTRODUCTORY SPATIAL ANALYSIS
 - PIA 2730 - COMMUNITY DEVELOPMENT AND FOCUS GROUPS
- OR
- NUR 3055 - COMMUNITY DEVELOPMENT AND FOCUS GROUPS: PREPARATION, FACILITATION AND APPLICATION

Additional Electives

Students must reach the 45 credit minimum with remaining approved electives taken within any graduate school at the university.

Behavioral and Community Health Sciences, MPH/MSW

What is the MPH/MSW joint degree program?

The joint degree program is collaboration between the School of Social Work and the Graduate School of Public Health, Department of Behavioral and Community Health Sciences. Students graduate with both Master of Social Work and Master of Public Health degrees and are prepared to pursue a wide range of social work and public health careers to improve the health of a target population and/or community. Students participate in class work, field placements, and leadership seminars to acquire the knowledge and skills to address health problems.

What principles guide this program?

The program has a strong commitment to social justice, the elimination of health disparities, and a holistic definition of community and population health, including individuals' physical health conditions and the behavioral and social ecological determinants of health. Moreover, both social work and public health share a commitment to involving consumers/community members in the development of policies and in the planning, delivery and evaluation of health promotion interventions, health behavior change, and health education.

What are the advantages of the program?

- Students develop knowledge, values and skills for both professional social work practice and (e.g. direct practice or community organization/social administration) and community public health practice (e.g. primary, secondary, and tertiary prevention).
- Advising and mentoring focuses on supporting students to achieve their professional goals (e.g., selection of field placements, papers written as part of course-work, leadership training activities, focus of final thesis/essay in the MPH program).

- Students increase their career marketability as a result of being able to work from a cross disciplinary perspective. Students have gone on to jobs, for example, in various social service organizations, health departments, other government agencies, academic institutions, think tanks, and the Centers for Disease Control and Prevention.

What competencies will individuals gain as a result of the program?

- Application of theoretical principles to primary, secondary, and tertiary health interventions targeting the promotion of health behavior change, enhancement of the environment, and the elimination of risk factors in neighborhoods and communities that contribute to disease and poor health status outcomes
- Application of principles of community-based participatory research and practice to community health assessment
- Application of quantitative and qualitative skills to program planning and evaluation research
- Processes involved in community health planning, program implementation, and program evaluation
- Written communication to inform the public, policymakers, and other key-stakeholders
- Other leadership skills in micro practice with individuals, families, and groups or macro practice.

All graduates also achieve the core and cross-cutting competencies for Pitt Public Health MPH students.

What are the requirements of the program?

The BCHS MPH/MSW joint degree typically is completed with a three-year curriculum plan for Direct Practice or COSA (2.5 years for advanced standing students). The BCHS MPH/MSW in Social Work requirements are listed below. Students should refer to the School of Social Work for the most current program checklist.

- 33 Social Work credits (plus 18 field placement credits)
- 36 Public Health credits

Some highlights of the program are:

- 18 field placement credits representing two separate field placement experiences, foundation and concentration, coordinated by the School of Social Work, Office of Field Education.
- Leadership Seminars for students participating in the Juanita C. Evans Fellowship Program
- Final essay or thesis

What types of careers do graduates of the MSW/MPH joint degree program engage in?

- Patient Services Managers
- Research Scientist
- Policy Advocates
- Program Directors
- Communication Directors
- Adjunct and part-time faculty in MSW and BSW degree programs
- Bridging the gap between the public's health and social work practice
- Program Planners

Application Process

Students must apply separately to the School of Social Work and the Graduate School of Public Health (GSPH).

GSPH Core Requirements

- BIOST 2011 - PRINCIPLES OF STATISTICAL REASONING or
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EOH 1033 - ENVIRONMENTAL HEALTH AND DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

BCHS MPH/MSW Core Requirements

- BCHS 2520 - THEORIES OF HEALTH BEHAVIOR AND HEALTH EDUCATION
- BCHS 2992 - SYSTEMS THEORIES AND APPROACHES
- BCHS 2990 - SOCIAL DYNAMICS IN PUBLIC HEALTH

Please choose a second-level research course to satisfy the BCHS 2525 requirement.

- BCHS 2554 - INTRODUCTION TO COMMUNITY HEALTH
- BCHS 2503 - PRACTICUM or
- BCHS 2511 - INDEPENDENT STUDY and/or coursework depending on circumstances.
- BCHS 2521 - ESSAY

Behavioral and Community Health Sciences, MPH/PhD, Anthropology

This joint degree program with the Department Anthropology in the Dietrich School of Arts and Sciences prepares anthropologists for research, teaching, and program planning/evaluation for specialization in the cultural, social, and behavioral aspects of health and health care in either a domestic or international setting.

Competencies

Graduates will be able to:

- Demonstrate ability to apply principles of community-based participatory research and practice to community health assessment
- Develop quantitative and qualitative skills that can be applied to program planning and evaluation
- Communicate in writing information to the public, stakeholders and policymakers
- Apply theory to program planning and evaluation

All graduates also achieve the core and cross-cutting competencies for Pitt Public Health MPH students.

The MPH/PhD joint degree requirements are listed below. Students should refer to the Department of Anthropology for the most current program checklist.

- 87 credits, including coursework, research and fieldwork
- Foundational public health courses
- Courses in health communication, program planning, methods, community development and behavioral theories
- Advanced courses in anthropology
- Advanced dissertation research that includes at least one year of fieldwork in an area of specialization

MPH students enrolled in the MPH/PhD program in anthropology fulfill the course work requirements for both BCHS and anthropology and earn both degrees for a total of 87 credits. The MPH essay/thesis requirement is met by the PhD dissertation. The practicum requirement is met through fieldwork. The joint degree program is designed to be completed in four to five years including time for dissertation research.

GSPH Core Requirements

- BIOST 2011 - PRINCIPLES OF STATISTICAL REASONING or
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

BCHS MPH/PhD Anthropology Core Requirements

- BCHS 2520 - THEORIES OF HEALTH BEHAVIOR AND HEALTH EDUCATION
- BCHS 2992 - SYSTEMS THEORIES AND APPROACHES
- BCHS 2990 - SOCIAL DYNAMICS IN PUBLIC HEALTH
- BCHS 2525 - INTRODUCTION TO APPLIED RESEARCH
- BCHS 2554 - INTRODUCTION TO COMMUNITY HEALTH
- BCHS 2521 - ESSAY

Behavioral and Community Health Sciences, MPH/PhD, Social Work

This joint program with the University of Pittsburgh School of Social Work prepares students to fulfill leadership roles in public health systems or academic settings. Students in this program, have opportunities to work with local organizations on a variety of planning, evaluation, and research activities.

Competencies

Graduates will be able to:

- Demonstrate ability to apply principles of community-based participatory research and practice to community health assessment
- Develop quantitative and qualitative skills that can be applied to program planning and evaluation
- Demonstrate process of planning, implementing, and evaluating programs and policies
- Communicate in writing information to the public, to stakeholders and to policymakers
- Apply theory to program planning and evaluation

All graduates also achieve the core and cross-cutting competencies for Pitt Public Health MPH students.

The BCHS MPH/PhD in Social Work requirements are listed below. Students should refer to the School of Social Work for the most current program checklist. The joint degree program is designed to be completed in four to five years including time for dissertation research.

Requirements

- 72 credits, including coursework and research
- Foundational public health courses
- Advanced courses in health communications, program planning, and behavioral theories
- Advanced courses in research methods and statistics
- Advanced dissertation research in an area of specialization

GSPH Core Requirements

- BIOST 2011 - PRINCIPLES OF STATISTICAL REASONING or
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

BCHS MPH/PhD Social Work Core Requirements

- BCHS 2520 - THEORIES OF HEALTH BEHAVIOR AND HEALTH EDUCATION
- BCHS 2992 - SYSTEMS THEORIES AND APPROACHES
- BCHS 2990 - SOCIAL DYNAMICS IN PUBLIC HEALTH
- BCHS 2525 - INTRODUCTION TO APPLIED RESEARCH

- BCHS 2554 - INTRODUCTION TO COMMUNITY HEALTH
- BCHS 2503 - PRACTICUM or
- BCHS 2511 - INDEPENDENT STUDY
- BCHS 2521 - ESSAY

Master's

Behavioral and Community Health Sciences, MPH

The MPH Program is a 45-credit program requiring students to complete the Pitt Public Health core courses (18 credits), the departmental core courses (11-15 credits), required electives, and open electives.

Electives are selected from a range of approved courses that pertain to a student's area of concentration or interest. Students are required to complete a practicum in a public health setting and prepare an essay or thesis that addresses an issue of public health significance and that demonstrates the ability to synthesize information from numerous sources. The MPH program is designed to be completed in four semesters of full-time study. An option does exist for finishing in three semesters.

Please refer to the MPH Handbook found on our website.

GSPH Core Requirements

Required coursework for the BCHS MPH degree

- BIOST 2011 - PRINCIPLES OF STATISTICAL REASONING or
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS

BCHS MPH Core Requirements

- BCHS 2520 - THEORIES OF HEALTH BEHAVIOR AND HEALTH EDUCATION
- BCHS 2992 - SYSTEMS THEORIES AND APPROACHES
- BCHS 2990 - SOCIAL DYNAMICS IN PUBLIC HEALTH
- BCHS 2525 - INTRODUCTION TO APPLIED RESEARCH
- BCHS 2554 - INTRODUCTION TO COMMUNITY HEALTH
- BCHS 2503 - PRACTICUM
- BCHS 2521 - ESSAY

Required Electives

Pick a minimum of 6 credits.

- BCHS 2504 - OVERVIEW OF HEALTH COMMUNICATION
- BCHS 2515 - WORKSITE HEALTH PROMOTION
- BCHS 2523 - PUBLIC HEALTH PROGRAM PLANNING AND PROPOSAL WRITING

- BCHS 2524 - OVERVIEW OF HEALTH EQUITY
 - BCHS 2526 - HEALTH EQUITY RESEARCH: METHODS AND INTERVENTIONS
 - BCHS 2558 - HEALTH PROGRAM EVALUATION
 - BCHS 2572 - RISK COMMUNICATION
 - BCHS 2608 - INTRODUCTION TO COMMUNITY BASED PARTICIPATORY RESEARCH
 - BCHS 2609 - TRANSLATING RESEARCH FOR POLICY AND PRACTICE
 - BCHS 2610 - CONCEPT MAPPING: A PARTICIPATORY RESEARCH METHOD
 - BCHS 2612 - PROJECT MANAGEMENT IN PUBLIC HEALTH
 - BCHS 2991 - MULTILEVEL ANALYSIS IN PUBLIC HEALTH
 - BCHS 3002 - HEALTH SURVEY METHODS
 - BCHS 3003 - SEMINAR IN ADVANCED EVALUATION TECHNIQUES
 - BCHS 3015 - COMMUNITY MAPPING AND INTRODUCTORY SPATIAL ANALYSIS
 - PIA 2730 - COMMUNITY DEVELOPMENT AND FOCUS GROUPS
- OR
- NUR 3055 - COMMUNITY DEVELOPMENT AND FOCUS GROUPS: PREPARATION, FACILITATION AND APPLICATION

Additional Electives

Students must reach the 45 credit minimum with remaining approved electives taken within any graduate school at the university.

Department of Biostatistics

Biostatistics is an innovative field that involves the design, analysis, and interpretation of data for studies in public health and medicine. Biostatistics experts arrive at conclusions about disease and health risks by evaluating and applying mathematical and statistical formulas to the factors that impact health.

Students at Pitt Public Health benefit from collaboration with UPMC, Pennsylvania's largest academic medical center, and have access to extensive University computing facilities. Through rigorous courses, students gain a comprehensive understanding of statistical methods in the context of public health and medical problems; work with faculty on developing new and innovative methodologies and analytical techniques; and have the opportunity through both research and service to apply these methods to current and pressing concerns in biomedicine and public health.

Contact Information

General Inquiries

biostat@pitt.edu

PhD Program

Abdus S. Wahed, PhD
 Director, Biostatistics PhD Graduate Program
 7136 Parran Hall
 130 DeSoto Street
 Pittsburgh, PA 15261
 412-624-3053
 wahed@pitt.edu

MS & MPH Programs

Ada O. Youk, PhD
 Director, Biostatistics MS & MPH Graduate Programs
 7129 Parran Hall
 130 DeSoto Street
 Pittsburgh, PA 15261
 412-624-5451
 ayouk@pitt.edu

Faculty & Administration

GSPH Primary Faculty

Department Student Services Staff

Admissions

In addition to the school-wide admission requirements, admission to all Biostatistics degree programs requires two semesters of calculus, a course in biology, and a basic computing course. In some cases, course deficiencies can be satisfied the first term. The MPH degree also requires 6 credits in biology, 6 credits in social science and a professional degree and/or background in health.

Applying for Admission to Pitt Public Health

Early Admission

University of Pittsburgh undergraduates may apply for early admission to the Biostatistics MS Program. Students must have completed the number of undergraduate credits required by their school before they can become a Biostatistics MS student.

3+2 Accelerated Master's Program

3+2 Accelerated Master's Program Admission Requirements

Financial Aid

The Department of Biostatistics provides full financial aid for approximately 55 PhD students per year. The most common form of financial aid is as a graduate student researcher (GSR). A GSR is expected to work on one of the many funded research projects maintained by either the Department of Biostatistics or their collaborators in other departments. Currently the stipend is \$1975.00 per month and includes a tuition waiver and medical benefits. A limited number of Teaching Assistantships (TA) are also available. The current stipend for a TA is \$2238.00 per month and includes a tuition waiver. To be eligible for a TA position, a first year student must pass the oral English competency exam given by the University of Pittsburgh.

The department does not provide funding for MS or MPH students except in rare circumstances. Many MS/MPH students obtain jobs in the University or surrounding area performing data analysis and other statistical tasks. The department circulates job advertisements when available to all students.

Tuition and Billing

Tuition & Financial Aid

Advanced Standing and Credit Transfer

Acceptance of a maximum of 12 credits taken as a non-degree student at Pitt Public Health is at the discretion of the department and program.

Students enrolled at Pitt Public Health may take credits in another school or institution, providing that their department has approved application of those credits to the degree requirements. In all cases, any combination of advanced standing credits and credits taken from another school or institution during enrollment at Pitt Public Health may not exceed the limits established by the University or the Regulations Governing Graduate Study at the University of Pittsburgh.

Students with previous graduate experience in Biostatistics or a related field may apply to transfer credits for graduate-level coursework successfully completed with a grade of B or better. PhD Students may apply to transfer up to 24 credits, MS students 6 credits, and MPH students 12 credits. The course credits to be transferred must be reviewed by the student's academic advisor and approved by the

Department Chair and Assistant Dean for Student Affairs. Students who receive transfer credits for GSPH Core Courses must complete the GSPH Core Course Exemption Form in addition to the credit transfer paperwork to exempt out of those classes. Students who receive transfer credits for BIOST 2087 must complete the BIOST Course Exemption Form in addition to the credit transfer paperwork to exempt out of those classes. All transfer credit paperwork must be complete by the end of a student's first term.

Doctoral

Biostatistics, PhD

The PhD in Biostatistics degree program is for students with a background in mathematics and a strong interest in biology and public health. The program emphasizes statistical theory and methods so that students are prepared to be effective statistical collaborators in interdisciplinary studies; lead the design and execution of studies; and develop biostatistics methodology.

Program Objectives

Students successfully completing the PhD Program in Biostatistics will be able to:

- Quantitatively address a novel or complex health problem by developing an innovative statistical methodology or adapting existing methods to a new problem
- Demonstrate mastery of advanced statistical theory and applications
- Understand and implement innovative statistical approaches emerging in the literature to biomedical and public health issues
- Communicate the results of biostatistical analyses to individuals with varying degrees of statistical knowledge
- Recognize strengths and weaknesses of proposed approaches, including alternative designs, data sources, and analytic methods
- Determine the data best suited to address public health issues, program planning, and program evaluation
- Contribute to the body of knowledge in the field of biostatistics by submitting an article for publication in peer-reviewed journal, or preparing a book chapter or book for publication

General Requirements for Doctoral Degrees

For an overview of University-wide regulations for doctoral students, see Regulations Pertaining to Doctoral Degrees.

Requirements

Coursework

A minimum total of 72 credits are required.

PhD candidates normally complete graduation requirements in four to five years.

Core Courses

- BIOST 2025 - BIOSTATISTICS SEMINAR (3 terms required)
- BIOST 2039 - BIOSTATISTICAL METHODS
- BIOST 2043 - INTRODUCTION TO STATISTICAL THEORY 1
- BIOST 2044 - INTRODUCTION TO STATISTICAL THEORY 2
- BIOST 2049 - APPLIED REGRESSION ANALYSIS
- BIOST 2050 - LONGITUDINAL AND CLUSTERED DATA ANALYSIS
- BIOST 2051 - STATISTICAL ESTIMATION THEORY
- BIOST 2054 - SURVIVAL ANALYSIS

- BIOST 2061 - LIKELIHOOD THEORY AND APPLICATION
- BIOST 2083 - LINEAR MODELS
- BIOST 2086 - APPLIED MIXED MODELS ANALYSIS
- BIOST 2087 - BIOSTATISTICS CONSULTING PRACTICUM
- BIOST 2093 - SAS FOR DATA MANAGEMENT AND ANALYSIS
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY *
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH *
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS * (2 terms required)

Note:

*Pitt Public Health Core Courses

Electives

In situations where a student's special interests or needs indicate an alternative course is more appropriate it may be substituted with the permission of the student's academic advisor and department chair.

Department Electives

Students must complete six Biostatistics elective courses. Current electives are:

- BIOST 2016 - SAMPLING DESIGN AND ANALYSIS
- BIOST 2040 - ELEMENTS OF STOCHASTIC PROCESSES
- BIOST 2052 - MULTIVARIATE ANALYSIS
- BIOST 2055 - INTRODUCTORY HIGH-THROUGHPUT GENOMIC DATA ANALYSIS 1: DATA MINING AND APPLICATIONS
- BIOST 2056 - INTRODUCTION TO DIAGNOSTIC TEST EVALUATION AND ROC ANALYSIS
- BIOST 2058 - SCIENTIFIC COMMUNICATION SKILLS
- BIOST 2059 - CONSTRAINED STATISTICAL INFERENCE WITH APPLICATIONS
- BIOST 2062 - CLINICAL TRIALS: METHODS AND PRACTICE
- BIOST 2063 - BAYESIAN DATA SCIENCE
- BIOST 2065 - ANALYSIS OF INCOMPLETE DATA
- BIOST 2078 - STATISTICAL LEARNING IN HIGH-DIMENSIONAL DATA WITH OMICS APPLICATIONS
- BIOST 2079 - INTRODUCTORY STATISTICAL LEARNING FOR HEALTH SCIENCES
- BIOST 2094 - ADVANCED R COMPUTING
- BIOST 2096 - NUMERICAL METHODS BIOSTATISTICS

Outside Electives

Students must complete at least three credits outside of the Department of Biostatistics.

Dissertation Research Credits

Students must complete three credits of BIOST 3010 or one term of FTDR 3999. Please see guidelines for both courses below.

Independent Study (BIOST 2021/3010) Guidelines

It is recommended that students should give priority to completing core and elective coursework before registering for independent study (BIOST 2021/BIOST 3010). Specifically, no more than 3 credits of independent study (BIOST 2021/BIOST 3010) should be taken in terms when core and elective courses are offered that a student needs take to complete coursework requirements.

Before passing the dissertation overview and comprehensive examination, a doctoral student can register for BIOST 2021 for his/her independent PhD level research. After passing the dissertation overview and comprehensive examination, a student is permitted to take

BIOST 3010 which can fulfill the dissertation research credit requirement while providing credits toward the 72 credit requirement for the PhD degree.

In situations where a student's special interests or needs indicate more credits of independent study (BIOST 2021/BIOST 3010) appropriate approval must be obtained from the student's academic advisor and department chair.

FTDR 3999 Guidelines

Upon enrollment in 72 credits and successful completion of all required coursework, PhD students are required to register for Full-time Dissertation Study (FTDR 3999). FTDR 3999 carries no credits or letter grade, but provides students with fulltime status. Students enrolled in FTDR 3999 are assessed a special tuition fee.

Preliminary (Qualifying) Examination

The preliminary examination is designed to assess the breadth of the student's knowledge of the discipline, the student's achievement during the first year(s) of graduate study, and the potential to apply research methods independently. The preliminary examination is used to identify those students who may be expected to complete the doctoral program successfully and also to reveal areas for improvement in the student's preparation.

The Biostatistics PhD preliminary examination is typically offered annually in June. The examination consists of three separate components: applications, theory, and public health based on epidemiology. In order to pass the preliminary examination, students must receive passing scores for all three components of the examination. Eligible students are permitted to retake the portions of the examination they did not pass when the examination is offered again the following year. Students who do not pass the examination on the second attempt will be released from the PhD Program in accordance with the Pitt Public Health Probation and Dismissal Guidelines.

Once a student passes the preliminary examination, the student may begin working on his/her dissertation. Students should not begin dissertation work before they pass the preliminary examination.

Eligibility

A student is eligible to take the preliminary examination if the student:

- is enrolled in the Department of Biostatistics PhD Program with good standing (3.00 QPA or greater)
- did not fail the preliminary examination more than once; and
- completed the required courses (listed below) with a B or better, or equivalent coursework which the student has obtained transfer credits or exemption for

Required Coursework

Application

Part 1 of 2

- BIOST 2039 - BIOSTATISTICAL METHODS
- BIOST 2049 - APPLIED REGRESSION ANALYSIS
- BIOST 2050 - LONGITUDINAL AND CLUSTERED DATA ANALYSIS
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY

Theory

Part 2 of 2

- BIOST 2043 - INTRODUCTION TO STATISTICAL THEORY 1
- BIOST 2044 - INTRODUCTION TO STATISTICAL THEORY 2

- BIOST 2051 - STATISTICAL ESTIMATION THEORY
- BIOST 2061 - LIKELIHOOD THEORY AND APPLICATION
- BIOST 2083 - LINEAR MODELS

Doctoral Dissertation

Students must write a dissertation that presents the results of a research project carried out by the student. An appropriate research project involves a substantive piece of original and independent research grounded in an appropriate body of literature. The PhD dissertation should consist of material sufficient for at least two publications in peer-reviewed journals. At least one of the manuscripts, based on the dissertation and first authored by the student, must be submitted before the PhD dissertation defense. For PhD students matriculated prior to fall 2015, it is recommended that at least one of the manuscripts be submitted before the PhD dissertation defense. It is the responsibility of the student's dissertation committee to evaluate the dissertation in these terms and to recommend the awarding of the doctoral degree only if the dissertation is judged to demonstrate these qualities.

Before the student's dissertation overview and comprehensive examination, the student's dissertation advisor proposes for the approval of the Department Chair and Assistant Dean for Student Affairs, a doctoral dissertation committee.

Dissertation Overview & Comprehensive Examination

Doctoral students must prepare and present a dissertation proposal. The dissertation proposal consists of two parts: (i) a presentation of a dissertation overview to members of the student's doctoral committee and all interested members of the Department of Biostatistics and (ii) a comprehensive examination attended only by the student and his/her doctoral committee. The purposes of the overview and the comprehensive exam are for a student to demonstrate that he/she is prepared to complete a dissertation by showing a general breadth of biostatistical knowledge and deep understanding of particular area(s) of biostatistics, demonstrating the ability to use biostatistical research methods and presenting a carefully formulated plan of novel dissertation research. An announcement advertising the time and location of the dissertation overview should be disseminated to the Department at least one week prior to the presentation. The doctoral committee must unanimously approve the dissertation topic and research plan before the student is admitted to candidacy for the doctoral degree. Approval of the overview does not imply either the acceptance of a dissertation prepared in accord with the overview or the restriction of the dissertation to its original overview. The dissertation overview and comprehensive examination should be passed at least one academic term before scheduling the dissertation defense.

Admission to Candidacy

Admission to candidacy for a doctoral degree constitutes a promotion of the student to the most advanced stage of graduate study and provides formal approval to devote essentially exclusive attention to the research and the writing of the dissertation.

Eligibility

To qualify for admission to candidacy a student must:

- be in full graduate status
- have satisfied the requirement of preliminary examination
- have completed all required coursework with a minimum quality point average (QPA) of 3.00
- shown proficiency in a research or investigative tool
- have received approval of the proposed dissertation subject and plan following successful completion of the dissertation overview and comprehensive examination requirements

Students are informed of admission to candidacy by written notification from the Assistant Dean for Student Affairs.

Admission to candidacy should occur at least one academic term before the defense of the dissertation in order to provide an opportunity for the dissertation committee members to review, criticize, and monitor the proposed research.

Meetings of the dissertation committee and student must occur at least annually from the time the student gains admission to doctoral candidacy. During these meetings, the dissertation committee should assess the student's progress toward the completion of degree requirements and discuss objectives for the following year and a timetable for completing degree requirements.

Doctoral Dissertation Defense

The final oral examination in defense of the doctoral dissertation is conducted by the student's dissertation committee. One copy of the dissertation must be submitted to each member of the dissertation committee at least two weeks before the scheduled doctoral defense. The defense may not be scheduled earlier than two weeks following submission of the dissertation, but must be held at least two weeks before the degree is conferred.

At least one month before the scheduled defense, the student must provide the department registrar with the defense time, date, place, dissertation title and abstract for school-wide advertisement. The student must also provide these details to the University Times and Pitt Chronicle for advertisement at least one month before the scheduled defense.

The final copy of the dissertation must be prepared and submitted according to University Guidelines for Electronic Theses and Dissertations (ETD). Detailed dissertation rules can be found in the Pitt Public Health Handbook.

Graduation

All PhD students must register for at least one credit or FTDR 3999 during the term in which they intend to graduate.

Master's

Biostatistics, MS

The MS in biostatistics degree program is for students with a background in mathematics and a strong interest in biology and public health. The program emphasizes statistical theory and methods so that students are prepared to be effective statistical collaborators in interdisciplinary studies; and lead the design and execution of studies.

Program Objectives

Students successfully completing the MS Program in Biostatistics will be able to:

- Address health problems by appropriate problem definition, study design, data collection, data management, statistical analysis, and interpretation of results
- Demonstrate mastery of the theory underlying statistical methods
- Understand and implement innovative statistical approaches
- Communicate biostatistical analyses to individuals with varying degrees of statistical knowledge
- Apply research design principles to problems in public health
- Recognize strengths and weaknesses of approaches, including alternative designs, data sources, and analytic methods
- Determine the data best suited to address public health issues, program planning, and program evaluation

General Requirements for Master's Degrees

For an overview of University-wide regulations for master's students, see Regulations Pertaining to Master's Degrees.

Requirements

Coursework

A minimum of 40 credits are required.

Full-time students normally complete graduation requirements for the MS degree within three to five terms (18 to 24 months).

Core Courses

- BIOST 2025 - BIOSTATISTICS SEMINAR
- BIOST 2039 - BIOSTATISTICAL METHODS
- BIOST 2043 - INTRODUCTION TO STATISTICAL THEORY 1
- BIOST 2044 - INTRODUCTION TO STATISTICAL THEORY 2
- BIOST 2049 - APPLIED REGRESSION ANALYSIS
- BIOST 2050 - LONGITUDINAL AND CLUSTERED DATA ANALYSIS
- BIOST 2066 - APPLIED SURVIVAL ANALYSIS: METHODS AND PRACTICE
- BIOST 2081 - MATHEMATICAL METHODS FOR STATISTICS
- BIOST 2087 - BIOSTATISTICS CONSULTING PRACTICUM
- BIOST 2093 - SAS FOR DATA MANAGEMENT AND ANALYSIS
- BIOST 2099 - CAPSTONE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY *
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH *
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS * (2 terms required)

Note:

* Pitt Public Health Core Course

Electives

Students must complete Biostatistics elective credits to bring the total number of course credits to 40. In situations where a student's special interests or needs indicate an alternative, non-Biostatistics, course is more appropriate it may be substituted with the permission of the student's academic advisor and department chair.

Master's Comprehensive Examination

MS students must pass a written comprehensive examination that is given annually at the end of the first year of study in early May. The MS comprehensive examination consists of two short answer components: one for theory and one for applied methods. The examination is a proctored closed book exam.

Eligible students who fail the examination on the first attempt will be permitted to take the examination a second time during the summer. The summer examination is only for eligible first-year students who did not pass the examination on the first attempt in order not to delay graduation or decisions about continuation in the program. Eligible students who fail the examination on the first attempt may also choose to wait until the following May to retake the exam. Students who do not pass the examination on the second attempt will be released from the MS Program in accordance with the Pitt Public Health Probation and Dismissal Guidelines.

Once a student passes the preliminary examination, the student may begin working on his/her thesis. Students should not begin thesis work before they pass the comprehensive examination.

Eligibility

A student is eligible to take the comprehensive examination if the student:

- is enrolled in the Department of Biostatistics MS Program with good standing (3.00 QPA or greater)
- did not fail the comprehensive examination more than once
- completed the required courses (listed below) with a B or better, or equivalent coursework which the student has obtained transfer credits or exemption for

Required Coursework

- BIOST 2039 - BIOSTATISTICAL METHODS
- BIOST 2043 - INTRODUCTION TO STATISTICAL THEORY 1
- BIOST 2044 - INTRODUCTION TO STATISTICAL THEORY 2
- BIOST 2049 - APPLIED REGRESSION ANALYSIS
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY

Master's Thesis

MS students must register for Capstone (BIOST 2099) after successful completion of the MS Comprehensive Examination requirement. Capstone is a required two-credit course that meets the master's thesis requirement. Capstone credits cannot be used to fulfill elective credit requirements. MS students are required to write and defend a master's thesis. The master's thesis must be in accord with specifications stipulated in the Format Instructions for Pitt Public Health Essays, Thesis, and Dissertations (ETD). The thesis work, including analysis, writing, defending and presenting are done within the Capstone course.

Capstone is a heavily directed, mentored, fast-paced and intense data analysis/writing course with the goal of producing an ETD formatted thesis document containing rigorous analytic methods, appropriately summarized analysis results with logical, statistically and scientifically valid conclusions. Capstone projects may be based on student work with a faculty member, access to a dataset with a research question from an outside source, or work done on a student internship. In addition, if none of these options apply to an individual student, open access datasets from previously funded research projects in the department or open access databases will also be available for students to use. All projects must have a public health focus.

Because of the fast pace and rigor necessary to complete Capstone within one term, it is critical that students prepare in advance of the course. In the semester prior to taking the course but only after passing the MS Comprehensive exam, students must meet with one of the course directors to discuss possible data sets, potential research questions and Pitt faculty members who are not on the Biostatistics faculty core to serve as an external reviewer as required by Pitt Public Health.

In the first two weeks of Capstone, students will finalize their data set, complete a project prospectus and write thesis research question(s). Also during this time, the Capstone director requests the approval of the Department Chair and Assistant Dean for Student Affairs, a master's thesis committee for each student in the Capstone. This committee will be the instructors of the Capstone course, the thesis advisor (if one is selected) as well as a Pitt faculty member who is not on the Biostatistics faculty core. Students may select a Biostatistics faculty member other than the Capstone instructors as their thesis advisor. This is not required, but if a different thesis advisor is selected, this faculty member must sign a memo of understanding in which they agree to adhere to the pace of the course. It will be the students' responsibility to gain the faculty members signature.

The MS thesis committee will judge the adequacy of the MS thesis by the final oral presentation/examination covering the subject of the thesis which occurs in the final week of the Capstone course. Successful completion of the MS thesis requires unanimous agreement by the MS thesis committee.

It is required that all students follow the format instructions for Pitt Public Health essays, theses, and dissertations and work in the ETD template when they start to write their thesis. The final copy of the thesis must be prepared and submitted according to University Guidelines for Electronic Theses and Dissertations (ETD).

Graduation

All MS students must register for at least one credit during the term in which they intend to graduate.

Department of Environmental and Occupational Health

The mission of the Department of Environmental and Occupational Health (EOH) is to study and elucidate the health effects of exposure to chemical, physical, and biological agents encountered in the workplace or general environment. Intrinsic to this research mission is that fundamental information regarding actions of environmental toxicants will provide insight into basic human biology in health and disease. Accordingly, current research includes fundamental studies on free radical biology and especially oxidative lipidomics and mitochondrial function, genetic basis of susceptibility to injurious agents including gene x environment approaches, cellular and molecular regulation of reparative response to injury including mesenchymal stem cells as modifying biological therapeutic agents, cardiopulmonary toxicology of heavy metals and particulate matter including nanoparticles, molecular carcinogenesis including metabolism of telomeres and DNA damage and repair, genetic and epigenetic contributions to neurodegenerative disease with focus on cholesterol dyshomeostasis and

integrated studies in complex disorders such as environmental induced interstitial pulmonary fibrosis. In addition, a focus on exposure science and environmental epidemiology supports efforts into the health effects of air pollution and public health concerns associated with energy procurement including unconventional natural gas development. Translation of these collective efforts in basic and applied research is in part provided by members of EOH active in environmental policy, risk assessment, and community behavioral sciences. These efforts coincide and are coordinated with mentoring and educational programs for pre-doctoral (PhD, MS) and (DrPH, MPH) students.

Contact Information

Departmental Chair
Bruce R. Pitt, PhD
Bridgeside Point Suite 350
100 Technology Drive
412-624-8300
Fax: 412-383-7658
www.eoh.pitt.edu

For information on admission or registration, contact Penny Weiss at 412-383-7297 or email pweiss@pitt.edu.

Admissions

Course work in mathematics and the physical, chemical, and biological sciences must be documented in the undergraduate transcript. Acceptable undergraduate training includes a bachelor's degree in the physical, chemical, or biological sciences with a minimum of two courses each in organic chemistry, biology, physics, and calculus.

Applicants for admission must also take the Graduate Record Examination (GRE). The MPH and DrPH programs also accept MLATS and DATS. If the candidate already has a graduate or professional degree a waiver may be approved by the department. Consistent with Pitt Public Health requirements, students are ordinarily required to have at least a 3.00 (on a 4.00 scale) overall undergraduate GPA, and a 3.00 GPA in the basic science courses (chemistry, physics, biology, mathematics).

Financial Assistance

Financial support is available for tuition and stipend for PhD students through a graduate research assistance program from the University of Pittsburgh Graduate School of Public Health. Stipends are made available from the Department of Environmental and Occupational Health, and from individual research laboratories. Although DrPH and master's students in the environmental health and/or environmental health risk assessment programs are eligible for support, in general it is expected that tuition and stipends for these students will be derived from external sources.

Graduate Degree Programs

PhD and MS Programs

The PhD in Environmental Health Sciences is designed to provide a broad theoretical and practical education for individuals who desire positions in academic, industrial or government laboratories as teachers and/or researchers in the multifaceted discipline of Environmental Health Science with an emphasis on environmental impact on human disease and disease susceptibility. The Environmental Health Sciences program is an integrated modern curriculum combining training in the toxicological and environmental biophysics disciplines that are traditional to the Department of Environmental and Occupational Health with the new and continually developing fields of cellular and molecular pathobiology of environmental disease and gene environment interactions. The program provides an understanding of how relevant environmental exposures, laboratory based model systems, and gene-environment responses can be interpreted and applied to the study of disease etiology in exposed and potentially exposed human populations. Master of Science degree in Environmental Health Sciences may be pursued and obtained along the way or independently.

EOH PhD and MS Handbook

MPH and DrPH Programs

The Master of Public Health in Environmental and Occupational Health is a key component of Public Health. Local environmental health professionals are the "front line troops" in the public health battle to prevent disease. The Department of Environmental and Occupational Health offers an MPH degree program to provide professional education for individuals who desire positions in environmental health or who already have environmental health positions and are seeking to strengthen their professional competency. The Doctor of Public Health in Environmental and Occupational Health provides further advanced professional education for those individuals who desire leadership positions in public health practice, policy analysis, professional communication, program management, high-level administration, and/or decision-making in an environmental health setting.

EOH MPH and DrPH Handbook

Certificate Programs

The certificate in **Environmental Health Risk Assessment** is offered for interested students and for professionals currently employed in environmental health positions. The risk assessment certificate program provides concentrated coursework relevant to human health risk evaluation and is an efficient means for achieving proficiency in this area of environmental health.

Certificate

Environmental Health Risk Assessment Certificate

This program provides concentrated coursework relevant to human health risk evaluation.

General Requirements

Students must have a graduate degree or be pursuing one concurrently. Students must complete 15 credits: 11 credits of required courses (EOH 2122, EOH 2175, EOH 2181, and EOH 2504) plus 4 elective credits.

Required Core

- EOH 2175 - PRINCIPLES OF TOXICOLOGY
- EOH 2181 - RISK ASSESSMENT PRACTICUM
- EOH 2504 - PRINCIPLES OF ENVIRONMENTAL EXPOSURE
- EOH 2122 - TRANSPORT AND FATE OF ENVIRONMENTAL AGENTS

Suggested Electives

Electives 4 credits

- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- EOH 2180 - INTRODUCTION TO RISK SCIENCES
- EOH 2309 - ENVIRONMENTAL HEALTH CHEMISTRY

Doctoral

Environmental and Occupational Health, DrPH

Program Requirements -72 credits

DrPH students must complete the MPH curriculum to satisfy the preliminary qualifying requirements for the program. Students spend the remainder of the program completing their research projects for a total of 72 credits. During the research project, students will meet with their dissertation committee to present an overview of their planned dissertation and be orally examined in areas broadly relevant to their chosen specialty. Preparation and submission of the written manuscript followed by its oral presentation to the dissertation committee completes the program.

EOH Required Course Work

- EOH 2021 - SPECIAL STUDIES 2 Credits Essay
- EOH 2108 - ENVIRONMENTAL AND OCCUPATIONAL HEALTH PRACTICUM
- EOH 2122 - TRANSPORT AND FATE OF ENVIRONMENTAL AGENTS
- EOH 2175 - PRINCIPLES OF TOXICOLOGY
- EOH 2180 - INTRODUCTION TO RISK SCIENCES
- EOH 2181 - RISK ASSESSMENT PRACTICUM
- EOH 2309 - ENVIRONMENTAL HEALTH CHEMISTRY
- EOH 2504 - PRINCIPLES OF ENVIRONMENTAL EXPOSURE

GSPH Core Requirements

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- BIOST 2042 - INTRODUCTION TO STATISTICAL METHODS 2
- BCHS 2509 - SOCIAL AND BEHAVIORAL SCIENCES AND PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH

Environmental and Occupational Health, PhD

The PhD in environmental and occupational health provides a broad theoretical and practical education for individuals who desire positions in academic, industrial, or government laboratories in the multifaceted discipline of environmental health sciences. The program combines training in classical toxicological and environmental biophysics with the new and continually developing fields of cellular and molecular pathobiology of environmental disease. Training is geared toward an understanding of how relevant environmental exposures, laboratory based model systems, and gene-environment responses can be interpreted and applied to the study of disease etiology in exposed and potentially exposed human populations.

Program Requirements

PhD students must complete coursework and research for a total of 72 credits. Attendance and participation in departmental seminars and journal clubs is required. During the first two years of study, students will take the majority of their coursework and have an opportunity to rotate in three different research laboratories. After the first year, students are expected to engage in independent research projects oriented towards their thesis research. Preliminary qualifying examinations for the PhD degree occur in the second year after all core courses have been taken. Students spend the remainder of the graduate program completing the research project and taking selected elective courses. Dissertation preparation and defense complete the PhD requirements. *See General Requirements for Doctoral Degrees and Regulations Pertaining to Doctoral Degrees for more information*

EOH PhD Core Requirements

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- BIOST 2049 - APPLIED REGRESSION ANALYSIS
- EOH 3210 - PATHOPHYSIOLOGY OF ENVIRONMENTAL DISEASE
- EOH 2310 - MOLECULAR FUNDAMENTALS
- EOH 2175 - PRINCIPLES OF TOXICOLOGY
- EOH 2109 - MOLECULAR TOXICOLOGY JOURNAL CLUB minimum 4 semesters
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- EOH 2110 - ROTATION/PRACTICUM at least 2 semesters
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS 2 Semesters
- EOH 2021 - SPECIAL STUDIES
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH
- EOH 2504 - PRINCIPLES OF ENVIRONMENTAL EXPOSURE OR
- EOH 2122 - TRANSPORT AND FATE OF ENVIRONMENTAL AGENTS

Electives

Students must take 12 credits in electives from University wide graduate level courses

Master's

Environmental and Occupational Health, MPH

The MPH program provides an opportunity for students interested in environmental and occupational health to become familiar with the relevant concepts as they apply to public health practice. The program will also be an opportunity for working health professionals to achieve an in-depth environmental perspective as well as a degree in public health. The degree may be tailored more toward either environmental health science or risk assessment depending on the choice of electives and desire of the student.

Program Requirements -47 credits

MPH students must complete the prescribed coursework. In addition, they must complete an independent study under the supervision of a faculty member and register for a practicum experience. Students will take the school-wide core courses as part of the required credits to complete their degree. MPH students are also required to write an essay that is submitted to an examination committee for approval. The curriculum consists of 47 credits and the degree normally takes two years.

GSPH Core Requirements

Required coursework for EOH MPH degree

- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS
- BCHS 2509 - SOCIAL AND BEHAVIORAL SCIENCES AND PUBLIC HEALTH
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- BIOST 2049 - APPLIED REGRESSION ANALYSIS
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

EOH Core Requirements

- EOH 2180 - INTRODUCTION TO RISK SCIENCES
- EOH 2181 - RISK ASSESSMENT PRACTICUM
- EOH 2175 - PRINCIPLES OF TOXICOLOGY
- EOH 2504 - PRINCIPLES OF ENVIRONMENTAL EXPOSURE
- EOH 2122 - TRANSPORT AND FATE OF ENVIRONMENTAL AGENTS
- EOH 2309 - ENVIRONMENTAL HEALTH CHEMISTRY
- EOH 2108 - ENVIRONMENTAL AND OCCUPATIONAL HEALTH PRACTICUM
- EOH 2021 - SPECIAL STUDIES 2 Credit Essay

Electives - Total 6 Credits

Students are required to take 6 credits of electives (school wide graduate level). Detailed below are some of the suggested electives students can take.

- EOH 2310 - MOLECULAR FUNDAMENTALS
- EOH 2122 - TRANSPORT AND FATE OF ENVIRONMENTAL AGENTS
- EOH 2513 - POLICY AND DECISION MAKING FOR PUBLIC HEALTH EMERGENCIES AND BIOTERRORISM
- CEE 2501 - ENVIRONMENTAL ENGINEERING CHEMISTRY
- BCHS 2572 - RISK COMMUNICATION
- EPIDEM 2220 - APPLIED SPATIAL/COMMUNITY EPIDEMIOLOGY
- GEOL 2449 - GIS, GPS, AND COMPUTER METHODS

Environmental and Occupational Health, MS

The emphasis of the MS in environmental and occupational health is directed towards the theoretical underpinnings of environmental health sciences and toxicology with more limited involvement in laboratory-based research. The program is designed as an integrated modern curriculum combining the training in the toxicological and environmental biophysics disciplines that are traditional to the Department of Environmental and Occupational Health with the new and continually developing fields of cellular and molecular pathobiology of environmental disease and gene environment interactions. The program provides an understanding of how relevant environmental exposures, laboratory based model systems, and gene-environment responses can be interpreted and applied to the study of disease etiology in exposed and potentially exposed human populations. The MS degree may be awarded as a terminal degree to students who do not enter the PhD program.

Program Requirements

MS students will follow the same coursework as the PhD students. They will, however, finish their program with 42 credits and a thesis. The degree takes approximately two years to complete. Students are also subject to a comprehensive exam. PhD students who do not progress to admission to candidacy may obtain a Master of Science with the completion of the MS requirements including a thesis.

MS Core Course Requirements

- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS 2 Semesters
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- BIOST 2049 - APPLIED REGRESSION ANALYSIS
- EOH 2175 - PRINCIPLES OF TOXICOLOGY
- EOH 2109 - MOLECULAR TOXICOLOGY JOURNAL CLUB Minimum 4 Semesters
- EOH 3210 - PATHOPHYSIOLOGY OF ENVIRONMENTAL DISEASE
- EOH 2310 - MOLECULAR FUNDAMENTALS
- EOH 2110 - ROTATION/PRACTICUM At Least 2 Semesters
- EOH 2021 - SPECIAL STUDIES
- EOH 2504 - PRINCIPLES OF ENVIRONMENTAL EXPOSURE OR

- EOH 2122 - TRANSPORT AND FATE OF ENVIRONMENTAL AGENTS

Department of Epidemiology

Epidemiology is the application of the scientific method to the study of disease in populations for the purpose of prevention or control. It is a key basic science of public health and preventive medicine. Epidemiologists play a fundamental role in public health and preventive medicine by identifying variabilities in human situations that may have a critical influence on the occurrence of disease within populations.

The epidemiological method for studying a problem involves three approaches:

- Description of the frequency and determinants of a disease in a defined population;
- Evaluation of factors that may cause a disease; and
- Experimental studies of the effects of modifying risk factors on the subsequent frequency of a disease.

Contact Information

Chair:

Anne B. Newman, MD, MPH
 Katherine M. Detre Endowed Chair of Population Health Sciences
 Professor of Epidemiology, Medicine, and Clinical and Translational Sciences
 Director, Center for Aging and Population Health
 University of Pittsburgh
 Graduate School of Public Health
 5126 Parran Hall
 130 DeSoto Street
 Pittsburgh, PA 15261
 Phone: (412) 624-3056
 Fax: 412-624-3737
 E-mail: newmana@edc.pitt.edu
www.epidemiology.pitt.edu

Executive Vice Chair:

Jane A. Cauley, DrPH
 Distinguished Professor of Epidemiology
 University of Pittsburgh
 Graduate School of Public Health
 A510 Crabtree Hall
 130 DeSoto Street
 Pittsburgh, PA 15261
 Phone: (412) 624-0218
 Fax: (412) 624-7397
 E-mail: jcauley@edc.pitt.edu
www.epidemiology.pitt.edu

For information on admission and registration, please contact the Epidemiology Student Services Manager and Program Administrator, Lori S. Smith, at smithl@pitt.edu.

Vice Chair for Education

Maria Brooks, PhD

mbrooks@pitt.edu

Director, Doctoral Program

Thomas Songer, PhD

tis@pitt.edu

Director, Master's Program

Nancy W. Glynn, PhD

epidnwg@pitt.edu

Director, MD/PhD Program

Caterina Rosano, MD, MPH

rosanoc@edc.pitt.edu

Admissions

Applying for Admission to Pitt Public Health

The department accepts students with a variety of prior health-related professional degree backgrounds, prior graduate degrees, and superior students who have completed a bachelor's degree. Students may matriculate for the MPH, MS, DrPH, or PhD degree. A joint MD/PhD program is also available. Major areas of emphasis within the department are aging, psychiatric, cancer, injury prevention, applied public health cardiovascular and diabetes, clinical trials and methods, infectious disease, molecular and genetic epidemiology, environmental epidemiology, global health, prevention lifestyle and physical activity, neuroepidemiology, obesity and nutritional epidemiology, reproductive, perinatal, and pediatric epidemiology, and women's health.

Financial Assistance

Graduate Student Researcher (GSR) Appointment Information for doctoral program applicants and students only: Graduate Student Researcher Position

Financial Assistance: Tuition & Financial Aid

Minority Student Support Information: <http://www.healthequity.pitt.edu/funding-opportunities>

Research

In fiscal year 2017-2018, the faculty within the Department of Epidemiology received approximately \$22.5 million in research funds. These projects, mostly federally funded, included activity in the major areas of focus within the department. For additional information, review details about our research practices and our numerous Areas of Research Emphasis .

Degree Requirements: Master's and Doctoral Curricula

The student's course of study includes Graduate School of Public Health core courses, department core courses, electives drawn from our frequently used courses, and other appropriate selections throughout the University. The sequencing of courses is developed in conjunction with the major advisor, taking into account background, area of focus, degree program, and Pitt Public Health requirements. The minimum credit requirement is 30 for the master's programs for health professionals and 72 for the doctoral programs. A 45-credit MPH or MS is available for students who are not health professionals. This is a 16-month or 20-month program; MPH students will be involved in a hands-on internship. Master's students must complete a (MS) thesis or essay (MPH) and doctoral students (PhD or DrPH) must complete a dissertation and one-semester Teaching Practicum experience. DrPH students must also fulfill a practicum requirement.

The following are the required departmental courses for students pursuing degrees in the Department of Epidemiology.

Doctoral

Epidemiology, DrPH

Pitt Public Health Requirements

- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS

- BCHS 2509 - SOCIAL AND BEHAVIORAL SCIENCES AND PUBLIC HEALTH
- EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS
- Academic Integrity Training
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

Department of Epidemiology Requirements

- EPIDEM 2160 - EPIDEMIOLOGY OF INFECTIOUS DISEASES
 - EPIDEM 2170 - CHRONIC DISEASE EPIDEMIOLOGY
 - EPIDEM 2180 - EPIDEMIOLOGICAL METHODS 1
 - EPIDEM 2181 - DESIGN AND CONDUCT OF CLINICAL TRIALS
 - EPIDEM 2183 - READING, ANALYZING AND INTERPRETING PUBLIC HEALTH MEDICAL LITERATURE
 - EPIDEM 2187 - EPIDEMIOLOGICAL METHODS 2 OR
 - BIOST 2066 - APPLIED SURVIVAL ANALYSIS: METHODS AND PRACTICE or
 - BIOST 2050 - LONGITUDINAL AND CLUSTERED DATA ANALYSIS
 - EPIDEM 2214 - PUBLIC HEALTH INTERNSHIP
 - EPIDEM 2215 - TEACHING PRACTICUM
 - EPIDEM 2230 - ADVANCED TOPICS IN EPIDEMIOLOGICAL METHODS
 - EPIDEM 2250 - SEMINAR IN EPIDEMIOLOGY
 - EPIDEM 2260 - EPIDEMIOLOGICAL BASIS DISEASE CONTROL
 - EPIDEM 2921 - GRANT WRITING
 - EPIDEM 3100 - RESEARCH AND DISSERTATION PHD OR
 - FTDR 3999 - FULL-TIME DISSERTATION STUDY
 - PUBHLT 2030 - RESEARCH ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH
 - BIOST 2093 - SAS FOR DATA MANAGEMENT AND ANALYSIS
- OR
- EPIDEM 2185 - INTRODUCTION TO SAS
 - BIOST 2049 - APPLIED REGRESSION ANALYSIS
 - HPM 2131 - PUBLIC HEALTH LAW AND ETHICS
 - BCHS 2558 - HEALTH PROGRAM EVALUATION
 - Internal Review Board (IRB) Training
 - Presentation Training - Complete at least two posters or oral presentations. Advisor sign-off is required.
 - Leadership Training - Complete at least 6 credits of electives in leadership, advocacy, communication, or management.
 - Possibilities include: PIA 2192, PIA 2028, PIA 2509, PUBHLT 2025, BCHS 2504, BCHS 2572, BCHS 3504, BCHS 2135, HPM 2063 HPM 2081, HPM 2133

Electives

Add electives as recommended by academic advisors to earn total credits required for the program. All Pitt Public Health course descriptions may be found on the Department of Epidemiology course offerings.

Epidemiology, PhD

Pitt Public Health Requirements

- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS

- Academic Integrity Training

Department of Epidemiology Requirements

- EPIDEM 2004 - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN OR
- EOH 3210 - PATHOPHYSIOLOGY OF ENVIRONMENTAL DISEASE
- EPIDEM 2160 - EPIDEMIOLOGY OF INFECTIOUS DISEASES
- EPIDEM 2170 - CHRONIC DISEASE EPIDEMIOLOGY
- EPIDEM 2180 - EPIDEMIOLOGICAL METHODS 1
- EPIDEM 2181 - DESIGN AND CONDUCT OF CLINICAL TRIALS
- EPIDEM 2183 - READING, ANALYZING AND INTERPRETING PUBLIC HEALTH MEDICAL LITERATURE
- EPIDEM 2187 - EPIDEMIOLOGICAL METHODS 2
- EPIDEM 2215 - TEACHING PRACTICUM
- EPIDEM 2230 - ADVANCED TOPICS IN EPIDEMIOLOGICAL METHODS
- EPIDEM 2250 - SEMINAR IN EPIDEMIOLOGY
- EPIDEM 2260 - EPIDEMIOLOGICAL BASIS DISEASE CONTROL
- EPIDEM 2600 - INTRODUCTION TO MOLECULAR EPIDEMIOLOGY
- EPIDEM 3100 - RESEARCH AND DISSERTATION PHD OR
- FTDR 3999 - FULL-TIME DISSERTATION STUDY
- EPIDEM 2921 - GRANT WRITING
- PUBHLT 2030 - RESEARCH ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH
- EPIDEM 2185 - INTRODUCTION TO SAS

OR

- BIOST 2093 - SAS FOR DATA MANAGEMENT AND ANALYSIS
- BIOST 2050 - LONGITUDINAL AND CLUSTERED DATA ANALYSIS
- BIOST 2066 - APPLIED SURVIVAL ANALYSIS: METHODS AND PRACTICE

Two advanced quantitative courses are required. The following can be substituted for BIOST 2066 and/or 2050:

- BIOST 2016, 2062, 2086
- BCHS 3002, 3015
- PSYED 3408, 3416, or 3417
- PSYED 3410, BIOST 2098, and BIOST 3023 also meet this requirement but are no longer offered.
- Other courses may qualify at advisor's discretion.
- BIOST 2049 - APPLIED REGRESSION ANALYSIS

Electives

Add electives as recommended by academic advisors to earn total credits required for the program. All Pitt Public Health course descriptions may be found on the Department of Epidemiology course offerings.

Master's

Epidemiology, MPH

Pitt Public Health Requirements

- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- BCHS 2509 - SOCIAL AND BEHAVIORAL SCIENCES AND PUBLIC HEALTH
- EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS

- Academic Integrity Training
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

Department of Epidemiology Requirements

On July 24, 2019 BIOST 2042 was noted to be removed from the requirements. On August 13, 2019 the course was removed.

- EPIDEM 2160 - EPIDEMIOLOGY OF INFECTIOUS DISEASES
- EPIDEM 2170 - CHRONIC DISEASE EPIDEMIOLOGY
- EPIDEM 2180 - EPIDEMIOLOGICAL METHODS 1
- EPIDEM 2181 - DESIGN AND CONDUCT OF CLINICAL TRIALS
- EPIDEM 2210 - SPECIAL STUDIES - ESSAY
- EPIDEM 2214 - PUBLIC HEALTH INTERNSHIP
- EPIDEM 2250 - SEMINAR IN EPIDEMIOLOGY
- Internal Review Board (IRB) Training
- Presentation Training - Complete at least one poster or oral presentation. Advisor sign-off is required.
- BIOST 2049 - APPLIED REGRESSION ANALYSIS

Electives

Add electives as recommended by academic advisors to earn total credits required for the program. All Pitt Public Health course descriptions may be found on the Department of Epidemiology course offerings.

Epidemiology, MS (30 Credit)

Pitt Public Health Requirements

- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS
- Academic Integrity Training

Department of Epidemiology Requirements

- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EPIDEM 2160 - EPIDEMIOLOGY OF INFECTIOUS DISEASES OR
- EPIDEM 2170 - CHRONIC DISEASE EPIDEMIOLOGY OR
- EPIDEM 2260 - EPIDEMIOLOGICAL BASIS DISEASE CONTROL
- EPIDEM 2180 - EPIDEMIOLOGICAL METHODS 1
- EPIDEM 2181 - DESIGN AND CONDUCT OF CLINICAL TRIALS
- EPIDEM 2210 - SPECIAL STUDIES - ESSAY
- EPIDEM 2250 - SEMINAR IN EPIDEMIOLOGY
- EPIDEM 2185 - INTRODUCTION TO SAS OR
- BIOST 2093 - SAS FOR DATA MANAGEMENT AND ANALYSIS
- BIOST 2049 - APPLIED REGRESSION ANALYSIS

Electives

Add electives as recommended by academic advisors to earn total credits required for the program. All Pitt Public Health course descriptions may be found on the Department of Epidemiology course offerings.

Epidemiology, MS (45 Credit)

Pitt Public Health Requirements

- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS
- Academic Integrity Training

Department of Epidemiology Requirements

- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
 - BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
 - EPIDEM 2160 - EPIDEMIOLOGY OF INFECTIOUS DISEASES
 - EPIDEM 2170 - CHRONIC DISEASE EPIDEMIOLOGY
 - EPIDEM 2180 - EPIDEMIOLOGICAL METHODS 1
 - EPIDEM 2181 - DESIGN AND CONDUCT OF CLINICAL TRIALS
 - EPIDEM 2210 - SPECIAL STUDIES - ESSAY
 - EPIDEM 2250 - SEMINAR IN EPIDEMIOLOGY
 - EPIDEM 2187 - EPIDEMIOLOGICAL METHODS 2 OR
 - BIOST 2066 - APPLIED SURVIVAL ANALYSIS: METHODS AND PRACTICE OR
 - BIOST 2050 - LONGITUDINAL AND CLUSTERED DATA ANALYSIS
 - BIOST 2049 - APPLIED REGRESSION ANALYSIS
 - PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
 - BIOST 2093 - SAS FOR DATA MANAGEMENT AND ANALYSIS
- OR
- EPIDEM 2185 - INTRODUCTION TO SAS
 - Internal Review Board (IRB) Training
 - Presentation Training - Complete at least one poster or oral presentation. Advisor sign-off req.

Electives

Add electives as recommended by academic advisors to earn total credits required for the program. All Pitt Public Health course descriptions may be found on the Department of Epidemiology course offerings.

Department of Health Policy and Management

The Department of Health Policy and Management prepares individuals to assume roles of leadership, policy development, and management within the health care system and public health. Its educational programs are grounded in the faculty's contributions in advancing the state of knowledge and professional practice in institutional and system health care management and the development, advocacy, analysis, and implementation of health policy. The HPM Faculty are engaged in interdisciplinary research addressing a range of problems relevant to public policy, organization, and management as applied to health care organizations and systems and in various professional and community service activities.

Contact Information

In order to obtain further information or to inquire about making application, admission, or registration about the Department of Health Policy and Management and its programs, please contact:

MHA and MHA/MBA

Kevin Broom, PhD
Associate Professor
Vice Chair for Education
Director, MHA and MHA/MBA Programs
Department of Health Policy & Management
Graduate School of Public Health
University of Pittsburgh
A626 Public Health, 130 DeSoto Street
Pittsburgh, PA 15261
412-624-0898
E-mail: kevinbroom@pitt.edu

MPH

Elizabeth Van Nostrand, JD
Assistant Professor
Director, JD/MPH Program
Department of Health Policy & Management
Adjunct Professor, School of Law
Graduate School of Public Health
University of Pittsburgh
A733 Public Health, 130 DeSoto Street
Pittsburgh, PA 15261
412-383-2231
E-mail: evannostrand@pitt.edu

JD/MPH

Elizabeth Van Nostrand, JD
Assistant Professor
Director, JD/MPH Program
Department of Health Policy & Management
Adjunct Professor, School of Law
Graduate School of Public Health
University of Pittsburgh
A733 Public Health, 130 DeSoto Street
Pittsburgh, PA 15261
412-383-2231
E-mail: evannostrand@pitt.edu

MS and PhD

Julie Donohue, PhD
Co-Director MS & PhD Programs
Professor, Department of Health Policy and Management
Graduate School of Public Health
University of Pittsburgh
A635 Public Health, 130 DeSoto Street
Pittsburgh, PA 15213

412-624-4562
E-mail: jdonohue@pitt.edu

Lindsay Sabik, PhD
Co-Director MS & PhD Programs
Associate Professor, Department of Health Policy and Management
Graduate School of Public Health
University of Pittsburgh
A613 Public Health, 130 DeSoto Street
Pittsburgh, PA 15213
412-624-0273
E-mail: lsabik@pitt.edu

Student Services

All Programs

Jessica Dornin, MSL
Recruitment and Academic Affairs Administrator
Department of Health Policy & Management
Graduate School of Public Health
University of Pittsburgh
A631 Public Health, 130 DeSoto Street
Pittsburgh, PA 15261
412-624-3625
E-mail: jld115@pitt.edu

The leadership of the Department of Health Policy and Management includes Mark S. Roberts, MD, MP, Chair, and Tina Micale, Departmental Administrator.

Graduate Degree Programs

The Department of Health Policy and Management offers the following graduate degree programs: Master of Health Administration (MHA), Master of Public Health (MPH), Master of Health Administration and Master of Business Administration (MHA/MBA), Juris Doctor/Master of Public Health (JD/MPH), Master of Science in Health Services Research and Policy (MS), a PhD in Health Services Research and Policy, a Graduate Certificate in Health Care Systems Engineering, and a Graduate Certificate in Health Systems Leadership and Management.

The MHA program offers a graduate education relevant to both the aspiring and already practicing health care management/policy professional; a curriculum that anchors the program in its public health tradition while also providing the students with necessary tools, technologies, and knowledge in organizational and system management and policy analysis. Career and professional development activities are provided through the professional practice component of the curriculum which includes a Management Residency, the Executive in Residence program, professional mentorship, and participation in the HPMA Student Chapter and other networking and professional development opportunities.

The MPH Program in the Department of Health Policy and Management in the Graduate School of Public Health at the University of Pittsburgh provides advanced education for recent graduates, entry-level, and mid-career professionals to facilitate their career development as leaders and managers, health professionals, policy analysts, and advocates for various roles and contexts in public health and health care.

The MHA/MBA joint degree program offered by the Department of Health Policy and Management and the Katz Graduate School of Business provides an outstanding professional development opportunity for high-achieving applicants. This program prepares graduates to assume fast-track middle management and executive leadership positions in health care organizations. This rigorous program combines the expertise of the Katz faculty in finance, marketing, business operations and strategic planning with that of the HPM faculty in health care

structures and policy, outcomes measures, data analytics and patient safety and quality management. This three-year, 78-credit program includes a required management residency in the form of two separate field placements during the summer terms or one extended residency experience.

The department also offers a joint degree program with the School of Law, the JD/MPH program in law and health policy. This joint degree program was developed in recognition of the important area of intersection between the practice of law, health policy and health care delivery in the United States. Graduates of this program are provided the academic foundation for professional roles in public policy analysis and development, the practice of law for private clients with specialization in health law, and as inhouse counsel for health care organizations and systems and regulatory agencies. Applicants must be admitted to both the Graduate School of Public Health and the School of Law.

The Master of Science in Health Services Research and Policy program prepares graduates for positions in health services research and policy, analytics and also prepares them for higher level education (such as a PhD). Graduates will be prepared to conduct research on policy issues affecting the organization, financing, and delivery of health care and public health services

The PhD in Health Services Research and Policy provides advanced educational and professional development opportunities for individuals entering a career in health services research and policy. The program meets an ongoing need for public health researchers who focus on cost, access, and quality of the health care system. Graduates will be prepared to conduct research on policy issues affecting the organization, financing, and delivery of health care and public health services. The goals of the program are to provide graduates with contemporary training in research design and methods appropriate for studying the health care system, experience in developing an NIH style grant proposal, and experience writing for publication, presenting results at a scientific meeting, and teaching. Students identify an area of focus that informs the substance and provides the theoretical framework for their research. Upon completing the program, graduates will be prepared for positions in academia, government or the private sector as experts in health services research and policy.

The Graduate Certificate in Health Care Systems Engineering is offered jointly by the Graduate School of Public Health and the Swanson School of Engineering. This certificate is designed for students in the Department of Health Policy & Management (Pitt Public Health) and the Department of Industrial Engineering (Swanson) and provides students with specific experiences and analytical tools required for effective problem solving relative to quality improvement and process engineering in the health care industry. Students are equipped to serve as leaders in addressing the challenges health care faces in the twenty-first century. Health care management students will learn engineering principles, models, and tools following a systems approach to analysis, problem solving, and project implementation, while engineering students gain knowledge of health care operations, the organizational culture, and the strategic issues facing the industry. With a focus on innovation, effectiveness, and efficiency in health care and public health, the certificate nurtures well-educated professionals and leaders in their disciplines. Contact Jessica Dornin for more information.

The Graduate Certificate in Health Systems Leadership and Management provides rigorous training for healthcare clinicians and providers looking to enhance their careers and improve healthcare delivery through strengthened leadership and management skills. The certificate is primarily designed for physicians, but is open to all healthcare clinicians and providers. The curriculum of 15-16 total credits consists of coursework in the following areas: Leadership Theory and Practice, Strategic Management, Financial Management, Health Policy, Quality and Patient Safety, and an applied project. Contact Jessica Dornin for more information.

Admission Requirements

Masters Degree Programs: The Graduate School of Public Health requires that students apply online for all degree programs. Requirements for admission include a bachelor's degree from an accredited college or university; acceptable scores on the Graduate Record Examination (GRE) for the MS, MHA and MPH and acceptable scores on the GRE and/or LSAT for the JD/MPH; and successful completion of: three postsecondary (college/university)-level semester credits in biology; three post-secondary (college or university) level semester credits in mathematics (algebra or higher); and 6 post-secondary (college/university) level semester credits in social and behavioral sciences, preferably including one course in economics.

In addition, the Admissions Committee cites the following as important factors in the admissions decision: undergraduate performance, GRE scores, letters of recommendation, relevant work (or volunteer) experience, and good interpersonal and communication skills. Most applicants are interviewed as part of the application review process. Students enroll in August of each year. Although a rolling admissions process is in place, applicants are encouraged to apply as soon as possible and prior to the end of May. International University of Pittsburgh students should apply by February 1.

Doctoral Degree Program: Applicants to the PhD Program in Health Services Research and Policy must hold a baccalaureate degree with a GPA of at least 3.3 desirable; college level coursework in calculus with a grade of 3.0 or better is a prerequisite; applicants must submit scores on the verbal, quantitative and critical thinking and analytical writing portion of the Graduate Record Examination (GRE)-a

quantitative score of 720 or higher, verbal score of 560 or higher, and analytical writing of 5.0 or higher are desirable. Applicants for whom English is not their first language must submit scores from the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS) exam. Students must score a minimum of 213 on the computerized TOEFL (or 550 on the paper-based version). The minimum score for the IELTS is 65.

In addition, applicants must demonstrate in their personal statement that they have a clear understanding of how the program of study will benefit them in achieving their career goals. Three letters of recommendation are required from individuals who are in a position to judge the applicant's professional and or academic abilities. At least one recommendation should be from an individual who can comment on the applicant's academic qualifications (e.g., former instructor or advisor).

Certificate Program in Health Care Systems Engineering: Applicants to this program must be admitted to or enrolled in the MHA program, the HPM-MPH program, or the MS program in industrial engineering.

Certificate Program in Health Systems Leadership and Management: All Certificate applicants, except those already enrolled in GSPH, need to apply through SOPHAS. In addition, the Certificate applicant will submit a brief statement addressing: interest in health systems leadership and management; previous experience; areas of interest; and the relation of the Certificate to career goals.

The admission requirements for applicants are based on completion of at least an advanced health care provider degree (e.g. MD, RN, PharmD, PT, OT) or appropriate job experience.

Financial Assistance

The Department of Health Policy and Management has limited scholarship funds and these funds are allocated separate from admission decisions. The scholarship funds are mainly awarded to incoming high caliber students on an annual basis. Graduate student assistantship and research positions are periodically available on a competitive basis.

Department Web site: www.hpm.pitt.edu

Certificate

Health Care Systems Engineering Certificate

Offered jointly by the University of Pittsburgh Swanson School of Engineering and Pitt Public Health, this program provides students with specific competencies and analytical tools required for effective problem solving relevant to quality improvement and process engineering in the health care industry. Students are equipped to serve as quality champions and agents of change in addressing the challenges health care faces in the twenty-first century. Engineering students gain knowledge of health care operations, the organizational culture, and the strategic issues facing the industry. Health care management students will learn engineering principles, models, and tools within a systems approach to analysis, problem-solving, and project implementation.

This certificate is intended for individuals pursuing careers in the management, redesign, and improvement of the health care industry. Designed for master's students in the Department of Health Policy and Management and the Department of Industrial Engineering, this program provides a rigorous and multidisciplinary education as a complement to the core curriculum of both programs. With a focus on innovation, effectiveness, and efficiency in health care and public health, the certificate nurtures well-educated professionals and leaders in their disciplines.

Students in this certificate program will be able to:

- Demonstrate knowledge of the structures, performance, quality, policy and environmental context of health and health care to formulated solutions for health policy problems,
- Design and implement projects, including collecting, analyzing, interpreting data and offering sound evidence-based recommendations, and
- Summarize and present health care engineering-related research orally and in writing.

Required Courses

- BIOST 2011 - PRINCIPLES OF STATISTICAL REASONING
- or
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- HPM 2105 - INTRODUCTION TO THE US HEALTHCARE DELIVERY SYSTEM 1
- HPM 2106 - HEALTH SYSTEMS LEADERSHIP AND PROFESSIONAL DEVELOPMENT 2
- HPM 2207 - QUALITY ASSESSMENT AND PATIENT SAFETY
- HPM 2050 - HEALTH SYSTEMS ENGINEERING SEMINAR
- HPM 2017 - QUANTITATIVE METHODS: DECISION TECHNOLOGIES AND OPERATIONS MANAGEMENT IN HEALTH CARE
- HPM 2220 - COST EFFECTIVENESS ANALYSIS HEALTH CARE
- IE 2000 - FUNDAMNTLS OF INDUSTRIAL ENGR
- IE 2001 - OPERATIONS RESEARCH
- IE 2102 - LEAN SIX SIGMA I (GREEN BELT)
- IE 2108 - HEALTH SYSTEMS ENGINEERING: QUANTITATIVE ANALYTICS
- IE 2998 - GRADUATE PROJECTS/PRACTICUM

Health Systems Leadership and Management Certificate

General Requirements

This graduate certificate provides rigorous training for health care clinicians and providers looking to enhance their careers and improve health care delivery through strengthened leadership and management skills. The certificate was initially designed for physicians in the School of Medicine, but is open to all health care clinicians and providers.

The admission requirements for applicants are based on completion of at least an advanced health care provider degree (e.g. MD, RN, PharmD, PT, OT), job experience, and career plans.

The curriculum requires 15-16 total credits and consists of coursework in leadership theory and practice; strategic management; financial management; health policy; quality and patient safety; and one applied project.

Required Courses

- HPM 2012 - FINANCIAL MANAGEMENT FOUNDATIONS HEALTH CARE AND PUBLIC HEALTH
- or
- HPM 2014 - APPLICATIONS AND ISSUES IN FINANCIAL MANAGEMENT OF HEALTH CARE INSTITUTIONS
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- or
- HPM 2064 - HEALTH POLICY ANALYSIS
- HPM 2017 - QUANTITATIVE METHODS: DECISION TECHNOLOGIES AND OPERATIONS MANAGEMENT IN HEALTH CARE
- or
- HPM 2207 - QUALITY ASSESSMENT AND PATIENT SAFETY
- HPM 2150 - STRATEGIC MANAGEMENT OF HEALTH SERVICE ORGANIZATIONS
- HPM 2700 - SEMINAR IN HEALTH SYSTEMS LEADERSHIP
- HPM 2275 - HPM SPECIAL STUDIES

*Applied Project

Doctoral

Health Services Research and Policy, PhD

Required Public Health Core Courses

- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS

Required HPM Core Courses

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- BIOST 2049 - APPLIED REGRESSION ANALYSIS
- BIOST 2050 - LONGITUDINAL AND CLUSTERED DATA ANALYSIS
- HPM 2216 - HEALTH INSURANCE: FINANCING HEALTH CARE
- HPM 2905 - QUASI-EXPERIMENTAL DESIGN FOR HEALTH SERVICES RESEARCH
- HPM 3000 - DOCTORAL RESEARCH AND PROFESSIONAL DEVELOPMENT SEMINAR PART 1
- HPM 3010 - SEMINAR ON ORGANIZATIONAL STUDIES: HEALTHCARE ORGANIZATIONS AND ENVIRONMENTS
- HPM 3064 - HEALTH POLICY ANALYSIS
- HPM 3065 - ADVANCED HEALTH POLICY ANALYSIS: IMPLEMENTATION, EVALUATION, AND TRANSLATION
- HPM 3125 - INTERMEDIATE HEALTH ECONOMICS
- HPM 3501 - SEMINAR IN HEALTH SERVICES RESEARCH METHODS 1
- HPM 3502 - SEMINAR IN HEALTH SERVICES RESEARCH METHODS 2
- HPM 3505 - ADVANCED EMPIRICAL MICROECONOMICS METHODS WITH APPLICATIONS FOR HEALTHCARE RESEARCH

Other Requirements

*HPM 3064: Health Policy Analysis is the prerequisite to HPM 3065 and must be taken during the spring term of the first year. In addition to required courses, students must have a minimum of 72 credits to graduate. Full Time Dissertation Study; Current Topics - Must attend all semesters and register for at least 2 Semesters; Teaching (1 credit) - Must serve as teaching assistant at least one semester; Area of Focus (Minimum 12, including electives)

Note:

- (a) Students without previous experience in health care are expected to take HPM 2105: Health and Medical Care Organization
- (b) Students must register for 3 dissertation credits or one semester of Full Time Dissertation Research (FTDR).

Requirements for the Ph.D. Degree:

(Note: This is not a complete list of requirements.)

For an overview of University-wide regulations for doctoral students, see Regulations Pertaining to Doctoral Degrees. All Pitt Public Health doctoral students must:

- Complete specific courses as determined by the program or the school, including at least 3 credits of 3100 (dissertation) or one term of FTDR (full-time dissertation research).
 - Fulfill the University's residency requirement.
 - Satisfactorily complete the preliminary/qualifying examination, the comprehensive examination, the dissertation overview, the dissertation defense, and the annual Individual Development Plan.
 - Meet the requirement for proficiency in tools of research.
 - Register for two terms of Public Health Grand Rounds.
 - Complete the online Academic Integrity Modules in the first semester.
- Individual programs will provide specific information on fulfillment of these requirements.

The Health Services Research and Policy (HSRP) PhD program meets an ongoing need for public health researchers who focus on cost, access and quality of the health care system. Graduates will be prepared to conduct research on policy issues affecting the organization, financing, and delivery of health care and public health services.

The PhD requires a minimum of 72 credits. Students will work with their academic advisors to develop an area of focus with at least 12 credits (included in the 72 credit total) that focuses on a discipline or area of interest. The area of focus is the opportunity for students to gain specialized skills and knowledge relevant to their chosen research area. The courses for the area of focus can be based in a traditional discipline, an established field, or can be thematically linked based on the students' interests and goals. For example, students may choose from a traditional discipline such as economics, psychology, sociology or bioethics. Others may choose to focus on a technical area such as quantitative or qualitative research methods or survey design, or a substantive area such as quality and patient safety, gerontology, pharmacoeconomics, substance abuse, or mental health. Students must successfully pass a preliminary exam given after the first year, a comprehensive exam given after the second year, and typically present their dissertation overview towards the end of the third year. The doctoral dissertation will take the form of three thematically linked manuscripts of publishable quality.

PhD Curriculum

Joint Degree

Health Policy and Management, JD/MPH

Program Requirements

MPH students must complete the prescribed coursework. In addition, they must complete a capstone intellectual product (master's essay) under the guidance of a faculty committee and register for a practicum experience. Students will take the school-wide core courses as part of the required credits to complete their degree.

Pitt Public Health requires the completion of 45 credits to receive a Master of Public Health (MPH) degree, including 40 hours of required courses and 5 elective credits. However, joint degree participants may cross-count up to 8 hours of law school credits towards their MPH.

The School of Law requires 88 credits for the Juris Doctor. Of these, 12 credits may be cross-counted from Pitt Public Health. Overall a total of 113 credit hours is required for completing the joint degree program, which is 20 credits fewer than completing all of the coursework independently.

Pitt Public Health Core Requirements

- BCHS 2509 - SOCIAL AND BEHAVIORAL SCIENCES AND PUBLIC HEALTH
- BIOST 2011 - PRINCIPLES OF STATISTICAL REASONING
- *Students must take either BIOST 2011 or BIOST 2041
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS

*Must register for two terms

- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

HPM Core Requirements

- HPM 1012 - FINANCIAL MANAGEMENT FOUNDATIONS HEALTH CARE AND PUBLIC HEALTH
- HPM 2020 - PROFESSIONAL DEVELOPMENT SEMINAR 1
- HPM 2025 - HPM PRACTICUM
- HPM 2028 - MICROECONOMICS APPLIED TO HEALTH
- HPM 2049 - HUMAN RESOURCES MANAGEMENT FOR HEALTH CARE AND PUBLIC HEALTH PROFESSIONALS
- HPM 2063 - THE POLITICS OF HEALTH POLICY

- HPM 2064 - HEALTH POLICY ANALYSIS
- HPM 2081 - PUBLIC HEALTH AGENCY MANAGEMENT
- HPM 2133 - LAW IN PUBLIC HEALTH PRACTICE
- LAW 5089 - PUBLIC HEALTH LAW

Requirements for the JD/MPH Degree:

For the JD/MPH degree, students enrolled in the joint-degree program receive integrated training in law and public health over a three-and-one-half-year period. Students must apply to and be accepted by the School of Law and then can apply to the Graduate School of Public Health. Once admitted, the student completes the first year of law school before registering for courses in public health. During subsequent semesters students are encouraged to integrate coursework between the schools to best accommodate the students learning objectives. If obtained separately, the combined credit-hour requirements for the JD and MPH degrees is 133 credits (88 for the JD, and 45 for the MPH). Students enrolled in this joint-degree program, however, are able to apply a number of courses toward fulfillment of both degrees simultaneously thereby reducing the total required credits to 113.

JD/MPH Curriculum

Health Policy and Management, MHA/MBA

Required Public Health Core Courses

- BACC 2401 - FINANCIAL ACCOUNTING
- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM
- HPM 2020 - PROFESSIONAL DEVELOPMENT SEMINAR 1
- HPM 2105 - INTRODUCTION TO THE US HEALTHCARE DELIVERY SYSTEM 1
- HPM 2108 - LEADERSHIP, PROFESSIONALISM AND CAREER DEVELOPMENT
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS
- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BMIS 2409 - INFORMATION SYSTEMS
- HPM 2106 - HEALTH SYSTEMS LEADERSHIP AND PROFESSIONAL DEVELOPMENT 2
- HPM 2141 - MANAGERIAL EPIDEMIOLOGY
- HPM 2216 - HEALTH INSURANCE: FINANCING HEALTH CARE
- HPM 2115 - HEALTH POLICY AND MANAGEMENT RESIDENCY
- BMKT 2409 - MARKETING MANAGEMENT
- BOAH 2421 - HUMN RESORC COMPETITIVE ADVNTG
- BOAH 2517 - INTERPERSONAL SKILLS MANAGERS 1
- BSPP 2409 - STRATEGIC MANAGEMENT
- HPM 2012 - FINANCIAL MANAGEMENT FOUNDATIONS HEALTH CARE AND PUBLIC HEALTH
- HPM 2028 - MICROECONOMICS APPLIED TO HEALTH
- HPM 2130 - HEALTH LAW AND ETHICS
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BQOM 2421 - DECISION TECHN IN MFG & OPER MGT
- HPM 2014 - APPLICATIONS AND ISSUES IN FINANCIAL MANAGEMENT OF HEALTH CARE INSTITUTIONS
- HPM 2037 - ESSAY-HA
- HPM 2220 - COST EFFECTIVENESS ANALYSIS HEALTH CARE
- BIND 2444 - MANAGEMENT SIMULATION CAPSTONE
- HPM 2017 - QUANTITATIVE METHODS: DECISION TECHNOLOGIES AND OPERATIONS MANAGEMENT IN HEALTH CARE
- HPM 2145 - MARKETING HEALTH SERVICES STRATEGY AND BUSINESS PLANS
- HPM 2207 - QUALITY ASSESSMENT AND PATIENT SAFETY
- HPM 2150 - STRATEGIC MANAGEMENT OF HEALTH SERVICE ORGANIZATIONS

General Requirements for Master's Degrees

(Note: This is not a complete list of requirements)

All master's degree-seeking students must:

- Complete the school-wide core courses required for their program, and complete and submit the thesis or essay
- Fulfill the program's core course requirements, including required courses, and any field work, and examinations
- Register for two terms of Public Health Grand Rounds
- Complete the online Academic Integrity Module in the first semester
- Submit a master's thesis or essay

Thesis or Essay

All master's students must complete a minimum of one essay/special study credit and meet the master's thesis/essay requirement. Program listings will specify the type of master's paper required. The form of the essay or thesis must be in accord with specifications stipulated in the University's Style and Form Manual or the ETD Format Guidelines Manual. The electronic copy of the thesis/essay must be uploaded and all required paperwork submitted to Joanne Pegher by the deadline posted for that graduation term.

MPH students who have been permitted to submit an article accepted for publication in lieu of the essay must meet the margin requirements and submit a committee signature sheet and title page patterned after that in the Style and Form Manual or the ETD Format Guidelines Manual. If there are multiple authors, a statement should be included explaining the role of each author. All essays must be read and approved by two faculty representing two different University of Pittsburgh Pitt Public Health departments. MS theses require approval by three readers.

Requirements for the MHA/MBA Degree:

An outstanding opportunity to become highly skilled in the management of health care processes, quality, and finances, the MHA/MBA joint degree program is designed to create future leaders in the management of health care organizations. Uniting the strengths of the University of Pittsburgh's Graduate School of Public Health and Joseph M. Katz Graduate School of Business, the program blends outstanding training in management and finance with the content expertise in health care quality improvement, outcomes measurement, and analytics.

Our highly trained graduates will be fully prepared to assume fast-track leadership positions in a variety of health care organizations. The Bureau of Labor Statistics estimates that the demand for health care managers will grow by 17 percent in the next decade. The U.S. health care system is the largest industry in the United States, currently consuming nearly 18 percent of GDP. At the same time, there remain significant problems with access and quality. The joint training in business and health care management should provide a strong foundation for a variety of positions in health care finance, insurance, operations, disease and population health management.

The standard full-time curriculum is a three-year, 78-credit course of study leading to the joint degree. The competency-based curriculum emphasizes both professional and leadership development, as well as functional management skills, blending courses across both the Katz School (MBA) and Pitt Public Health's Department of Health Policy and Management (MHA) in six academic terms.

Students are required to complete a management residency in the first summer term that may be extended into the second summer term. These supervised placements in health care services or health-related practice sites are an invaluable experience for professional development and networking. The student must also complete a master's essay and an applied management project at the residency site.

MHA/MBA Curriculum

Admissions

Students must complete applications for, and be accepted into, both the Graduate School of Public Health and the Joseph M. Katz Graduate School of Business. Application to Pitt Public Health must be submitted through SOPHAS at www.sophas.org. Application to the Katz Graduate School of Business should be made at www.business.pitt.edu/katz/apply.

Master's

Health Policy and Management, MHA

Required Public Health Core Courses

- BIOST 2011 - PRINCIPLES OF STATISTICAL REASONING
- HPM 2010 - ORGANIZATION STUDIES: THEORY AND APPLICATIONS TO HEALTH CARE SYSTEMS
- HPM 2012 - FINANCIAL MANAGEMENT FOUNDATIONS HEALTH CARE AND PUBLIC HEALTH
- HPM 2014 - APPLICATIONS AND ISSUES IN FINANCIAL MANAGEMENT OF HEALTH CARE INSTITUTIONS
- HPM 2017 - QUANTITATIVE METHODS: DECISION TECHNOLOGIES AND OPERATIONS MANAGEMENT IN HEALTH CARE
- HPM 2020 - PROFESSIONAL DEVELOPMENT SEMINAR 1
- HPM 2028 - MICROECONOMICS APPLIED TO HEALTH
- HPM 2029 - HEALTH MANAGEMENT INFORMATION SYSTEMS
- HPM 2037 - ESSAY-HA
- HPM 2049 - HUMAN RESOURCES MANAGEMENT FOR HEALTH CARE AND PUBLIC HEALTH PROFESSIONALS
- HPM 2105 - INTRODUCTION TO THE US HEALTHCARE DELIVERY SYSTEM 1
- HPM 2106 - HEALTH SYSTEMS LEADERSHIP AND PROFESSIONAL DEVELOPMENT 2
- HPM 2108 - LEADERSHIP, PROFESSIONALISM AND CAREER DEVELOPMENT
- HPM 2115 - HEALTH POLICY AND MANAGEMENT RESIDENCY
- HPM 2130 - HEALTH LAW AND ETHICS
- HPM 2141 - MANAGERIAL EPIDEMIOLOGY
- HPM 2145 - MARKETING HEALTH SERVICES STRATEGY AND BUSINESS PLANS
- HPM 2150 - STRATEGIC MANAGEMENT OF HEALTH SERVICE ORGANIZATIONS
- HPM 2207 - QUALITY ASSESSMENT AND PATIENT SAFETY
- HPM 2216 - HEALTH INSURANCE: FINANCING HEALTH CARE
- HPM 2220 - COST EFFECTIVENESS ANALYSIS HEALTH CARE
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS

*Must register for two terms

General Requirements for Master's Degrees

(Note: This is not a complete list of requirements)

All master's degree-seeking students must:

- Complete the school-wide core courses required for their program, and complete and submit the thesis or essay
- Fulfill the program's core course requirements, including required courses, and any field work, and examinations
- Register for two terms of Public Health Grand Rounds
- Complete the online Academic Integrity Module in the first semester
- Submit a master's thesis or essay

Thesis or Essay

All master's students must complete a minimum of one essay/special study credit and meet the master's thesis/essay requirement. Program listings will specify the type of master's paper required. The form of the essay or thesis must be in accord with specifications stipulated in

the University's Style and Form Manual or the ETD Format Guidelines Manual. The electronic copy of the thesis/essay must be uploaded and all required paperwork submitted to Joanne Pegher by the deadline posted for that graduation term.

MHA students who have been permitted to submit an article accepted for publication in lieu of the essay must meet the margin requirements and submit a committee signature sheet and title page patterned after that in the Style and Form Manual or the ETD Format Guidelines Manual. If there are multiple authors, a statement should be included explaining the role of each author. All essays must be read and approved by two faculty representing two different University of Pittsburgh Pitt Public Health departments. MS theses require approval by three readers.

Requirements for the MHA Degree:

The MHA program offers students a competency-based curriculum and an array of professional development resources and activities to prepare graduates for managerial roles in health care systems and networks, managed care, health insurance, and long-term care organizations. The broad curriculum provides students with a foundation of knowledge, analytical and communication skills, and core values for ongoing career growth and professional and leadership development. Upon completion of the MHA program, our graduates obtain post-graduate fellowships or full-time employment in hospitals, academic medical centers, physician practices, long-term care facilities, health plans, and consulting firms.

The mission of the Masters in Health Administration (MHA) Program is to provide students with the competencies necessary for early to mid-level management positions and provide the foundation for subsequent professional development, leadership and executive management in organizations involved in the delivery or financing of health care services. The program's curriculum is based on evidence-based practice enriched by the research activity of the faculty.

In order to be eligible for graduation, students must complete 60 credit hours with a B average or better including a supervised management residency, which is typically scheduled during the summer term, and prepare a scholarly master's essay relating to the culminating experience. The curriculum includes select Pitt Public Health core courses, the required health management core, and elective credits offered within and outside the schools of the health sciences.

MHA Curriculum

Health Policy and Management, MPH

Program Requirements

MPH students must complete the prescribed coursework. In addition, they must complete a capstone intellectual product (master's essay) under the guidance of a faculty committee and register for a practicum experience. Students will take the school-wide core courses as part of the required credits to complete their degree. The curriculum consists of 45 credits typically completed over two years.

Pitt Public Health Core Requirements

- BCHS 2509 - SOCIAL AND BEHAVIORAL SCIENCES AND PUBLIC HEALTH
- BIOST 2011 - PRINCIPLES OF STATISTICAL REASONING
- *Students must take either BIOST 2011 or BIOST 2041
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS
- *Must register for two terms
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

HPM Core Requirements

- HPM 2012 - FINANCIAL MANAGEMENT FOUNDATIONS HEALTH CARE AND PUBLIC HEALTH
- HPM 2020 - PROFESSIONAL DEVELOPMENT SEMINAR 1
- HPM 2025 - HPM PRACTICUM
- HPM 2028 - MICROECONOMICS APPLIED TO HEALTH
- HPM 2037 - ESSAY-HA
- HPM 2055 - MANAGING HEALTH PROGRAMS AND PROJECTS
- HPM 2063 - THE POLITICS OF HEALTH POLICY
- HPM 2064 - HEALTH POLICY ANALYSIS
- HPM 2081 - PUBLIC HEALTH AGENCY MANAGEMENT
- HPM 2105 - INTRODUCTION TO THE US HEALTHCARE DELIVERY SYSTEM 1
- HPM 2108 - LEADERSHIP, PROFESSIONALISM AND CAREER DEVELOPMENT
- HPM 2131 - PUBLIC HEALTH LAW AND ETHICS
- HPM 2220 - COST EFFECTIVENESS ANALYSIS HEALTH CARE

General Requirements for Master's Degrees

(Note: This is not a complete list of requirements)

All master's degree-seeking students must:

- Complete the school-wide core courses required for their program, and complete and submit the thesis or essay
- Fulfill the program's core course requirements, including required courses, and any field work, and examinations
- Register for two terms of Public Health Grand Rounds
- Complete the online Academic Integrity Module in the first semester
- Submit a master's thesis or essay

Thesis or Essay

All master's students must complete a minimum of one essay/special study credit and meet the master's thesis/essay requirement. Program listings will specify the type of master's paper required. The form of the essay or thesis must be in accord with specifications stipulated in the University's Style and Form Manual or the ETD Format Guidelines Manual. The electronic copy of the thesis/essay must be uploaded and all required paperwork submitted to Joanne Pegher by the deadline posted for that graduation term.

MPH students who have been permitted to submit an article accepted for publication in lieu of the essay must meet the margin requirements and submit a committee signature sheet and title page patterned after that in the Style and Form Manual or the ETD Format Guidelines Manual. If there are multiple authors, a statement should be included explaining the role of each author. All essays must be read and approved by two faculty representing two different University of Pittsburgh Pitt Public Health departments. MS theses require approval by three readers.

Requirements for the MPH Degree:

The MPH in Health Policy and Management (HPM) prepares students for careers as public policy analysts, advocates for public health and high quality care, and professionals engaged in the development and implementation of health policies. The program provides professional development through a combination of coursework, a health policy or management related practicum, a Public Health Leader-in-Residence, and other curricular activities.

This two-year, 45-credit Program prepares students for careers in both health policy development, analysis and advocacy and program and organization management in public health agencies, foundations, other nonprofits and the private sector. Graduates of our MPH Program should be well-prepared to pass the Certification in Public Health (CPH) exam, pursue related Doctoral studies and/or obtain professional employment in public health and related sectors, nationally and globally.

In order to be eligible for graduation, students must complete 45 credit hours with a B average or better including a supervised practicum, and prepare a scholarly master's essay relating to culminating experience. The curriculum includes the GSPH core courses, the required MPH core and elective courses offered within and outside of the schools of health sciences.

MPH Curriculum

Health Services Research and Policy, MS

Required Public Health Core Courses

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- BIOST 2049 - APPLIED REGRESSION ANALYSIS
- BIOST 2050 - LONGITUDINAL AND CLUSTERED DATA ANALYSIS
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- HPM 2905 - QUASI-EXPERIMENTAL DESIGN FOR HEALTH SERVICES RESEARCH
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS
- HPM 3508 - RESEARCH AND DISSERTATION PHD

Decision Sciences Area of Emphasis Courses

- HPM 2123 - ADVANCED TOPICS IN DECISION AND COST-EFFECTIVE ANALYSIS IN HEALTHCARE
- HPM 2217 - CLINICAL DECISION ANALYSIS
- HPM 2220 - COST EFFECTIVENESS ANALYSIS HEALTH CARE
- IE 2086 - DECISION MODELS

Decision Sciences Suggested Elective Courses

- IE 2001 - OPERATIONS RESEARCH
- CLRES 2023 - SURVIVAL ANALYSIS
- CLRES 2026 - ANALYSIS OF CORRELATED DATA
- CLRES 2107 - COMPARATIVE EFFECTIVENESS RESEARCH AND PCOR
- HPM 2028 - MICROECONOMICS APPLIED TO HEALTH
- HPM 2215 - COMPUTER METHODS IN DECISION AND COST-EFFECTIVENESS ANALYSIS
- HPM 3501 - SEMINAR IN HEALTH SERVICES RESEARCH METHODS I
- IE 2188 - SIMULATION MODELING AND APPLICATIONS

Health Policy and Economics Area of Emphasis Courses

- CLRES 2107 - COMPARATIVE EFFECTIVENESS RESEARCH AND PCOR
- HPM 2028 - MICROECONOMICS APPLIED TO HEALTH
- HPM 2220 - COST EFFECTIVENESS ANALYSIS HEALTH CARE
- HPM 2064 - HEALTH POLICY ANALYSIS
- HPM 2216 - HEALTH INSURANCE: FINANCING HEALTH CARE

Health Policy and Economics Suggested Electives Courses

- BCHS 2520 - THEORIES OF HEALTH BEHAVIOR AND HEALTH EDUCATION
- BCHS 3002 - HEALTH SURVEY METHODS
- BIOST 2046 - ANALYSIS OF COHORT STUDIES
- HPM 3125 - INTERMEDIATE HEALTH ECONOMICS

- HPM 3501 - SEMINAR IN HEALTH SERVICES RESEARCH METHODS 1
- HPM 3505 - ADVANCED EMPIRICAL MICROECONOMICS METHODS WITH APPLICATIONS FOR HEALTHCARE RESEARCH
- PIA 2028 - PUBLIC POLICY ANALYSIS
- PIA 2117 - PUBLIC PROGRAM EVALUATION

General Requirements for Master's Degrees

(Note: This is not a complete list of requirements)

All master's degree-seeking students must:

- Complete the school-wide core courses required for their program, and complete and submit the thesis or essay
- Fulfill the program's core course requirements, including required courses, and any field work, and examinations
- Register for two terms of Public Health Grand Rounds
- Complete the online Academic Integrity Module in the first semester
- Submit a master's thesis or essay

Thesis or Essay

All master's students must complete a minimum of two essay/special study credits and meet the master's thesis/essay requirement. Program listings will specify the type of master's paper required. The form of the essay or thesis must be in accord with specifications stipulated in the University's Style and Form Manual or the ETD Format Guidelines Manual. The electronic copy of the thesis/essay must be uploaded and all required paperwork submitted to Joanne Pegher by the deadline posted for that graduation term.

MPH students who have been permitted to submit an article accepted for publication in lieu of the essay must meet the margin requirements and submit a committee signature sheet and title page patterned after that in the Style and Form Manual or the ETD Format Guidelines Manual. If there are multiple authors, a statement should be included explaining the role of each author. All essays must be read and approved by two faculty representing two different University of Pittsburgh Pitt Public Health departments. MS theses require approval by three readers.

Requirements for the MS Degree:

The Master of Science in Health Services Research and Policy program prepares graduates for positions in health services research and policy, analytics and also prepares them for higher level education (such as a PhD). Graduates will be prepared to conduct research on policy issues affecting the organization, financing, and delivery of health care and public health services.

The MS requires a minimum of 42 credits. The program includes coursework in statistics and research methods as well as foundations in public health. Students must successfully pass a comprehensive exam given during the second year and submit and successfully defend a master's thesis.

MS Decision Sciences Area of Emphasis

MS Health Policy and Economics Area of Emphasis

Department of Human Genetics

The Department of Human Genetics provides graduate training in the fields of human genetics, public health genetics, and genetic counseling. The mission of the department is to discover new knowledge about the genetic determinants of human health and disease through basic and applied research; to educate students, trainees, and other interested persons in that knowledge; and to apply that knowledge to improve the health of populations, families, and patients.

Contact Information

ATTN: Noel Harrie
Department Office: 3102C Parran Hall
412-624-3066
Fax: 412-624-3020
E-mail: nce1@pitt.edu
<http://publichealth.pitt.edu/hugen>

Admission

In addition to meeting the Graduate School of Public Health's general admission requirements, applicants to the MS and PhD programs should have completed courses in calculus and genetics. For the Genetic Counseling program, the preferred undergraduate background includes courses in each of the following: genetics, organic chemistry-general biochemistry, calculus, statistics, and a behavioral or social science. In some cases, deficiencies can be made up after admission. For applicants to the MPH program, these courses are suggested but not required. For information on admission and registration contact the Department of Human Genetics at 412-624-3066 or nce@pitt.edu.

Financial Assistance

Financial aid in the form of graduate student assistantships is often available for PhD students. For other degree programs, aid is not usually available, although it is often possible to arrange for hourly wage/stipend support from research mentors or other faculty.

Major Educational Areas and Programs

Courses offered by the department address the areas of human population and quantitative genetics, biochemical and molecular genetics, cytogenetics, bioinformatics, genome sequence analysis, public health genetics, and genetic counseling. In addition, courses aimed at genetic counseling students provide training in clinical genetics, cytogenetics/molecular diagnostics techniques, risk communication, counseling, and ethics.

The principle objective of the courses in human genetics is to train students to critically examine the role of genes and genetic variation in determining the distribution of health and disease in the general population.

To achieve this objective, training is provided in both experimental and statistical approaches to the direct detection or estimation of the impact of genes on the health of individuals, families and populations. Such approaches include the evaluation of the relative roles of genetic and environmental factors and their interaction in determining the distribution of disease in the population. The department offers degree programs in three areas: human genetics (MS, PhD), genetic counseling (MS), and Public Health Genetics (MPH)

Human Genetics-PhD and MS

This area is concerned with the study of the mechanisms of genetic variability and its impact on health at the individual and population level. An important component is the study of the fraction of genetic variability that leads directly to disease or determines an individual's susceptibility to diseases caused by pathogens or adverse environments.

A PhD track in human genetics with an emphasis on genetic counseling is available to applicants with three to five years of work experience as a genetic counselor and who are certified in genetic counseling by the American Board of Genetic Counseling (ABGC) or the American Board of Medical Genetics (ABMG).

Genetic Counseling-MS

The objectives of the program are:

- To provide a balanced program of study integrating courses in molecular genetics, medical genetics, and psychosocial and multicultural counseling including biomedical ethics.
- To provide extensive direct patient contact experience in a variety of clinical placements so that the student gains an appreciation of how the practicing genetic counselor functions in different work settings.

- To prepare students at the Master of Science level for entering the profession of genetic counseling and assuming the role of a professional in medical, research, and academic settings.
- This is a full-time, two-year program. Course work occurs in the first year and is followed by a ten-month clinical rotation at nearby hospitals. The clinical internship involves laboratory experience and direct patient contact.

Public Health Genetics-MPH

The MPH program integrates genetics and the public health science disciplines of epidemiology, biostatistics, environmental health, and health services research, focusing on phenotypic disease prevention in populations.

Research

Research in the Department of Human Genetics includes studies of basic genetic mechanisms of segregation and recombination; family and population studies of normal and disease phenotypes; chromosome structure and chromosomal mechanisms in disease; physical and genetic mapping of genes; interaction of genes with the environment; bioinformatics and sequence analysis; assessment of genetic risk; community outreach regarding genetics; educational projects for the public health care professionals; the process of genetic counseling including decision making, communication, and satisfaction with clinical service; and the detection of genetic disease. Application of this research is explored with research in ethics, genetic counseling and screening. The focus of faculty research is on human genetics but includes experimental studies in appropriate non-human animals and methodological work in statistical genetics.

Certificate

Public Health Genetics Certificate

Advances in genetics are occurring at a pace that challenges our collective ability to respond to the many social, legal, ethical, and public health policy implications generated by this revolution of knowledge. Consequently, there is a compelling need to prepare future public health professionals in the biology, technology, applications, responsibilities, and issues of genetic information, which will play an increasing role in our understanding of health and disease. All areas of public health can be improved and expanded by examining the role of genetics in public health issues.

The purpose of the Certificate in Public Health Genetics is to provide graduates with a basic grounding in public health genetics that will enable them to function as public health professionals at the cutting edge of this important new area. Students enrolled in this certificate program are trained to incorporate knowledge of how genes, together with the environment and behavior, influence health and apply this insight into their area of practice or research. Students will be able to:

- Demonstrate basic knowledge of the role that genetics plays in the development of disease.
- Identify the limits of his/her genetic expertise.
- Identify ethical and medical limitations to genetic testing, including uses that don't benefit the individual
- Identify the role of cultural, social, behavioral, environmental, and genetic actors in the development and prevention of genetic-related diseases

More information regarding the program can be found on the Pitt Public Health website under the Academics tab, Degree Programs, and clicking on the Certificates designation.

Certificate Requirements

The curriculum consists of 15 credits, of which at least 12 must be traditional classroom courses. The remaining three credits can be seminar, project, or practicum work.

In addition, all students receiving the certificate must give a presentation in a public health genetics course.

Other courses may be permitted, but must be pre-approved by the director of the MPH in the Department of Human Genetics.

1) All students must take:

- HUGEN 2049 - INTRODUCTION PUBLIC HEALTH GENETICS

2) At least six credits from the following five courses are required to achieve competency in the basic science of genetics:

- HUGEN 2010 - BIOINFORMATIC RESOURCES FOR GENETICISTS
- HUGEN 2022 - HUMAN POPULATION GENETICS
- HUGEN 2031 - CHROMOSOMES AND HUMAN DISEASE
- HUGEN 2034 - BIOCHEMICAL AND MOLECULAR GENETICS OF COMPLEX DISEASES
- HUGEN 2040 - MOLECULAR BASIS OF HUMAN INHERITED DISEASE

3) A maximum of three credits may come from the following courses:

- HUGEN 2028 - HUMAN GENETICS JOURNAL CLUB AND PEER REVIEW
- HUGEN 2050 - PUBLIC HEALTH GENETICS PRACTICUM
- HUGEN 2052 - ETHICAL ISSUES IN CLINICAL AND PUBLIC HEALTH GENETICS

4) Additional courses permitted for the certificate include the following:

- EPIDEM 2601 - MOLECULAR EPIDEMIOLOGY TOOLS & TECHNIQUES
- BCHS 2572 - RISK COMMUNICATION

**Other courses may be permitted, but must be pre-approved by the Director of the MPH in Public Health Genetics Program in the Department of Human Genetics.*

Students enrolled in Human Genetics degree programs other than the MPH in Public Health Genetics may receive the certificate, with the stipulation that the certificate curriculum must include at least six credits of coursework that is not part of the coursework for their degree and three credits of project or practicum work. The requirements for current Human Genetics students include:

- **Six additional credits of coursework not already required by the student's degree program** *Three of these credits must be HUGEN 2049: Introduction to Public Health Genetics and the additional three can come from the approved list of additional courses above or otherwise must be approved by the Directors of the MPH in Public Health Genetics program.*
- **Three credits of a project or practicum work** *A paper (10 double-spaced page minimum, plus references) describing the project or practicum is required to receive a grade for these credit hours. Writing guidelines will be provided.*
- **Students must give a presentation in a public health genetics course on a topic decided by the course instructor.**

Competencies

Graduates will be able to:

- (1) Apply knowledge of inheritance, including basic cellular and molecular mechanisms, and risk factors for disease to understanding a variety of rare and common health conditions.
- (2) Identify interactions among genes, environmental factors, and behaviors, and their effects on public health.
- (3) Assess the ethics of the application of genetic technologies to public health

Doctoral

Human Genetics, PhD

The Doctoral Program in Human Genetics prepares students for careers leading genetics and genomics research in academia or industry. The flexible curriculum provides a broad background in the field while allowing customized emphasis on molecular genetics/genomics, statistical genetics and genetic epidemiology, or genetic counseling. Typically four to ten doctoral students are admitted each year, including external applicants and internal applicants currently pursuing Master's degrees within the department. In addition to core coursework and advanced classes in a chosen area of interest, doctoral students pursue mentored research projects culminating in the production and defense of a dissertation.

AREAS OF STRENGTH

The doctoral program offers training in molecular genetics, statistical genetics and genetic epidemiology, and genetic counseling. This includes advanced coursework and outside-of-the-classroom training and research experiences. For example, during the second year and beyond, doctoral students will choose advanced courses in Human Genetics and elective courses across the Schools of the Health Sciences pertaining to their area of interest. Across all years, students will participate in workshops, laboratory meetings, and scientific conferences,

and attend seminars offered to the University community, that enhance knowledge and skills in their chosen area of study. Research experiences including dissertation research will provide in-depth, hands-on training in the chosen area.

Students entering the doctoral program can tailor their training based on their research interests and career goals:

Molecular Genetics

Students pursuing training in molecular genetics or cytogenetics will carry out research projects performing benchtop experimental studies in laboratories within the department or across the Schools of the Health Sciences. Students can further customize their training by choosing among many elective courses in Cell Biology and Molecular Physiology, Cellular and Molecular Pathology, Immunology, Molecular Genetics and Developmental Biology, Molecular Pharmacology, and Molecular Virology and Microbiology.

Statistical Genetics and Epidemiology

Students pursuing training in statistical genetics and genetic epidemiology will carry out applied analysis or methodological research projects related to clinical or epidemiological studies. Students will work as members of statistical and computational research groups within the department or across the School of the Health Sciences. Students can further customize their training by choosing advanced coursework in Biostatistics, Biomedical Informatics, Computational and Systems Biology, and Epidemiology.

Genetic Counseling

Students holding a MS-GC degree who wish to pursue a doctoral degree with a focus in genetic counseling will carry out original research in their area(s) of interest. In addition to addressing basic science or clinical research questions, students' projects will explore the medical, psychological, and familial implications of genetic contributors to human health and disease. Students can further customize their training by choosing elective courses from across the Schools of the Health Sciences in consultation with the Director and Assistant Director of the Genetic Counseling Program.

DOCTORAL COMPETENCIES

Students will gain proficiency in the knowledge, skills, and abilities required to begin a career as an independent scientist. These educational goals are organized into seven doctoral program competencies. After successful completion of the doctoral program, students will be able to:

- Describe basic genetic mechanisms and how they affect proteins, chromosomes, cells, individuals, and populations of organisms in normal and disease states
- Describe mechanisms by which genes and the environment interact to affect the distribution of health and disease in human populations
- Apply a broad range of molecular and analytical methodologies to design genetic studies.
- Use their conceptual and methodological knowledge to analyze data and interpret research results.
- Analyze and communicate published research in human genetics at the level needed for effective research and teaching
- Apply fundamental principles of ethical research practice.
- Query bioinformatic resources to facilitate clinical decision-making or interpret research results.

More information about the program can be found by visiting the Pitt Public Health website, Department of Human Genetics, and accessing the Doctor of Philosophy (PhD) in Human Genetics program designation.

Required Human Genetics Courses

COURSEWORK

Coursework for doctoral students is typically undertaken during the first two years in the program, although advanced courses may be taken in later years. All doctoral students will complete the core Human Genetics courses as well as the core Public Health curriculum. Advanced courses offered through Human Genetics and other departments will provide students instruction in their chosen area of concentration. Certificate programs offered through the Graduate School of Public Health can be pursued to further customize the education of doctoral students.

A minimum of 72 credits is required.

- HUGEN 2010 - BIOINFORMATIC RESOURCES FOR GENETICISTS
- HUGEN 2011 - SCIENTIFIC WRITING IN HUMAN GENETICS
- HUGEN 2022 - HUMAN POPULATION GENETICS

- HUGEN 2025 - HUMAN GENETICS SEMINAR
(must take four times)
- HUGEN 2028 - HUMAN GENETICS JOURNAL CLUB AND PEER REVIEW
(must take two times)
- HUGEN 2031 - CHROMOSOMES AND HUMAN DISEASE
- HUGEN 2034 - BIOCHEMICAL AND MOLECULAR GENETICS OF COMPLEX DISEASES
- HUGEN 2040 - MOLECULAR BASIS OF HUMAN INHERITED DISEASE

Human Genetics Research Credits, under one or both of the following course designations:

- HUGEN 2021 - SPECIAL STUDIES - *variable*
- HUGEN 3010 - RESEARCH AND DISSERTATION PH.D. - *variable*

**In addition, two advanced courses are required. Students may select another advanced course with permission of the Graduate Director.*

Advanced Human Genetics Courses

- HUGEN 2029 - INTRODUCTION TO GENE MAPPING
- HUGEN 2051 - INBORN ERRORS OF DEVELOPMENT
- HUGEN 2070 - BIOINFORMATICS FOR HUMAN GENETICS
- HUGEN 2080 - STATISTICAL GENETICS

School Core Course Requirements

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS
(must be taken for the first two semesters)
- PUBHLT 2030 - RESEARCH ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH

Joint Degree

Genetic Counseling and Public Health Genetics Dual-Degree Program, MS/MPH

The University of Pittsburgh established the MPH in Public Health Genetics and MS in Genetic Counseling dual degree program in 2004, which was the first program of its kind to be offered to students pursuing a genetic counseling degree. The dual degree program enables students to build upon the clinical skills that they acquire through the Genetic Counseling Program to understand the importance of genetics, genomics, and genetic counseling in the field of public health.

Given the rapid expansion of available genetic and genomic testing, the current focus on precision medicine, and the increasing interest of national organizations, state public health offices, and hospitals in the application of genomics to public health, there is a growing need for professionals with skills in both disciplines. Graduates of the dual degree program are well-prepared to integrate public health genetics into clinical, research, public health, and industry settings. The dual degree program also benefits students by broadening their areas of expertise and career qualifications in other areas of public health including program development, evaluation, and policy.

There are a variety of options for completing the dual degree, which depend in part on the timing of the student entering the program. However, most students are able to complete the dual degree program in 22 months, which is one additional summer session beyond the typical completion time for the MS in Genetic Counseling degree program.

More information regarding the program can be found on the Pitt Public Health website, Department of Human Genetics, under the Dual MPH/MS Genetic Counseling program designation.

Dual-Degree Course Requirements

Students interested in both genetic counseling and public health genetics can pursue both degrees in a combined 62-credits (2.5 to 3 year) program. All requirements for each individual program must be completed.

All required courses for both degrees must be taken by dual degree students, with the exception of PUBHLT 2011, Essentials of Public Health. Given that some of the curriculum overlaps, the dual degree requires the completion of 62 credits. In addition to completing all of the requirements for the MS in Genetic Counseling degree, students enrolled in the dual degree will take an additional seven courses and fulfill the MPH practicum and MPH essay requirements.

The schedule below illustrates one possible schedule that would allow students to complete the Dual Degree Program in 22 months. Schedules are discussed on an individual basis with the Program Directors of the MPH in Public Health Genetics and MS in Genetic Counseling Programs.

Required Human Genetics Courses

- HUGEN 2010 - BIOINFORMATIC RESOURCES FOR GENETICISTS
- HUGEN 2011 - SCIENTIFIC WRITING IN HUMAN GENETICS
- HUGEN 2021 - SPECIAL STUDIES - *variable*
- HUGEN 2022 - HUMAN POPULATION GENETICS
- HUGEN 2025 - HUMAN GENETICS SEMINAR
(*must take two times*)
- HUGEN 2031 - CHROMOSOMES AND HUMAN DISEASE
- HUGEN 2032 - GENETIC TECHNIQUES
- HUGEN 2034 - BIOCHEMICAL AND MOLECULAR GENETICS OF COMPLEX DISEASES
- HUGEN 2035 - PRINCIPLES OF GENETIC COUNSELING
- HUGEN 2036 - GENETIC COUNSELING INTERNSHIP
(*must take two times - fall and spring term of 2nd year*)
- HUGEN 2038 - INTERVENTION SKILLS FOR GENETIC COUNSELING
- HUGEN 2039 - RISK CALCULATION GENETIC COUNSELING
- HUGEN 2040 - MOLECULAR BASIS OF HUMAN INHERITED DISEASE
- HUGEN 2047 - CLINICAL GENETICS CASE CONFERENCE
(*must take four times but formally register once*)
- HUGEN 2049 - INTRODUCTION PUBLIC HEALTH GENETICS
- HUGEN 2050 - PUBLIC HEALTH GENETICS PRACTICUM
- HUGEN 2052 - ETHICAL ISSUES IN CLINICAL AND PUBLIC HEALTH GENETICS
(*must take two times but formally register once*)
- HUGEN 2053 - APPLICATIONS IN PUBLIC HEALTH GENETICS AND GENOMICS
(*must take two times but formally register once*)

School Core Course Requirements

- BCHS 2509 - SOCIAL AND BEHAVIORAL SCIENCES AND PUBLIC HEALTH
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
**(students in the Public Health Genetics program with adequate prior background may apply to be exempted from the requirement to take PUBHLT 2015)*
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS
(*must take two times*)
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

Thesis and Essay

Students in the dual degree program will complete both the thesis requirement for the MS in Genetic Counseling degree and the Essay requirement for the MPH in Public Health Genetics degree. Depending on the thesis and essay topics, sometimes these documents can be combined into one document comprising the student's thesis project with additional background on public health genetics relevance and, at least, one additional, extensive chapter focusing on an application of public health genetics. The student's thesis committee and the Program Director for the MPH in Public Health Genetics will work with the student to identify the additional components or topics that are needed to satisfy the MPH Essay requirement.

Human Genetics and Medicine, PhD/MD

The joint MD/PhD program is a unique arrangement between the Department of Human Genetics and the Medical Scientist Training Program (MSTP), a collaboration between the University of Pittsburgh and Carnegie Mellon University. The program provides the opportunity for students to undertake a physician-scientist training program tailored to specific research interests, provided by the wide range of research that primary and secondary Human Genetics faculty are involved in within Pitt Public Health and the University of Pittsburgh School of Medicine.

Students in this program begin by completing two years of the MD program in the School of Medicine. Then they come to Pitt Public Health for three years to complete the PhD program. Students then return to the School of Medicine to finish the last two years of medical training.

The required core curriculum for the joint PhD/MD program is the same as the requirements for the PhD in Human Genetics.

Master's

Genetic Counseling, MS

The Genetic Counseling Graduate Program at the University of Pittsburgh is committed to providing cutting-edge training in the complex science of genetics while fostering a strong foundation in counseling. This unique program is constantly evolving to ensure the continued success of graduates entering a dynamic workforce. Each year between 10 and 12 students are welcomed into the incoming class to be trained by world-renowned faculty. The Genetic Counseling Program is grounded in three important elements: scientific training in human genetics and genomics, comprehensive clinical experience, and understanding the psychological and social aspects of counseling, with an added focus on integrating up to the minute discoveries in genetics and genomics as well as valuable concepts from other academic disciplines.

The Genetic Counseling Program is fully accredited by the Accreditation Council for Genetic Counseling, Inc. (ACGC), 7918 Jones Branch Drive, Suite 300 McLean, VA 22102; Phone: 703-506-7667. Our comprehensive program helps students to achieve and often surpass the practice based competencies outlined by the ACGC.

More information regarding the program can be found on the Pitt Public Health website, Department of Human Genetics, under the Master of Science (MS) in Genetic Counseling program designation. Please explore our website to learn more about what sets our program and our graduates apart! We hope you will consider joining our challenging and exciting program.

Required Human Genetics Courses

A minimum total of 38 credits is required for the M.S. in Genetic Counseling.

- HUGEN 2010 - BIOINFORMATIC RESOURCES FOR GENETICISTS
- HUGEN 2022 - HUMAN POPULATION GENETICS
- HUGEN 2025 - HUMAN GENETICS SEMINAR
(*must take two times*)
- HUGEN 2031 - CHROMOSOMES AND HUMAN DISEASE
- HUGEN 2032 - GENETIC TECHNIQUES
- HUGEN 2034 - BIOCHEMICAL AND MOLECULAR GENETICS OF COMPLEX DISEASES
- HUGEN 2035 - PRINCIPLES OF GENETIC COUNSELING
- HUGEN 2036 - GENETIC COUNSELING INTERNSHIP
(*must take two times - fall and spring term of 2nd year*)

- HUGEN 2038 - INTERVENTION SKILLS FOR GENETIC COUNSELING
 - HUGEN 2039 - RISK CALCULATION GENETIC COUNSELING
 - HUGEN 2040 - MOLECULAR BASIS OF HUMAN INHERITED DISEASE
 - HUGEN 2047 - CLINICAL GENETICS CASE CONFERENCE
- (must take four times but do not formally register)*
- HUGEN 2052 - ETHICAL ISSUES IN CLINICAL AND PUBLIC HEALTH GENETICS
- (must take two times but do not formally register)*

School Core Course Requirements

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
 - EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
 - PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH
 - PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS
- (must be taken for the first two semesters)*

Clinical Rotations

Genetic counseling students have the opportunity to participate in patient care at world-renowned medical facilities. They typically see 150-200 cases or more and are exposed to a variety of genetic referral types as well as diverse medical systems.

Rotation schedules are divided into 13 blocks, with each block lasting three weeks. All students will spend three blocks in Cancer genetics, three blocks in Prenatal genetics, three blocks in Pediatric genetics as well as one block in Adult/Specialty genetics, Primary Care, and a thesis focused block with clinic days in the Center for Advanced Fetal Diagnostics (CAFD). In addition, students spend three weeks (one block) at an optional rotation site. This allows students the opportunity to select specific training experiences to develop a higher level of expertise based on their interests.

Thesis Project

Designing, conducting, and interpreting research studies are important skills for success as a genetic counselor. The completion of a thesis project is an integral component of a student's education in the Pitt Genetic Counseling Program. The thesis project allows students to understand the research process, develop their research skills, and collaborate with faculty across diverse disciplines.

Students are encouraged to develop a project according to their interests and research goals. Many previous students have published their thesis projects in peer-reviewed journals and have presented their research at conferences both nationally and internationally.

Core Values

The University of Pittsburgh Genetic Counseling Program's core values are:

- **Speak with Integrity and Compassion** - We are committed to honesty, transparency and respect in every interaction.
- **Commit Everyday** - We take personal responsibility to achieve excellence in everything we do.
- **Reach Out** - We embrace collaboration and partnership to enhance professional possibilities
- **Embrace the Unknown** - We believe that curiosity leads to lifelong learning.
- **Be Bold** - We are inspired by innovation and change.

Genome Bioinformatics, MS

Human Genetics, MS

The Master of Science program in Human Genetics prepares students for careers as contributing members of genetics and genomics research teams in academia or industry. Graduates of the program often go on to PhD level study and become independent scientists. The

flexible curriculum provides a broad background in the field while allowing customized emphasis on laboratory genetics or genetic data analysis. In addition to core coursework and advanced classes in a chosen area of interest, MS students pursue mentored research projects culminating in the production and defense of a thesis.

More information about the program can be found by visiting the Pitt Public Health website, Department of Human Genetics, and accessing the Master of Science (MS) in Human Genetics program designation.

MS Program Requirements

COMPETENCIES

Students will gain proficiency in the knowledge, skills, and abilities required to begin a career as a scientist. These educational goals are organized into five MS program competencies. After successful completion of the Master of Science program, students will be able to:

- Describe basic genetic mechanisms and how they affect proteins, chromosomes, cells, individuals, and populations of organisms in normal and disease states
- Describe mechanisms by which genes and the environment interact to affect the distribution of health and disease in human populations
- Use their conceptual and methodological knowledge to analyze data and interpret research results.
- Apply fundamental principles of ethical research practice.
- Query bioinformatic resources to facilitate clinical decision-making or interpret research results.

COURSEWORK

Coursework for MS students is typically undertaken during the first year in the program, although advanced courses may be taken in the second year. All MS students will complete the core Human Genetics courses as well as the core Public Health curriculum. Advanced courses offered through Human Genetics and other departments will provide students instruction in their chosen area of concentration. Certificate programs offered through the Graduate School of Public Health can be pursued to further customize the education of MS students.

Required Human Genetics Courses

- HUGEN 2010 - BIOINFORMATIC RESOURCES FOR GENETICISTS
 - HUGEN 2011 - SCIENTIFIC WRITING IN HUMAN GENETICS
 - HUGEN 2021 - SPECIAL STUDIES - *variable*
 - HUGEN 2022 - HUMAN POPULATION GENETICS
 - HUGEN 2025 - HUMAN GENETICS SEMINAR
- (must take two times)
- HUGEN 2028 - HUMAN GENETICS JOURNAL CLUB AND PEER REVIEW
 - HUGEN 2031 - CHROMOSOMES AND HUMAN DISEASE
 - HUGEN 2034 - BIOCHEMICAL AND MOLECULAR GENETICS OF COMPLEX DISEASES
 - HUGEN 2040 - MOLECULAR BASIS OF HUMAN INHERITED DISEASE

School Core Course Requirements

- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
 - EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
 - PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH
 - PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS
- (must be taken for the first two semesters)
- PUBHLT 2030 - RESEARCH ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH

Public Health Genetics, MPH

The MPH in Public Health Genetics Program integrates genetics and the public health science disciplines of epidemiology, pathobiology, biostatistics, environmental health, and health services research, with ethics, social sciences, public affairs, economics and law. Public health genetics focuses on phenotypic disease prevention in populations, not just individual patients and their families. It addresses society's legal, ethical, financial, regulatory, and organizational responsibilities in offering genetic services, and devising environmental and occupational interventions to prevent disease in populations.

More information regarding the program can be found on the Pitt Public Health website, Department of Human Genetics, under the Master of Public Health (MPH) in Public Health Genetics designation.

MPH Requirements

The MPH in Public Health Genetics curriculum is designed to give students a strong knowledge base in Human Genetics with a broad understanding of the field of public health. Through the coursework, students are immersed in current topics in human genetics, public health, and the ethical, legal and social issues important to the field of public health genetics. The curriculum, practicum experience, and public health essay focus on the development of skills that are desirable to employers after graduation including critical thinking, scientific writing, and statistical analysis.

A minimum of 47 credits is required for the MPH. This total is made up of school core courses, a core of required courses in the department of Human Genetics, and electives relevant to the student's program goals. The entire program can be completed in 1 1/2 years, although most students prefer to spread it out over two years. There is also the option to complete the program on a part-time basis.

The MPH in Public Health Genetics course schedule can be customized to meet individual student goals, interests, and circumstances.

Required Human Genetics Courses

- HUGEN 2010 - BIOINFORMATIC RESOURCES FOR GENETICISTS
- HUGEN 2011 - SCIENTIFIC WRITING IN HUMAN GENETICS
- HUGEN 2021 - SPECIAL STUDIES
(variable, or can be replaced by elective courses)
- HUGEN 2022 - HUMAN POPULATION GENETICS
- HUGEN 2025 - HUMAN GENETICS SEMINAR
(must take two times)
- HUGEN 2034 - BIOCHEMICAL AND MOLECULAR GENETICS OF COMPLEX DISEASES
- HUGEN 2040 - MOLECULAR BASIS OF HUMAN INHERITED DISEASE
- HUGEN 2049 - INTRODUCTION PUBLIC HEALTH GENETICS
- HUGEN 2050 - PUBLIC HEALTH GENETICS PRACTICUM
- HUGEN 2052 - ETHICAL ISSUES IN CLINICAL AND PUBLIC HEALTH GENETICS
- HUGEN 2053 - APPLICATIONS IN PUBLIC HEALTH GENETICS AND GENOMICS

School Core Course Requirements

- BCHS 2509 - SOCIAL AND BEHAVIORAL SCIENCES AND PUBLIC HEALTH
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY

**(students in the Public Health Genetics program with adequate prior background may apply to be exempted from the requirements to take PUBHLT 2015)*

- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS
(must be taken for the first two semesters)
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS

Public Health Essay and Practicum

Students must write a master's essay, which may be based on the practicum experience or on another topic related to public health genetics. All essays must include analysis of data. The essay topic must be approved by the Directors of the MPH in Public Health Genetics program. The essay is read and approved by an MPH Essay Committee that must consist of at least one of the Public Health Genetics faculty members in Human Genetics and one from outside the department. The MPH Essay Committee must be approved by the Office of Student Affairs. The essay must be approved by unanimous vote of the committee.

All students in the MPH in Public Health Genetics program are required to complete a Practicum. The Practicum is a supervised practice experience of at least 200 hours, providing students an opportunity to learn how genetics is applied in a public health setting and in the formulation and application of public health policy. MPH students are encouraged to seek out opportunities that fit their interests and goals with guidance provided by program leadership. Students may choose to complete their practicum in the city of Pittsburgh or in a location outside of the city. Many students will complete the practicum during their summer semester, but scheduling is flexible based on student needs.

MPH in Human Genetics Program-Specific Competencies

A student completing the MPH program in Public Health Genetics will be able to:

- (1) Apply knowledge of inheritance, including basic cellular and molecular mechanisms, and risk factors for disease to understanding a variety of rare and common health conditions.
- (2) Identify interactions among genes, environmental factors, and behaviors, and their effects on public health.
- (3) Assess the ethics of the application of genetic technologies to public health
- (4) Communicate genetic and genomic principles to the general public as part of current public health initiatives
- (5) Evaluate how genetic principles/technologies apply to diagnosis, screening, and interventions for disease prevention and health promotion programs

Department of Infectious Diseases and Microbiology

The mission of the Department of Infectious Diseases and Microbiology is to conduct research, teaching, and service that will enhance the control of infectious diseases in the human population. Our goals to accomplish this mission include:

- Research programs that focus on understanding the mechanisms of pathogenesis of microbial infections at the cellular and molecular level as they relate directly to developing methods for disease prevention and treatment.
- Integrated teaching programs that are devoted to the education and training of graduate students in various molecular, immunologic and biologic aspects of microbial pathogenesis, as well as disease control and prevention.
- Programs that focus on population-based education and prevention for control of infectious diseases.

We have a commitment to high quality graduate education that is consistent with our leading cutting-edge research and behavioral health and community education programs. The degree programs draw upon the disciplines of molecular biology, immunology, epidemiology, medicine, health education, and community intervention to provide our students with opportunities to participate in cross-disciplinary research into multiple aspects of infectious diseases. As a graduate of our program you will be prepared for careers in academia, industry, government, and community service sectors. Our graduates have obtained professional positions with prestigious employers in the USA and worldwide. Examples include the National Institutes of Health, the Centers for Disease Control and Prevention, state and local health departments, pharmaceutical companies, hospitals, and major universities and other academic institutions.

The Department offers Master of Public Health (MPH), Doctor of Philosophy (PhD), and Master of Science (MS) degree programs. Students in the MPH program can pursue one of two concentrations: Infectious Disease Pathogenesis, Eradication, and Laboratory Practice (PEL) or Infectious Disease Management, Intervention, and Community Practice (MIC).

Contact Information

Dr. Jeremy Martinson
2134 Parran Hall
412-624-5646
jmartins@pitt.edu

Abby Michael
2122 Parran Hall
412-624-3331
abm82@pitt.edu

For more information on admissions and registration contact the department at 412-624-3331 or idsm@pitt.edu.

Admission

Admission to all of our graduate programs is for the fall semester only. Your application will be evaluated based on your undergraduate academic performance, Graduate Record Exam (GRE) test scores, letters of recommendation, relevant research or professional experience and personal statement.

The application deadline for admissions for the fall of 2018 is January 15, 2018. The IDM Graduate Admissions Committee strongly recommends that you submit all materials by this deadline to ensure prompt review.

Application materials, as well as tips for submitting materials on time, are available on the IDM web site www.idm.pitt.edu.

Early admission into the MS or MPH program

Outstanding applicants who are enrolled in an undergraduate program at the University of Pittsburgh may apply for early admission, also known as 3+2 Accelerated Master's Program. Additional admission requirements must be met for this program.

Financial Assistance

Financial support (through stipends and tuition waivers) is available for full-time doctoral students. A limited number of partial scholarships are available to outstanding new MS and MPH students.

Doctoral

Infectious Diseases and Microbiology, PhD

The PhD program in the Department of Infectious Diseases and Microbiology prepares students for competitive research and teaching careers in academia, government agencies, and private industry. Our PhD students complete coursework that emphasizes the fundamentals of pathogen biology, immunology, cell biology, and molecular biology, which provides the necessary educational basis to conduct independent research mentored by our faculty.

PROGRAM REQUIREMENTS

- 72 credits total
- Preliminary exam
- Comprehensive exam
- Research project and Dissertation
- First author publication

PROGRAM LENGTH

Students complete the PhD program on an average of 6 years.

PhD PROGRAM COMPETENCIES

1. Demonstrate knowledge of the molecular biology of hosts and pathogens and how pathogenesis of infectious diseases evolves from the interactions of organisms on a molecular level.
2. Demonstrate comprehensive knowledge of the mechanisms of innate and acquired immunity and the role of immune functions in health and disease.
3. Demonstrate an ability to analyze and interpret data from scientific publications in the field of molecular biology, microbiology, immunology, or infectious diseases.
4. Show an ability to think independently and demonstrate comprehensive knowledge in a specific area of microbiology related to the student's dissertation work.
5. Conduct independent laboratory-based research leading to a first author publication in a professional peer-reviewed journal.

PhD Program Requirements:

The following are IDM department required courses for the IDM PhD program:

**Note: electives are not included on this list*

- IDM 2040 - SCIENTIFIC COMMUNICATION
- IDM 2021 - SPECIAL STUDIES IN MICROBIOLOGY
- IDM 2023 - MICROBIOLOGY LABORATORY
- IDM 2025 - MICROBIOLOGY SEMINAR
- IDM 2001 - MOLECULAR BIOLOGY OF MICROBIAL PATHOGENS
- IDM 2002 - MOLECULAR VIROLOGY
- IDM 2003 - HOST RESPONSE TO MICROBIAL INFECTION
- IDM 2004 - VIRAL PATHOGENESIS
- IDM 2014 - FUNCTIONAL GENOMICS OF MICROBIAL PATHOGENS
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EPIDEM 2160 - EPIDEMIOLOGY OF INFECTIOUS DISEASES
- PUBHLT 2030 - RESEARCH ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH

GSPH Required Courses

The following are GSPH required courses for the IDM PhD program:

- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH

Master's

Infectious Diseases and Microbiology, MPH

The Department of Infectious Diseases and Microbiology offers two (2) MPH programs: MIC (Management, Intervention, and Community Practice) and PEL (Pathogenesis, Eradication, and Laboratory Practice). Continue reading below for a description of each MPH program:

The MPH with a concentration in **Infectious Disease Management, Intervention, and Community Practice (MIC)** provides a tailored educational experience to foster competencies for practice, research, and education in public health. Students take courses that focus on global and domestic infectious diseases including HIV, and assists students in designing interventions, approaches, and policies to address the increase in infectious diseases as well as emerging infectious disease threats to public health. This coursework paired with hands-on practicum experience particular to the student's interest prepares students for careers in public health education, program development and management, or further education.

The MPH with a concentration in **Infectious Disease Pathogenesis, Eradication, and Laboratory Practice (PEL)** enables students a unique educational experience, which brings together pathogen biology, immunology, and epidemiology within the broader framework of public health. Students then have the opportunity to apply what they learn in a laboratory setting. Students graduate from the MPH PEL program with the expertise necessary for occupations in public health education, analysis, and research in the non-profit, government, or private sectors. The program also prepares students for further education in medical or graduate programs.

MPH-MIC Departmental Requirements:

PROGRAM REQUIREMENTS

- 42 credits total
- Written essay OR thesis
- 200 hour practicum

PROGRAM LENGTH

- Full-time students complete the program in 2 years or less
- Part-time students complete the program in 3-4 years on average

MPH-MIC PROGRAM COMPETENCIES

1. Demonstrate knowledge of local, regional, national and global infectious diseases.
2. Demonstrate knowledge of social, economic, and cultural factors for the prevention, control and/or elimination of the emergence and spread of infectious diseases in specific populations and communities.
3. Demonstrate knowledge of infectious disease pathogenesis, prevention, clinical diagnosis, and treatment in relevant populations in domestic and international settings.
4. Demonstrate knowledge of clinical, behavioral, epidemiological aspects of infectious disease prevention and treatment interventions for health services, systems of care, organizations, institutions, communities, and

governments.

5. Demonstrate knowledge and skills in recognizing, assessing, evaluating scientific research and best practices to make evidence-based public health recommendations for infectious disease planning, interventions, research, and policies.

The following courses are IDM departmental required courses:

**Note: this list does not include electives*

- IDM 2038 - PREVENTION, TREATMENT, AND CONTROL OF GLOBAL INFECTIOUS DISEASES
- IDM 2021 - SPECIAL STUDIES IN MICROBIOLOGY
- IDM 2025 - MICROBIOLOGY SEMINAR
- IDM 2032 - HUMAN DIVERSITY AND PUBLIC HEALTH
- IDM 2034 - CONTROL AND PREVENTION OF HIV/AIDS
- IDM 2007 - PUBLIC HEALTH COMMUNICABLE DISEASE PRACTICUM
- BCHS 2523 - PUBLIC HEALTH PROGRAM PLANNING AND PROPOSAL WRITING

MPH-PEL Departmental Requirements:

PROGRAM REQUIREMENTS

- 42 credits total
- Written essay OR thesis
- 200 hour practicum
- OPTIONAL lab rotation

PROGRAM LENGTH

- Full-time students complete the program in 2 years or less
- Accelerated schedule available: 1.5 years
- Part-time students complete the program in 3-4 years on average

The following are IDM departmental required courses:

**Note: this list does not include electives*

- IDM 2021 - SPECIAL STUDIES IN MICROBIOLOGY
- IDM 2025 - MICROBIOLOGY SEMINAR
- IDM 2003 - HOST RESPONSE TO MICROBIAL INFECTION
- IDM 2007 - PUBLIC HEALTH COMMUNICABLE DISEASE PRACTICUM
- EPIDEM 2160 - EPIDEMIOLOGY OF INFECTIOUS DISEASES

GSPH Required Courses

The following are GSPH required courses for the MPH-MIC program:

- BCHS 2509 - SOCIAL AND BEHAVIORAL SCIENCES AND PUBLIC HEALTH
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EOH 1013 - ENVIRONMENTAL HEALTH AND DISEASE
- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2015 - PUBLIC HEALTH BIOLOGY
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS
- PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

The following are GSPH required courses for the MPH-PEL program:

- BCHS 2509 - SOCIAL AND BEHAVIORAL SCIENCES AND PUBLIC HEALTH
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS

- EOH 2013 EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE
- EPIDEM 2110 EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- HPM 2001 HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH
- PUBHLT 2022 PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS
- PUBHLT 2033 PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH
- PUBHLT 2034 PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS
- PUBHLT 2035 PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH
- IDM 2010

Infectious Diseases and Microbiology, MS

The Master of Science program within the Department of Infectious Diseases and Microbiology provides students with a unique basic science education within the Graduate School of Public Health. Graduates of our MS program develop skills and experience to become more competitive applicants for medical school and doctoral programs, as well as qualified researchers in academia, government and industry. This two year program emphasizes coursework in immunology, cell biology, and virology, and enables students to apply their coursework to their thesis research projects completed under a faculty advisor.

PROGRAM REQUIREMENTS

- 36 credits total
- Comprehensive exam
- Research project
- Written thesis & defense

PROGRAM LENGTH

- Full-time students complete the program in 2 years or less
- Part-time students complete the program in 3-4 years on average

MS PROGRAM COMPETENCIES

1. Demonstrate knowledge of the molecular biology of hosts and pathogens and the pathogenesis of host/pathogen interactions.
2. Demonstrate knowledge of the mechanisms of innate and acquired immunity and their roles in health and disease.
3. Demonstrate an ability to analyze and interpret data from scientific publications covering molecular biology, microbiology, immunology, and infectious diseases.
4. Show an ability to think independently and demonstrate comprehensive knowledge in a specific area related to the student's thesis research.
5. Demonstrate an ability to conduct relatively independent laboratory-based research.

MS Program Requirement:

Below are the IDM departmental requirements for the MS program:

**Note: this list does not include electives*

- IDM 2021 - SPECIAL STUDIES IN MICROBIOLOGY

- IDM 2023 - MICROBIOLOGY LABORATORY
- IDM 2025 - MICROBIOLOGY SEMINAR
- IDM 2001 - MOLECULAR BIOLOGY OF MICROBIAL PATHOGENS
- IDM 2002 - MOLECULAR VIROLOGY
- IDM 2003 - HOST RESPONSE TO MICROBIAL INFECTION
- IDM 2004 - VIRAL PATHOGENESIS
- BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS
- EPIDEM 2160 - EPIDEMIOLOGY OF INFECTIOUS DISEASES
- PUBHLT 2030 - RESEARCH ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH

GSPH Required Courses

The following are GSPH required courses:

- EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY
- PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH
- PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS

School-level Admission Requirements

Degree and Certificate Requirements

All degree and certificate applicants must have completed Pitt Public Health's prerequisite courses.

Master of Public Health (MPH)

Applicants must possess:

- U.S. bachelor's degree from an accredited institution or the equivalent degree from a foreign school and substantial knowledge in a discipline relevant to public health, either through study, experience, or both
- Applicants who don't already have a graduate degree are required to submit scores on the verbal, quantitative, and analytical portions (general test) of the Graduate Record Examination (GRE). Departments may require GRE scores from any applicant. In some cases, results of the LSAT, MCAT, or DAT may be substituted.

Master of Health Administration (MHA)

Applicants must possess:

- U.S. bachelor's degree from an accredited institution or the equivalent degree from a foreign school and substantial knowledge in a discipline relevant to public health, either through study, experience, or a combination
- All applicants must submit scores on the verbal, quantitative, and analytical portions (general test) of the Graduate Record Examination (GRE). MHA/MBA applicants may submit GMAT or GRE scores. In some cases other test scores may be substituted.

Multidisciplinary Master of Public Health (MMPH)

- Applicants must hold a doctoral degree in the health sciences, be an advanced medical, dental, or veterinary student, or hold a relevant doctoral degree in a related field (considered on an individual basis).
- In most cases, official scores from the verbal, quantitative, and analytical portions (general test) of the Graduate Record Examination (GRE) must be submitted. GRE waivers will be granted on a case by case basis provided MCAT, PCAT, DAT or USMLE/ECFMG scores are submitted in place of the GRE.

Note: If you're a graduate of a foreign medical or dental school, you must hold a valid medical or dental license in the United States, be eligible for licensure, be in a residency or fellowship program, or be a visiting clinician planning to return to your native country.

Master of Science (MS)

Applicants must possess:

- A Bachelor's degree in arts, science, engineering, or nursing, or an MD, DDS, or DVM from an approved U.S. school or equivalent foreign degree
- Evidence of adequate training in the sciences basic to public health (some applicants may be admitted at the discretion of the faculty, making up deficiencies as prescribed)

Applicants may be required to take any examinations deemed necessary to satisfy the faculty as to the applicants' qualifications. In most cases, official scores from the verbal, quantitative, and analytical portions (general test) of the Graduate Record Examination (GRE) must be submitted.

Doctor of Public Health (DrPH)

Applicants must:

- Have an MPH or other graduate degree in a relevant field, or
 - Fulfill admission requirements for the MPH
 - Demonstrate (or have demonstrated previously) ability for leadership in their field, as well as for advancement of scientific knowledge
- DrPH applicants are required to submit scores on the verbal, quantitative, and analytical portions (general test) of the Graduate Record Examination (GRE).

Check the department to which you're applying for more specific requirements.

Doctor of Philosophy (PhD)

Applicants must:

- Possess a U.S. graduate or bachelor's degree, or the equivalent degree from a foreign school, in a field relevant to the PhD program to which they are applying
- Have had sufficient courses in mathematics and the biological and social sciences
- Have had sufficient prerequisite courses in the field to which they are applying

Applicants who don't already have a graduate degree are required to submit scores on the verbal, quantitative, and analytical portions (general test) of the Graduate Record Examination (GRE). Departments may require GRE scores from any applicant. In some cases, LSAT, MCAT, or DAT scores may be submitted.

Certificate Programs

Applicants must possess:

- U.S. bachelor's degree from an accredited institution or the equivalent degree from a foreign school and substantial knowledge in a discipline relevant to public health, either through study, experience, or a combination
- Applicants who don't already have a graduate degree must submit scores on the verbal, quantitative, and analytical portions (general test) of the Graduate Record Examination (GRE). Departments may require GRE scores from any applicant. In some cases, results of the LSAT, MCAT, or DAT may be substituted.

GRE Requirements for Degree Programs

Each department reserves the right to require that *any* applicant submit an official GRE score report, even if the chart indicates that under the specified circumstances the GRE is generally waived. No photocopies of GRE score reports will be accepted. Use Pitt Public Health code 4234 to send your official GRE scores; department codes are NOT used.

GRE Scores

**Master of
Science**

**Master of
Public
Health**

**Master of
Health**

**Doctor of
Philosophy**

**Doctor of
Public
Health**

Administration					
		Required*			
Behavioral and Community Health Sciences	N/A	All international applicants MUST submit GRE scores.	N/A	Required	Required
Biostatistics	Required	N/A	N/A	Required	N/A
Environmental and Occupational Health	Required*	Required*,**	N/A	Required*	N/A
	Required**	Required**		Required**	Required*
Epidemiology	All international applicants MUST submit GRE scores.	All international applicants MUST submit GRE scores.	N/A	All international applicants MUST submit GRE scores.	All international applicants MUST submit GRE scores.
Health Policy & Management	Required	Required MPH/JD: Must submit LSAT scores.	Required MHA/MBA: May submit GMAT scores	Required	N/A
	Required*				
	All international applicants MUST submit GRE scores.	Required*		Required*	
Human Genetics	Genetic Counseling: Required*	All international applicants MUST submit GRE scores.	N/A	All international applicants MUST submit GRE scores.	N/A
	All international applicants				

	MUST submit GRE scores.				
	Genome Bioinformatics: Required*				
	All international applicants MUST submit GRE scores.				
	Required**	Required**		Required**	
Infectious Diseases and Microbiology	All international applicants MUST submit GRE scores.	All international applicants MUST submit GRE scores.	N/A	All international applicants MUST submit GRE scores.	N/A
Multidisciplinary MPH	N/A	MCAT or DAT official score report required for all US applicants. All international applicants must submit the GRE scores.	N/A	N/A	N/A

*If you already have a U.S. graduate degree (or the equivalent), contact the department and request a GRE waiver. There is no guarantee that a waiver will be granted. If the GRE requirement is waived, you must request that the department send a written memo to the admissions manager. E-mail this request to the department student services staff: BCHS: Paul Markgraf; EOH: Bryanna Snyder; HUGEN: Noel Harrie; IDM: Chelsea Yonash.

**MCAT or DAT may usually be substituted for GRE.

School-wide Prerequisite Courses

Social Science Requirement

MPH candidates must have six college credits in behavioral and social sciences (with a C or better).

Mathematics Requirement

All applicants must have mathematical preparation appropriate for entrance into Principles of Statistical Reasoning, usually consisting of college-level statistics, algebra, or calculus (with a C or better). Advanced placement courses reflected on college transcripts may fulfill this requirement. An ETS administered advanced placement test score of three or higher in calculus or a GRE quantitative score at or above the 70th percentile is also evidence of acceptable preparation.

Department Requirements

In addition to school and degree-level requirements, each department has specific requirements. Once you know which program(s) you're applying to, be sure to review departmental requirements.

Certificate Programs

Applicants must meet requirements for admission to MPH.

3+2 Accelerated Master's Program Admission Requirements

In addition to the general requirements, each department has its own admissions requirements.

Department (<i>Program</i>)	Admission Requirements for 3+2 Accelerated Program
Behavioral and Community Health Sciences (<i>MPH</i>)	<ul style="list-style-type: none">• Undergraduate GPA: 3.5• GRE scores: 60th (V), 31st (Q) percentiles; 4.5 (A)• Health-related experience (work or volunteer)• All majors acceptable if above criteria are met
Biostatistics (<i>MS</i>)	<ul style="list-style-type: none">• Undergraduate GPA: 3.0• GRE scores: 72nd (V), 67th (Q) percentiles• Prior coursework: calculus (2 semesters)• Suggested major: mathematics (other majors acceptable if above criteria met)
Environmental and Occupational Health (<i>MPH or MS</i>)	<ul style="list-style-type: none">• Undergraduate GPA: 3.0• GRE scores: 60th (V), 50th (Q) percentiles• Prior coursework (grade of B or better): biology (2 required), organic chemistry, general chemistry, physics, and calculus• Major: biology, chemistry, or mathematics
Epidemiology (<i>MPH or MS</i>)	<ul style="list-style-type: none">• Undergraduate GPA: 3.2• GRE scores must be submitted• Three (3) letters of recommendation• Prior coursework (MPH): social sciences (6 cr.), mathematics (3 cr.), human biology (3 cr.)• Prior coursework (MS): mathematics (3 cr.), human biology (3 cr.)• All majors acceptable if above criteria are met
Health Policy and Management (<i>MPH or MS</i>)	<ul style="list-style-type: none">• Undergraduate GPA: 3.5• GRE scores: 85th (V), 50th (Q) percentiles; 5.0 (A)• All majors acceptable, if above criteria are met

Human Genetics
(MPH or MS)

- Undergraduate GPA: 3.5
- GRE scores: 70th (V, Q, A) percentiles
- Prior coursework: chemistry, biochemistry, and molecular biology
- All majors acceptable if above criteria are met

Genome Bioinformatics
(MS)

- Undergraduate GPA: 3.5
- GRE scores: 70th (V, Q, A) percentiles
- Prior coursework: calculus or statistics, some programming/coding experience, and at least one course in biology or genetics or a related field
- Suggested major: mathematics, computer science, biology, or a related field

Infectious Diseases and Microbiology
(MPH-MIC, MPH-PEL, or MS)

MPH-MIC: Management, Intervention, & Community Practice

MPH-PEL: Pathogenesis, Eradication, & Laboratory Practice

- Undergraduate GPA: 3.3
- GRE scores: 75th percentile (combined)
- Strong letters of recommendation from persons directly familiar with academic performance
- Appropriate undergraduate major

3+2 Accelerated Master's Program

Qualified Pitt undergraduates **apply in their third year** and enroll in graduate classes in their fourth year. As they begin master's degree studies, students simultaneously satisfy remaining undergraduate requirements to **graduate on time** with their bachelor's degree at the end of their fourth year.

Students in the accelerated bachelor's/master's program fully participate in the graduate school experience and prepare themselves for their future career:

- **Develop new skills** with advanced coursework
- **Gain real-world experience** through a required practicum or internship
- **Work with experienced researchers** on basic and applied research problems

Though graduate school is challenging, this accelerated program allows motivated students to obtain a graduate degree and career path all while **saving up to one year's worth of tuition!**

Try out Public Health

Not sure what public health is all about? Explore public health or learn more about the school and the professional field by...

- taking a course-for credit-to satisfy a general education elective,
- attending an event whether it's a talk, presentation, workshop, or social event open to the University,
- participating in a recruitment event like our fall open house for prospective students,
- contacting a faculty member whose work interests you,
- chatting with a student services coordinator to learn more about our different departments and programs,
- talking to your advisor,

Or, contacting our Office of Student Affairs for help or to set up a meeting.

How to apply

Students interested in the accelerated bachelor's/master's program apply online to the specific department and program, normally in the middle of their junior year. Plan on

- taking the GRE (submit scores to code 4234)
- completing some undergrad background courses in the behavioral and social sciences (with a C or better)
- having mathematical preparation needed to later take Principles of Statistical Reasoning (usually college-level statistics, algebra, or calculus with a C or better)
- being on-track to complete at least 96 credits before you start as a graduate student

Applying for Admission to Pitt Public Health

If You Are Applying for a Degree Program

All new degree-seeking applicants, except those applying for non-degree study, only a certificate program, Genetic Counseling MS, and/or dual-degree Genetic Counseling MS/MPH, must apply through SOPHAS, the online, centralized application service for CEPH-accredited schools of public health. SOPHAS submits applications to Pitt Public Health only after all required materials are received.

- Apply online through SOPHAS
- Pay application fee directly to SOPHAS
- Submit personal statement through SOPHAS
- Submit three recommendations directly to SOPHAS
- Submit official transcripts for ALL education in the United States directly to SOPHAS
- Submit a course-by-course WES evaluation for ALL education outside of the United States (not including study abroad) directly to SOPHAS
- Submit official GRE scores to the Graduate School of Public Health code **4234**, with no department code
- Submit official TOEFL scores (if applicable) to SOPHAS code **5688**
- Track the status of your completed application online

Note: *Pitt Public Health holds its applicants and students to the high ethical standards expected of public health professionals. Any form of misrepresentation or plagiarism discovered in an application will result in immediate rejection of the applicant. The incident also will be reported to SOPHAS, the public health shared application service, which will notify other participating schools.*

If You Are Applying for Genetic Counseling MS or dual-degree Genetic Counseling MS/MPH Programs

All new Genetic Counseling MS and/or dual-degree Genetic Counseling MS/MPH applicants must apply through SOPHAS Express.

- Apply online through SOPHAS Express
- Pay application fee directly to SOPHAS Express
- Submit personal statement through SOPHAS Express
- Submit three recommendations through SOPHAS Express
- Submit official transcripts for ALL education in the United States and/or in Canada directly to Pitt Public Health Office of Student Affairs. Official e-transcripts can also be emailed to satemp5@pitt.edu
- Submit a course-by-course WES evaluation for ALL education outside of the United States (excluding study abroad but including non-English speaking Canadian institutions) directly to Pitt Public Health Office of Student Affairs
- Submit official GRE scores to the University of Pittsburgh code **2927**, with no department code
- Submit official TOEFL scores (if applicable) to University of Pittsburgh code **2927**

Note: Pitt Public Health holds its applicants and students to the high ethical standards expected of public health professionals. Any form of misrepresentation or plagiarism discovered in an application will result in immediate rejection of the applicant. The incident also will be reported to SOPHAS Express, the public health shared application service, and the Genetic Counseling program.

If You Are Applying for Non-Degree Study

Interested applicants may enroll in 12 credits of non-degree study before applying to a degree-seeking program.

- Apply online through SOPHAS Express and complete required sections only
- Pay application fee online directly to SOPHAS Express
- Submit official transcripts for all education in the United States and/or Canada to Pitt Public Health Office of Student Affairs
- Submit a course-by-course WES evaluation for all education outside of the United States (excluding study abroad but including non-English speaking Canadian institutions) to Pitt Public Health Office of Student Affairs
- Submit official TOEFL scores (if applicable) to the University of Pittsburgh institution code **2927**, with no department code

Note: Non-degree applicants are not required to submit recommendations, upload transcripts through SOPHAS Express, submit test scores, or submit any non-required sections of the SOPHAS Express application.

More information about the non-degree option can be found [here](#).

If You Are Applying for a Certificate Only

If you are only applying to a Pitt Public Health certificate, you may apply through the abbreviated application below. If you also plan to apply for a degree program, do not apply through SOPHAS Express for the certificate. You will only be required to apply through SOPHAS following the instructions above.

- Apply online through SOPHAS Express
- Pay application fee online directly to SOPHAS Express
- Submit a personal statement through SOPHAS Express
- Submit three recommendations through SOPHAS Express
- Submit official transcripts for all education in the United States and/or Canada to Pitt Public Health Office of Student Affairs
- Submit a course-by-course WES evaluation for all education outside of the United States (excluding study abroad but including non-English speaking Canadian institutions) to Pitt Public Health Office of Student Affairs
- Submit official GRE scores to the University of Pittsburgh code **2927**, with no department code
- Submit official TOEFL scores (if applicable) to the University of Pittsburgh institution code **2927**, with no department code

Note: Applicants who are interested in only pursuing a certificate should contact the program before applying to confirm the availability of courses. International applicants are not eligible to apply for only a certificate program due to the full-time registration requirements of the student visa.

Current Pitt Public Health Students Applying to a New Degree or Certificate Program

Current degree-seeking students interested in transferring to another program or adding another academic program/certificate must:

- Email a brief statement including name, current program, details on the plans to transfer or add a program, and the term in which you would like to begin the program to the Office of Student Affairs, stuaaff@pitt.edu
- Submit official GRE scores (if applicable) to the University of Pittsburgh code **2927**, with no department code

Further instruction will be forwarded to you once the admissions office receives your email of intent, depending on the department's requirements.

Note: *Pitt Public Health non-degree students are required to apply through SOPHAS if they are interested in being considered for a degree program. See above for the application instructions.*

Admissions Review Process

Pitt Public Health processes new applications on Tuesdays and Thursdays. Once the school has received your verified application from SOPHAS or SOPHAS Express and has processed internally, you will be notified by email. If your application is complete by our school-specific requirements, it will be sent to the department for their review. If your application is incomplete, you will receive an initial email about the missing items and then you will be sent periodic email reminders about the incomplete status. Applicants are not considered for admission until all required application materials have been received. Please be sure to add **donotreply@webadmit.org** and **@sendgrid.me** to your safe-senders list in your email account.

Your application will be reviewed by the departmental committees. Departmental review generally takes four to six weeks, but the timing may vary by department or by season. As soon as the department has submitted a decision on your application to the Office of Student Affairs, you will be notified of the admissions committee's decision by email.

Note: *A departmental committee evaluates applications and makes a recommendation to the recruitment and admissions manager in the Office of Student Affairs. Admission is not final until the recruitment and admissions manager issues a letter of acceptance.*

In the following circumstances, application materials will be kept for one year from the date the application was received and then be destroyed:

- Application remains incomplete
- Application is not accepted
- Application is accepted, but applicant does not respond
- Application is accepted, but the applicant declines admission

Mailing Address

University of Pittsburgh
Graduate School of Public Health
Office of Student Affairs
G009 Public Health
130 DeSoto Street
Pittsburgh, PA 15261
(412) 624-3088

Department-specific Admission Requirements

Each program at Pitt Public Health has specific requirements. Once you know which program(s) you're applying to, be sure to review the departmental requirements listed below.

Behavioral and Community Health Sciences

PhD applicants must hold a post-baccalaureate degree, e.g. a master of science degree, in a discipline relevant to public health, such as social work or anthropology, or an MD or JD. DrPH applicants must either hold an MPH degree or a post-baccalaureate degree in a discipline relevant to public health. DrPH applicants who do not hold an MPH degree must complete the Pitt Public Health school core

courses in addition to the requirements for the DrPH degree if accepted. A degree from a school accredited by the Council on Education for Public Health (CEPH) is highly desirable.

Biostatistics

	MS	PhD
Prior Degree Required	Yes	Yes
Complete and Submit Application	Yes	Yes
Three Letters of Recommendation	Yes	Yes
Biology (3 credits)	Yes**	Yes**
Computer Science	Yes**	Yes**
Calculus (1 year)	Yes	Yes
GRE within three years of application	Yes	Yes

* Degree should be a professional health degree, such as nursing, MD, DDS, or DVM

** Deficiency can be made up during the first year

Environmental and Occupational Health

Acceptable undergraduate training includes:

- A bachelor's degree in the physical, chemical, or biological sciences with at least a 3.0 grade-point average overall and in the basic sciences
- A minimum of two courses each in organic chemistry, biology, physics, and calculus
- The Graduate Record Examination (GRE), unless you already have a graduate or professional degree and a waiver is approved

Epidemiology

All epidemiology degree programs require 3 college-level credits of human biology course work. Advanced Placement biology course work does not fulfill this requirement.

Health Policy and Management

Acceptable undergraduate training includes:

MHA applicants

- Minimum of three credits in human biology
- Minimum of three credits in college-level mathematics (algebra or higher) or statistics
- Minimum of six credits in the social and behavioral sciences, preferably with at least one course in economics
- GRE required but current scores from the following exams will be considered on a case by case basis: GMAT, LSAT, MCAT or PCAT

MPH and JD/MPH applicants

- Minimum of three credits in college level mathematics (algebra or higher) or statistics
- Minimum of six credits in the social and behavioral sciences, preferably with at least one course in economics

- GRE required but current scores from the following exams will be considered on a case by case basis: GMAT, LSAT, MCAT or PCAT

MS applicants

- QPA of 3.0 or higher (undergraduate degree)
- Undergraduate or graduate calculus with a 3.0 or higher
- GRE scores in at least the 50th percentile or higher in all categories

It is recommended that applicants have completed coursework in statistics, economics and another social science

PhD applicants

- QPA of 3.3 or higher (master's degree not required)
- Undergraduate or graduate calculus with a 3.0 or higher
- GRE scores in at least the 60th percentile or higher in all categories

Human Genetics

Acceptable undergraduate training includes the following:

MS in human genetics and PhD applicants

- Bachelor's degree in a discipline related to the biological or behavioral sciences from an accredited college or university, with a minimum GPA of 3.0
- Graduate Record Examination (GRE) scores above the 70th percentile for the verbal and quantitative tests
- Introductory courses in genetics and calculus are required; additional coursework in biochemistry and behavioral or social sciences are recommended but not required

MS in Genetic Counseling

- Please see the Genetic Counseling Program's Admissions page for information on admissions requirements

MPH in Public Health Genetics

- Candidates must have a degree in a discipline relevant to public health or must have substantial knowledge of a discipline relevant to public health either gained either through study or experience
- Graduate Record Examination (GRE) scores above the 70th percentile for the verbal and quantitative tests
- Coursework in genetics, biochemistry, and calculus is helpful but not required

MS in Genome Bioinformatics

- Bachelor's degree in a discipline related to biological sciences or computer/information sciences from an accredited college or university with a minimum GPA of 3.0
- Graduate Record Examination (GRE) scores above the 70th percentile for the verbal and quantitative tests
- Coursework in calculus or statistics, some programming/coding experience, and at least one course in biology or genetics or a related field is required
- A minimum TOEFL score of 80 on the internet test. IELTS scores (minimum 6.5) may be substituted. In either case the test must have been taken within two years of application

Infectious Diseases and Microbiology

MS and PhD programs

- Minimum 3.0 combined grade-point average in biology, chemistry, math, and biochemistry and/or molecular biology and/or immunology
- Relevant research experience in biochemistry, immunology, and molecular biology
- College biology with or without microbiology
- Chemistry, including organic chemistry with laboratory and biochemistry
- College-level algebra

MPH programs

- Minimum six credits of college-level behavioral science, to include at least one course in sociology or social psychology and an additional course in anthropology, economics, political science, psychology, or sociology with a grade of C or better

Multidisciplinary Master of Public Health (for clinically trained health professionals)

The program is open to...

- Physicians, dentists, and veterinarians
- Holders of doctoral degrees in the health sciences
- Advanced medical and dental students (considered on an individual basis)
- Holders of other relevant doctoral-level degrees (considered on an individual basis)

If you're a graduate of a foreign medical and dental school, you must hold a valid medical or dental license in the United States, be eligible for licensure, be in a residency or fellowship program, or be a visiting clinician planning to return to your native country.

Certificate Programs

Applicants must possess:

- U.S. bachelor's degree from an accredited institution or the equivalent degree from a foreign school and substantial knowledge in a discipline relevant to public health, either through study, experience, or a combination
- Applicants who don't already have a graduate degree must submit scores on the verbal, quantitative, and analytical portions (general test) of the Graduate Record Examination (GRE). Departments may require GRE scores from any applicant. In some cases, results of the LSAT, MCAT, or DAT may be substituted

Non-Degree Status

You can take up to 12 credits (cumulative maximum) as a non-degree student. If you are later accepted into a degree program, that program will decide which of those credits may be applied to your requirements.

GSPH-Epidemiology Areas of Research Emphasis

Areas of Emphasis

Students take a series of core courses in epidemiology and public health, then may choose to enroll in courses in one or several Areas of Emphasis. Faculty in each of these areas have major research and/or community service programs that provide excellent facilities for student research and field training, and some have training grants. Summaries of each area, and their specific details, are provided below.

Faculty members in each of these areas offer major research and/or community service programs that provide excellent facilities for student research and field training.

Aging Epidemiology
 Applied Public Health Epidemiology
 Cancer Epidemiology
 Cardiovascular & Diabetes Epidemiology
 Clinical Trials & Methods
 Environmental Epidemiology
 Global Health Epidemiology
 Infectious Disease Epidemiology
 Injury Prevention Epidemiology
 Molecular & Genetic Epidemiology
 Neuroepidemiology
 Obesity & Nutritional Epidemiology
 Prevention, Lifestyle & Physical Activity Epidemiology
 Psychiatric Epidemiology

Faculty Contact: Anne Newman, MD, MPH

- Areas of research broadly include: successful aging and longevity, physical function, activity and disability, osteoporosis, vascular aging, sarcopenia, brain aging and mobility.
- Training grant: All trainees participate in a three course series on aging, hands-on research training, research conferences and seminar series. Additional career development opportunities for post-doctoral students are available.
- All doctoral trainees design, implement, analyze data, and report the results of an independent study as part of the program with a goal of submitting three manuscripts for publication. Trainees are encouraged to present their research in a variety of venues, including GSPH Dean's Day.
- Faculty members primarily working in this area include: Robert Boudreau, Jane Cauley, Nancy Glynn, Lewis Kuller, Iva Miljkovic, Anne Newman, Caterina Rosano, Andrea Rosso, Elsa Strotmeyer, Joseph Zmuda
- Collaborating Faculty include: Steve Albert, Howard Aizenstein, Steve Belle, Emma Barinas-Mitchell, Jen Brach, Maria Brooks, Clare Bunker, Lora Burke, Mary Ganguli, Tiffany Gary-Webb, Susan Greenspan, Joseph Hanlon, John Jakicic, Candy Kammerer, Oscar Lopez, Neelesh Nadkarni, Karen Matthews, Ryan Minster, Trevor Orchard, Sara Piva, Chip Reynolds, Akira Sekikawa, Jian-Min Yuan

Faculty Contact: Thomas Songer, PhD

- Areas of focus include: population health status assessment; infectious and chronic disease surveillance and control, maternal and child health epidemiology and environmental health epidemiology.
- Opportunities include practicum experiences, independent study and other applied projects. An enhanced practicum experience is the Summer Institute in Applied Public Health at the Allegheny Health Department.
- Faculty members currently working in this area include LuAnn Brink, Marshal Ma, Kristen Mertz, and Thomas Songer.

Faculty Contacts: Jian-Min Yuan, MD, PhD

- An advanced course is offered in cancer epidemiology on topics of surveillance, etiology and prevention.
- Research focus areas include: breast cancer and hormonal factors; environmental exposures determined by objective biomarkers and gene-environment interaction in the etiology of and susceptibility to cancer, including cancers of the lung, liver, colorectum, urinary bladder, breast, ovary and prostate; molecular epidemiology; cancer screening and related health services; diet as a source of risk and protective factors of cancer; obesity and weight loss for cancer prevention.
- Cancer Epidemiology and Prevention Program Seminar series at the University of Pittsburgh Cancer Institute, an National Cancer Institute-designated Comprehensive Cancer Center.
- Faculty members currently working in this area include: Clareann Bunker, Jane Cauley, Brenda Diergaarde, Lewis Kuller, Faina Linkov, Jian-Min Yuan.

Faculty Contact: Akira Sekikawa, MD, MPH, PhD

- Areas of research broadly include: cardiovascular aging and longevity; body composition and obesity; cardiovascular epidemiology; physical activity and subclinical CVD; novel CVD risk factors, high risk and ethnic subpopulations; vascular health; hypertension; peripheral nerve function; lipid metabolism, and evaluation of cardiac interventions.
- Diabetes areas of research include extensive programs in both Type 1 and Type 2 diabetes. For type 1 diabetes, these include a 30 year follow up study of childhood onset diabetes, (Pittsburgh Epidemiology of Diabetes Complications Study) and the national DCCT/EDIC study also with over 25 years follow up. For type 2 diabetes the Diabetes Prevention Program Outcomes Study and the translation of the interventions to the community form the basis of much activity including a Diabetes Prevention Support Center.
- Training grant: Designed to provide concentrated, tailored training in the quality collection of subclinical atherosclerotic measures, organized around four major research strengths: vascular aging, women's health, genetics and high risk/international populations. All trainees will participate in course work, research field work, and professional development (including CVD and diabetes journal clubs, independent research, grant writing, manuscript preparation and conference presentations).
- Faculty members currently working in this area include: Emma Barinas-Mitchell, Marnie Bertolet, Maria Mori Brooks, Clareann Bunker, Tina Costacou, Samar El Khoudary, Linda Fried, M. Kaye Kramer, Andrea Kriska, Allison Kuipers, Lewis Kuller, Rachel

Mackey, Oscar Marroquin, Karen Matthews, Iva Miljkovic, Matthew Muldoon, Suresh Mulukutla, Anne Newman, Trevor Orchard, Akira Sekikawa, Thomas Songer, Elsa Strotmeyer, Evelyn Talbott.

Faculty Contact: Steven Belle, PhD, M.Sc.Hyg.

- The activities of the Epidemiologic Methods group contribute to all areas of emphasis, specializing in design and conduct of studies including adaptive trials, survey sampling, and statistical methods.
- The didactic component includes three general methods courses and a design of clinical trials course. The journal club has covered topics including Latent Variable Modeling in Epidemiology and Causal Inference.
- The Epidemiology Data Center (EDC) was established in 1980 as a section of the Department of Epidemiology, founded by Katherine M. Detre, M.D., Dr.P.H., and under the co-direction of Steven Belle, PhD, Maria Brooks, PhD, and Stephen Wisniewski, PhD. The EDC has collaborated in over 100 research studies sponsored by the National Institutes of Health and other agencies. Presently, the EDC coordinates data management and analysis activities for 26 research projects sponsored by federal and various other governmental or private agencies and by industry. For more information, see the EDC web-site.
- The EDC hosts the CTSI Design, Biostatistics and Epidemiology (DBE) Core providing services to researchers at all stages of the research spectrum. Services include: grant application development and the pairing of researchers with statistical collaborators. It also hosts a Journal Club offering topics such as Propensity Scores and Survey Sampling.
- Faculty members currently working in this area include: Emma Barinas-Mitchell, GK Balasubramani, Steven Belle, Marnie Bertolet, Robert Boudreau, Maria Mori Brooks, Clareann Bunker, Yona Cloonan, Samar El Khoudary, Anthony Fabio, Sheryl Kelsey, Wendy King, Ashley Naimi, Rachel Mackey, Bedda Rosario, Kristine Ruppert, Robert Schoen, Stephen Wisniewski.
- Additional collaborators from the Department of Biostatistics include: Jong Jeong, and Abdus Wahed.

Faculty Contact: Evelyn Talbott, DrPH, MPH

- Areas of research include: air pollution and cardiovascular disease outcomes, cancer epidemiology and cancer cluster investigation, ambient air lead and PM_{2.5} and health effects, childhood autism and personal and environmental risk factors.
- Graduate student research assistantships for CDC funded projects involving ambient air lead and childhood lead poisoning, childhood autism and the environment , PM_{2.5} air pollution and cardiopulmonary outcomes.
- All doctoral trainees conduct an independent study with the requirement to submit three manuscripts for publication. Hands on training in the area of environmental epidemiology with collaborations with over 23 state health departments through CDC environmental public health tracking programs.
- Faculty members currently working in this area include: Jennifer Adibi, Gary Marsh , Evelyn Talbott, and Ada Youk.
- Additional collaborators from the Department of Biostatistics include: Vincent Arena, and Jeanine Buchanich and from the Allegheny County Health Department: LuAnn Brink and Kristen Mertz.

Faculty Contact: Clareann Bunker, PhD

- Areas of research Include: maternal and child health (rural India); functional disability in aging (rural India); diabetes (Rwanda), hypertension, cardiovascular disease (rural India, Tobago); impaired kidney function (Tobago); infectious disease/HIV (Brazil, India, and Mozambique); bone health (Tobago); prostate cancer (Tobago, Nigeria); cancer (China); environmental health (China); application of the Internet and Mobile technology for global health and prevention. Infectious diseases/dengue modeling (Thailand, Cambodia, Laos, Vietnam, Philippines, Singapore, Malaysia, Taiwan, Brazil, Columbia); atherosclerosis, coronary heart disease, alzheimer's disease, chronic obstructive pulmonary disease (Japan).
- Development of the internet Supercourse with 50,000+ members from over 170 countries, teaching over 50,000,000.
- Development of Project Tycho, a global health data repository released in November of 2013 providing open access to high resolution disease data for research, training, and public health public policy at www.tycho.pitt.edu.
- Faculty members currently working in this area include: Donald Burke, Clareann H. Bunker, Jane Cauley, Catherine Haggerty, Lee H. Harrison, M. Kaye Kramer, Andrea Kriska, Allison Kuipers, Ronald LaPorte, Faina Linkov, Iva Miljkovic, Jean Nachega, Anne Newman, Trevor Orchard, Akira Sekikawa, Evelyn Talbott, Willem van Panhuis, Jian-Min Yuan, Joseph Zmuda.

Faculty Contact: Lee Harrison, MD

- Areas of research include: epidemiology and molecular epidemiology of serious, vaccine-preventable, drug-resistant and hospital-associated bacterial infections; prevention of HIV infection; infectious diseases surveillance; computational modeling of disease and intervention strategies; use of geotemporal analysis in infectious diseases.
- Training grants: 1) Dengue and vaccine-preventable and drug-resistant bacterial infections in Brazil and 2) prevention of HIV infection in Brazil, India, and Mozambique.
- All doctoral trainees conduct an independent study with the requirement to submit three manuscripts for publication. Trainees can choose traditional epidemiology or molecular epidemiology as the basis of their doctoral research.
- Faculty members currently working in this area include: Steven Belle, Donald Burke, Catherine Haggerty, Lee Harrison, Lawrence Kingsley, Jean Nachega, Willem van Panhuis, and collaborating from the Allegheny Health Department: Kristen Mertz.

Faculty Contacts: Tom Songer, PhD, MPH, Anthony Fabio, PhD, MPH

- Applied research in broad areas of unintentional and intentional injury including but not limited to injury from motor vehicle crash, falls, natural disasters, poisoning, head trauma, criminal violence, child maltreatment, domestic violence, and treatment of injury.
- Emphasis on the application of epidemiologic methods in population and clinical settings to understand key risk and prognostic factors for primary and secondary prevention of injury.
- Trainees participate in academic training in injury epidemiology and/or injury prevention and control and applied research training on specific injury and violence topics using mentors from multiple disciplines in the fields of epidemiology, statistics, trauma, behavioral sciences, surgery, psychiatry, criminology and others.
- Faculty members currently working in this area include: Steven Albert, Anthony Fabio, Thomas J. Songer, Evelyn Talbott, Stephen Wisniewski, Mazen Zenati.

Faculty Contact: Joseph Zmuda, PhD

- Areas of current research broadly include aging, cancer, reproduction and early development, cardiovascular disease, diabetes, obesity, sarcopenia, and osteoporosis.
- Requirements vary depending on student background and needs, and are offered in collaboration with the Departments of Environmental and Occupational Health and Human Genetics in the Graduate School of Public Health.
- Didactic and laboratory courses are offered.
- Faculty members currently working in this area include: Jennifer Adibi, Clareann H. Bunker, Brenda Diergaarde, Allison Kuipers, Iva Miljkovic, Anne Newman, Jian-Min Yuan, Joseph Zmuda.
- Collaborators from other departments include: Robert Ferrell, Candace Kammerer, Ilyas Kamboh, Ryan Minster, Dan Weeks.

Faculty Contact: Caterina Rosano, MD, MPH

- Focuses on the application of epidemiology methods and cutting-edge neuroimaging methodologies in population and clinical studies to enhance etiological research and evaluation of specific therapies in the disorders of the central nervous system.
- Targets the interdependent nature of clinical characterization, epidemiological methods and multimodal assessment of disorders of the central nervous system through rigorous academic training and applied research opportunities.
- Maximizes the potential for applied research training and for successful field placements of the trainees through multidisciplinary mentored work with leaders in the fields of epidemiology, psychiatry, neuroscience, neurology, and others.
- Read more about Specialization in Neuroepidemiology
- Faculty members currently working in this area include: Jane Cauley, Mary Ganguli, Lewis Kuller, Karen Matthews, Trevor Orchard, Gale Richardson, Caterina Rosano, Bedda Rosario, Andrea Rosso, Evelyn Talbott.
- Collaborators from other departments include: Howard Aizenstein (psychiatry), James Becker (psychiatry), Kirk Erickson (psychology), Peter Gianaros (psychiatry), Samay Jain (neurology), Oscar Lopez (neurology), Amy Wagner (psychology).

Faculty Contact: Lisa Bodnar, PhD

- Areas of research include: nutritional epidemiology, obesity epidemiology, body composition, bariatric surgery, dietary intake, and supplement use.
- Relevant courses include Nutritional Epidemiology, Nutrition Assessment Laboratory.

- Faculty members currently working in this area include: Lisa Bodnar, Lora Burke, Samar El Khoudary, Wendy King, M. Kaye Kramer, Andrea Kriska, Iva Miljkovic, Akira Sekikawa, Lauren Simkin-Silverman.

Faculty Contacts: Andrea Kriska, PhD, MS

- This program involves translating the proven benefits of lifestyle intervention on a broad range of health outcomes including type 2 diabetes, cardiovascular disease and obesity. This program encompasses the conceptual and practical foundation needed for such public health translation initiatives. Learning objectives include a thorough understanding of disease prevention, behavioral intervention theory and lifestyle intervention training, along with a critical understanding of the methodological issues in designing and evaluating these efforts. Course work includes formal training and a practicum in which students gain community-based experience administering the lifestyle intervention, which is comprised of weight loss, increased physical activity and healthy eating.
- An integral part of this AOE in the Department of Epidemiology is the Diabetes Prevention Support Center (DPSC). The DPSC is comprised of Epidemiology faculty who were originally part of the Diabetes Prevention Program, the national multi-center clinical trial that demonstrated the benefits of lifestyle intervention in preventing a chronic disease. The DPSC serves as the central training center for lifestyle intervention delivery as well as provision of subsequent post-training support.
- The Department of Epidemiology is also the home of the Physical Activity Resource Center for Public Health (PARC-PH) which was developed to provide the physical activity assessment information and lifestyle intervention tools necessary to carry out prevention/translation efforts.
- Faculty members currently working in this area include: Lisa Bodnar, Joyce Bromberger, Lora Burke, Margaret Conroy, Jacqueline Dunbar-Jacob, Nancy Glynn, Wendy King, M. Kaye Kramer, Andrea Kriska, Lewis Kuller, Faina Linkov, Karen Matthews, Kathleen McTigue, Trevor Orchard, Lauren Simkin-Silverman, Elizabeth Venditti, Tiffany Gary-Webb .

Faculty Contact: Gale Richardson, PhD

- The Psychiatric Epidemiology Training Program focuses on the acquisition of epidemiological, biostatistical, and psychiatric concepts and methods, and on their application to research in the field of psychiatric disorders
- Training is accomplished through course work in epidemiology and biostatistics, and through courses in psychiatric epidemiology that were designed specifically for the PET Program
 - The training experience includes the opportunity to work on research projects with faculty mentors who are active researchers in psychiatry and epidemiology within the Graduate School of Public Health (GSPH) and the Department of Psychiatry within the University of Pittsburgh School of Medicine
- Faculty members currently working in this area include: David Brent, Joyce Bromberger, Tammy Chung, Marie Cornelius, Nancy Day, Mary Amanda Dew, John Donovan, Mary Ganguli, Karen Matthews, Margaret McDonald, Kenneth Perkins, Gale Richardson, Stephen Wisniewski.

Faculty Contact: Catherine Haggerty, PhD, MPH

- Areas of research broadly include: causes of pregnancy complications and adverse outcomes including spontaneous abortion, stillbirth, preterm birth, low birth weight, intrauterine growth restriction, and preeclampsia; obesity and nutrition among pregnant women; fertility and contraception; breastfeeding; and sexually transmitted infections. A major clinical site for collaboration is Magee-Womens Hospital, the obstetrics, gynecologic, and reproductive sciences specialty hospital associated with the University of Pittsburgh Medical Center. Global health research experiences are available through a study of pregnancy being conducted in India.
- Training program provides concentrated, tailored training on the patterns, risk factors, and interventions that might improve reproductive, perinatal, and pediatric health, as well as women's health across the lifespan. All trainees will participate in coursework, research field work, and professional development including courses in Reproductive Epidemiology, Epidemiology of Women's Health, and Pediatric Epidemiology; a Reproductive, Perinatal and Pediatric Epidemiology Journal Club; a Maternal and Child Health Journal Club; independent research; grant writing; manuscript preparation; and scientific conference presentations.
- Trainees who engage in community service activities in addition to completing the didactic requirements will be eligible for a Women's Health Specialization, which honors trainees' combined interests in women's health research and community outreach.
- Faculty members currently working in this area include: Jennifer Adibi, Emma Barinas-Mitchell, Lisa Bodnar, Joyce Bromberger, Clareann H. Bunker, Janet Catov, Jane Cauley, Yona Cloonan, Marie Cornelius, Nancy Day, Samar El Khoudary, Catherine Haggerty, Sheryl Kelsey, Andrea Kriska, Lewis Kuller, Rachel Mackey, Dara Mendez, Evelyn Talbott, Nina Markovic, Karen Matthews, Gale Richardson, James Roberts, Rebecca Thurston.

Faculty Contact: Jane Cauley, DrPH

- Areas of research broadly include: women's health across the lifespan, menopause and late life. Menopause and Aging focuses on furthering our understanding of chronological aging versus ovarian aging. Emphasis is placed on a broad range of topic areas including the skeleton, cardiovascular disease, mental health, physical function and disability, body composition and lifestyle.
- Faculty members currently working in this area include: Emma Barinas-Mitchell, Lisa Bodnar, Joyce Bromberger, Maria Mori Brooks, Clareann Bunker, Janet Catov, Jane Cauley, Marie Cornelius, Nancy Day, Natacha DeGenna, Samar El Khoudary, Catherine Haggerty, Sheryl Kelsey, Andrea Kriska, Lewis Kuller, Rachel Mackey, Nina Markovic, Karen Matthews, Dara Mendez, Gale Richardson, Akira Sekikawa, Evelyn Talbott,, Rebecca Thurston.

GSPH-Epidemiology Funded Research & Practice

Funded Research and Training Projects

The Department of Epidemiology, the largest department at Pitt Public Health, offers interdisciplinary research opportunities in the City Of Pittsburgh, which is recognized as an international hub for health care innovation and practice. The school is one of the nation's leading schools of public health, consistently ranking in the top tier among schools of public health in terms of NIH funding. The Department of Epidemiology accounts for about forty percent of the school's total grant funding.

The Department of Epidemiology has a central theme of "**Teaching and Prevention through Quality Research**," and is involved in both research and prevention activities. The department's primary faculty members have a varied range of research interests reflected in more than 90 funded projects and more than 500 publications each year. Faculty, staff and student participation in regular seminars provides a rich collaborative environment.

Based on faculty research, the department offers many areas of emphasis including aging, applied public health, cancer, cardiovascular and diabetes, clinical trials and methods, environmental, global health, infectious disease, injury prevention, molecular and genetics, neuroepidemiology, obesity and nutritional, prevention, lifestyle and physical activity, psychiatric, reproductive, perinatal and pediatric and women's health epidemiology.

Research programs include those with global reach in over a dozen nations including: maternal and child health (rural India); functional disability in aging (rural India); diabetes (Rwanda), hypertension, cardiovascular disease (rural India, Tobago); impaired kidney function (Tobago); infectious disease/HIV (Brazil, India, and Mozambique); bone health (Tobago); prostate cancer (Tobago, Nigeria); cancer (China); environmental health (China); application of the Internet and Mobile technology for global health and prevention; Infectious diseases/dengue modeling (Thailand, Cambodia, Laos, Vietnam, Philippines, Singapore, Malaysia, Taiwan, Brazil, Columbia); atherosclerosis, coronary heart disease, Alzheimer's disease, chronic obstructive pulmonary disease (Japan).

Research Innovations

in risk assessment

- use of advanced imaging methods
- use of biomarkers, including genetic profiles and personal monitoring
- use of activity monitoring and environmental (air and water quality) assessment
- use of molecular tools to detect and study emerging bacterial infections - *in data management and analysis*
- adaptive designs for clinical trials
- geographic modeling
- temporal modeling

Research Highlights

- through the Center for Aging and Population Health (CAPH, a Centers for Disease Control and Prevention (CDC) Research Center, supporting data collection for several large studies, primarily in older adults but also in other groups
- through CAPH, addressing healthy aging by promoting a comprehensive community prevention program called the 10 Keys to Healthy Aging
- with funding from the National Institutes of Health, currently conducting the Lifestyles and Independence for the Elderly Trial, Testosterone Trial, and Aspirin to Prevent Events in the Elderly Trial
- engaging in ongoing follow-up for the Epidemiology of Diabetes Complications study, Women's Health Initiative, Cardiovascular Health Study, Study of Osteoporotic Fracture, and Men's Osteoporosis Study

Collaborating Partners

- Pitt Public Health departments
- Pitt Department of Psychiatry
- University of Pittsburgh Cancer Institute
- Magee Womens Research Institute
- Allegheny County Health Department
- Pennsylvania Department of Health

Tuition & Financial Aid

Tuition and fees are set by the University and the official postings should be consulted for current information.

Learn more about Tuition and Billing

Financial Aid

Pitt Public Health cannot guarantee funding to every student, but last year the school provided more than \$5 million in financial aid to graduate students. Almost all Pitt Public Health doctoral students and many master's students receive some type of financial aid, whether in the form of full or partial scholarships, fellowships, student assistantships, student employment, or student loans.

Students who receive aid generally receive it through their department, and the amount of aid available varies among the programs. Priority consideration is given to doctoral students. Departments may award graduate student research positions to international students.

Important Information on Financial Aid for International Applicants

In general, international students are not eligible for student loans, federal traineeships, fellowships, or scholarships. International students may be eligible for selected scholarships or assistantships. (A significant number of our international doctoral students are supported by assistantships.)

Important: At the time of admission, international applicants who have not been offered financial aid are required to submit an affidavit, indicating that they have sufficient funds to cover their tuition and living expenses for the duration of the program. Visa documents are issued on the basis of these affidavits, and the expectation of self-support continues throughout the period of enrollment.

International students should always consult with the Office of International Services before applying for student employment.

Contacts for Financial Aid

Contact your GSPH Department Student Services Staff or academic advisor first with questions about student assistantships, scholarships, and hourly employment.

University of Pittsburgh Student Loans

Pitt Office of Admissions and Financial Aid
412-624-7488

Student Hourly Employment

Contact your GSPH Department Student Services Staff or your departmental academic advisor.

Contact the University's Office of Human Resources at 412-624-7000.

Scholarships, Assistantships, Fellowships

Contact your GSPH Department Student Services Staff or academic advisor.

Key Deadlines

Loan Applications

Student loan applications are processed for GSPH students by the University's Office of Admissions and Financial Aid (OAFA; 412-624-7488). See complete instructions for applying for a student loan on the University's Office of Admissions and Financial Aid page.

Student Loan Deadlines

While there is no strict deadline for application, the suggested filing dates are encouraged:

- June 1 (fall term)
- October 1 (spring term)
- February 1 (summer term)

Students are encouraged to submit loan application documents as soon as possible before the start of the term for which a loan is requested.

For information about student loans, view the University's Office of Admission and Financial Aid's PowerPoint presentation.

Types of Aid

Student Loans

Generally, applicants must be U.S. citizens or permanent residents. Contact Office of Admissions and Financial Aid for information on loan options, availability, and to apply.

Call 412-624-7488 to check the status of your loan application.

Free Application for Federal Student Aid (FAFSA)

The Free Application for Federal Student Aid (FAFSA) is required for all students who wish to be considered for loans or Pitt Public Health aid. The University of Pittsburgh federal school code is 008815.

Federal Regulations on Student Loans: Satisfactory Academic Progress (SAP)

Institutions participating in Title IV Federal Student Aid programs must monitor satisfactory academic progress of students receiving any federal loans or other aid (e.g. scholarships).

To demonstrate satisfactory progress, students must maintain a 3.0 GPA and complete at least 67% of the total credits attempted at any point. Doctoral students must complete the degree within the statute of limitations for the degree and must complete the degree with no more than 150% of the required credits. If progress is not met, students may be ineligible to receive loans or other aid. Students may appeal, in which case they will have one term to achieve the SAP standards. See Mary Derkach in the Office of Student Affairs, G009 Public Health, to submit an appeal of determination of no progress.

If you receive federal aid, you should read the entire SAP policy. In particular, FTDR registration is counted as 9 credits for the purposes of this law; retaking courses and receiving course grades of W, I, G, F, N (audit) and R all count towards the stated totals. Advanced standing credits also count toward the total number of credits taken. Also, carrying a large number of I, G, W, R, and F graded credits may potentially violate the 67% completion rule. Contact your instructor(s) about filing real grades on a term-by-term basis, where appropriate.

Emergency Loans

The University may provide loans of up to \$200 for students in emergency financial need. Interested students should contact the Student Organization Resource Center (SORC) on the first floor of the William Pitt Union, 412-624-7116.

Short-term student loans of up to \$500 may be available through the Pitt Public Health Office of Student Affairs for students with unexpected emergencies who have paid their tuition for the term. Students should contact assistant dean for student affairs, Mary Derkach for more information.

Grants and Scholarships

Important Note on Loan Eligibility with Regard to Grants and Scholarships

The University recalculates a student's loan eligibility whenever additional financial aid appears in the student financial system. New aid may result in a reduction or total cancellation of loan eligibility, including an obligation to immediately repay all or part of a loan already disbursed. If you receive a scholarship, you may want to schedule a meeting with a loan counselor in the Office of Admissions and Financial Aid and ask for a recalculation of your loan eligibility.

University Aid

The University offers several scholarships throughout the year that are suitable for graduate students. These scholarships will be announced to departments and students will be invited to apply.

Pitt Alumni Association Graduate Scholarship

A one-time \$5,000 scholarship awarded to graduate students who also completed their undergraduate degree at Pitt.

The George L. Carson Graduate Fellowship for Pitt Alumni

Awarded to a graduate student who was affiliated with a Pitt athletics program as an undergraduate. Applications will be available in February and are typically due May 1. Contact the Student Life and Compliance Office in the Athletics Department with questions.

Owens Fellowship

A needs-based, \$6,000 per year fellowship that can be used for tuition, books, and living expenses. Copies of GRE scores or other standardized test scores may be required. Applications are available in February. Go to my.pitt.edu, PittFund\$Me, in early May for applications and information.

Provost's Development Fund

A needs-and merit-based grant for doctoral students intended to provide financial support and professional development for women and disadvantaged students. Applicants must be U.S. citizens or permanent residents. Applicants must also be in the final year of their doctoral program, having completed all required coursework and working on their dissertation. Contact Linda Williams-Moore at lwmoore@pitt.edu for more information.

K. Leroy Irvis Fellowships

Graduate schools receive one award each year to provide first-year support of an outstanding, full-time doctoral student who supports the University's and school's diversity mission. The Irvis Fellowship provides a stipend, tuition remission, and health insurance for the first year; the academic department provides the same level of support for years two and three. Nominations are made by departments.

PittFund\$Me: All students seeking aid should fill out a personal profile at my.pitt.edu, PittFund\$Me, to be considered for any University aid for graduate students.

Pitt Public Health Aid

Pitt Public Health awards the following partial scholarships annually, generally at the start of the fall term. Students may contact their departments and request to be nominated.

Dean's Public Health Scholars Award

During the early spring term each department can nominate one outstanding incoming master's student for the Dean's Public Health Scholars Award, which provides a 50% tuition scholarship for up to two years of full-time graduate studies. Students must be registered full-time through the Graduate School of Public Health to receive the award.

In addition, two scholarship awards are reserved for direct application by newly accepted applicants for Fall 2019. Applicants who wish to be considered for one of these awards must send a request to Mary Derkach, Office of Student Affairs, at derkach@pitt.edu. Selected applicants must plan to enroll through Pitt Public Health as full-time master's students, and be U.S. citizens or permanent residents, with verbal GRE scores in the 70th percentile or better, and quantitative scores in the 60th percentile or better. In addition, requests must be accompanied by a statement describing the applicant's academic achievements to date as well as her/his ability to enhance or contribute to the diversity and inclusiveness of the Pitt Public Health student body. Second-year funding is available, contingent upon a GPA of 3.3 or higher in the first year.

Campaign for the Next 5,000 Alumni

Financial support based on need, merit, and diversity. Although preference may be given to master's students, doctoral students are also eligible.

Dean's Endowed Doctoral Scholarship

Support for doctoral students based on need, merit, and community service.

Dr. Edgar and Lauraine Duncan Scholarship

Financial support for disadvantaged students that can be used for student fees, stipend, books, or travel expenses.

Bernard D. Goldstein Student Award in Environmental Health Disparities and in Public Health Practice

For students or postdoctoral fellows studying either the environmental causes of health disparities or the practice of public health. This award is administered in alternate years by the Center for Health Equity (even-numbered years) and the Center for Public Health Practice (odd-numbered years). Apply by November 18, 2019.

Departmental Awards**Behavioral and Community Health Sciences****Carol McAllister Award**

Based on need and merit, awards can be used for books, fees, stipends, or travel expenses.

Karen S. Peterson Memorial Research Award for Women's Health

Research or practice support for work in women's health.

Joseph and Brigida Ricci Scholarship

Needs-based support for an outstanding student.

Myrna Silverman Scholarship

Needs-based support for an outstanding doctoral student.

Biostatistics**Biostatistics Endowed Scholarship Fund**

Tuition support.

Department of Biostatistics Endowment Fund

Resource support including travel and registration for academic and professional conferences.

Epidemiology**Arlene W. Caggiula Student Award in Nutrition**

Tuition support for students studying nutritional epidemiology, a nutrition-related component of chronic disease, a nutrition-related component of aging, or the evaluation of the epidemiology of a nutrition-related disorder.

Katherine Detre Scholarship

Awarded to promising accepted doctoral applicants or continuing doctoral students who demonstrate high levels of scholarship and commitment to public health. Established to supplement graduate student support in the Epidemiology Data Center.

Lewis H. Kuller Scholarship Award

Resource support that can be used to cover tuition, books, fees, research, travel expenses, or stipends.

Evelyn H. Wei Memorial Fund

Resource support for travel to attend approved scientific meetings, events, or conferences.

Evelyn H. Wei Scholarship Award in Epidemiology

Tuition assistance for master's or doctoral degree students based upon potential contribution to public health, with emphasis on scholarship, leadership, and service.

Health Policy and Management

The Dawn Gideon Scholarship for MHA Students

Provides scholarship assistance for students in the MHA program whose talents lean towards creative problem solving and an understanding of the value all individuals bring to the process.

Nathan Hershey Endowment in Health Administration

An annual award to a full-time student enrolled in the MHA program. Secondary criteria shall include need.

HPM Friends and Alumni Scholarship Fund

This scholarship provides tuition support to students within the Department of Health Policy Management.

Hunter Group Health Policy and Management Student Scholarship Award

This endowed fund provides tuition assistance for students in the Department of Health Policy and Management.

The Thomas and Judy Priselac Endowed Fund for Healthcare Leadership

Provides support for MHA students participating in selected professional and leadership development activities nationally, including professional association conferences, academic team competitions, professional networking, and other health management career path opportunities.

Surma Scholarship for Long-term Healthcare Administration in Policy and Aging

This endowed fund provides support to Graduate School of Public Health students who are Pennsylvania residents and have demonstrated interest in long-term healthcare administration or policies.

Human Genetics**C. C. & Clara Li Endowed Scholarship**

The award is offered to the top accepted applicants in each of our four offered programs, PhD, MS, MPH and MS-GC. It can be used towards tuition support or to defray the cost of books, lab related fees, conference travel, etc.

George Qi Wang Memorial Student Assistance Fund in Pharmacogenetics

Tuition support for students pursuing research studies in pharmacogenetics; open to students in any of the Schools of the Health Sciences or Arts and Sciences.

Infectious Diseases and Microbiology**Bob Yee Student Award**

Tuition support.

Other Financial Support - Resources for Research and Professional Development**Russell Rule Rycheck Award for a Promising MPH Student**

A \$500 award for MPH students committed to the practice of public health. Funds can be used for books, coursework, travel, or professional development. Applications are due to Mary Derkach, assistant dean for student affairs, G009 Public Health, by December 4 each year. If December 4 falls on a Saturday or a Sunday, applications are due the following Monday.

William T. Green Jr. Award in Public Health Studies - Awarded in Fall and Spring Terms

A \$750 award to support research and special projects for currently enrolled Pitt Public Health students. Funds can be used for direct research costs, books, travel, or professional memberships. Applications are due to Mary Derkach, assistant dean for student affairs, G009 Public Health, by December 4 for the fall term, and by March 15 for the spring term.

Other Financial Support - Travel Awards for Conferences and International Study**Pitt Public Health Support****Office of Student Affairs**

The Office of Student Affairs provides departments with \$500 each year to use for student travel grants. To apply for a travel grant, please see the student services staff member in your department. Awards are allocated on a first-come, first-served basis and travel must take

place no later than mid-May. Receipts for reimbursement must be submitted to your department as soon as you return from your conference/meeting.

Awards can be applied only to future travel. Travel must take place during the student's enrollment in a degree program at Pitt Public Health. Students may request only one award per academic year. Awards will be processed as a travel expense reimbursement (TBE) by the student's department upon submission of receipts for travel. In no case can the amount of the award exceed expenses. Students applying for travel awards from more than one source should prepare one reimbursement form for all of the sources, since original receipts are required for all sources.

Student Government Association

Students can apply for a travel award (up to \$150) from the Student Government Association. Applications are available in the Office of Student Affairs.

Global Health

The dean of Pitt Public Health sponsors a grant program for graduate students in the health sciences who want to conduct international research to address global health issues. Availability of grants can be found annually in *The Week Ahead*.

University Support

Foreign Language Area Studies (FLAS)

Funded by the U.S. Department of Education with the intent of promoting the study of a modern, European foreign language within a cultural, scientific, or historical framework. Fellowships are awarded annually for summer and academic year study. Submit an application to Pitt Public Health, and we will then select nominees and forward them to the University Center for International Studies.

Graduate and Professional Student Government

Grants support for travel to academic and professional conferences. Applicants are eligible for one grant per fiscal year (July 1- June 30), and funds are awarded on a first-come, first-served basis.

Nationality Rooms Scholarships

These scholarships reflect decades of work honoring education through cultural exchange. After the Nationality Rooms were built in Pitt's Cathedral of Learning, committees stayed together to raise funds enabling eligible Pitt students to study abroad, thereby experiencing another culture in depth. There are several different awards available.

University Center for International Study Scholarships

The Pitt Study Abroad Office offers a central listing of the range of scholarship possibilities available to help defray the cost of a study abroad program. Scholarships are managed by academic departments and schools such as the Center for Global Health or the College of General Studies.

Women's Studies Student Research Fund

Awards of up to \$1,000 to support travel expenses, secretarial costs, research materials, or other direct costs for research related to the study of women, gender, and/or sexuality.

EXTERNAL SUPPORT

The following external sources also provide travel support for conferences and international study:

Fulbright Fellowship Program

Grants for individually designed study/research projects or for English Teaching Assistantships. During their program, Fulbrighters will meet, work, live with, and learn from the people of a host country, sharing daily experiences.

Fulbright Hays

Funding for students wishing to conduct their doctoral dissertations abroad.

George Mitchell Scholarship

National scholarship for students interested in pursuing one year of graduate work in an institution of higher education in Ireland or Northern Ireland.

International Education Financial Aid

Information on financial aid for U.S. and international students wishing to study abroad.

External Funding Opportunities

These organizations may have financial aid programs for public health students. Students can find listings of internship, fellowship, and post-doc opportunities in Pitt Bridges.

Public Health Air Force	Federal Student Financial Assistance	Ford Foundation
American Heart Association	American Association of University Women	American Society for Microbiology
Society for Toxicology	American Cancer Society	American Chemical Society
National Student Loan Data System	National Cancer Institute	National Science Foundation
Congressional Black Caucus Foundation	Tobacco-Related Disease Research Program	Hispanic Scholarship Fund
Alma Adams Scholarship for Outreach and Health Communication	National Institutes of Health	Agency for Healthcare Research and Quality
Society for Epidemiologic Research	Society for Public Health Education (SOPHE) Scholarships	Soros Scholarship for New Americans
Evalee Schwarz Charitable Trust for Education	Institute Of Current World Affairs Fellowships	Ruth Kirschstein National Research Service Awards
American Indian/Alaska Native Scholarships	Ruth Taylor Award for Residents of Westchester County, NY	Agency for Healthcare Research and Quality
Pittsburgh Young Professionals Fund	Truman Foundation Scholarships	Delay the Real World Fellowship
Institute for Human Studies	Udall Environmental Fellowship	Davis-Putter Scholarships
Boren Fellowships	American Medical Writers Association Scholarship	Roybal Foundation
www.internationalscholarships.com	www.explorehealthcareers.org	www.wiredscholar.com
www.fastweb.com	www.finaid.org	www.collegeview.com

Blake Rubin Scholarship

Strong Arm Leukemia Scholarship

Student Assistantships

Graduate student assistants, graduate student researchers, teaching assistants, and teaching fellows are students who receive support in return for specified duties while gaining teaching, teaching-related, or research experience under the guidance of a faculty mentor.

Whenever available, assistantships and traineeships are awarded by the departments. There are no assistantships available through the Office of Student Affairs or the Dean's Office. Students may receive an assistantship from any department in the University, but there is no central listing of assistantships available.

Descriptions**Traineeships**

A traineeship is money from a training grant allocated to students to support advanced study in a specified field. A traineeship may provide full or partial tuition and/or living expenses. Usually, there is no service requirement. Several departments have traineeships available for students in particular concentrations.

Assistantships

An assistantship provides a full or partial tuition scholarship, a stipend, and individual health insurance coverage in exchange for performance of specified duties, usually in support of a faculty member's research project. Assistantship appointments can be full or part-time. Each department may award a limited number of student assistantships, usually to doctoral students. Students may also be awarded an assistantship by another University department. There is no central listing of University assistantships.

Teaching Assistants

A teaching assistant (TA) is a student who holds a teaching or teaching-related appointment made within the University regulations pertaining to teaching assistants. No teaching assistant shall be employed to teach post baccalaureate courses.

Teaching Fellows

A teaching fellow (TF) is the same as a teaching assistant except that the teaching fellow is more educationally advanced or experienced, typically holding the equivalent of a master's degree. TFs should not be assigned to teach graduate courses. Exceptions may be made only in rare cases where the individual shows clear evidence of outstanding skills in specialized areas and when the individual is directly supervised by faculty.

Eligibility

Students must be appointed through Pitt Public Health and must be enrolled at Pitt Public Health.

Effort

Full-time GSRs are expected to devote twenty hours per week to the research project they are assisting. GSRs may be required to work more hours if the research pertains to their thesis or dissertation. Time expenditure of part-time GSRs is proportional to this standard of twenty hours (i.e. half-time GSRs must devote ten hours per week to their research project, and more if the research pertains to their thesis).

TAs and GSAs have the same work obligation of twenty hours a week. However, their assignments will differ from a GSR and will not likely relate directly to their research interests.

Appointments

GSR, GSA, and TA appointments may be made annually for one to no more than three terms at a time (one academic year). Renewals are subject to satisfactory job performance and availability of funding.

Evaluation

At least once each year, the faculty supervisor must provide a written evaluation of a GSR/TA/GSA's performance to the student and to the department. A suggested evaluation form is available from the department administrator, who should request the evaluation in the spring term. A copy of the completed evaluation should be provided to the department administrator.

Stipend

The monthly stipend amount is set by the department within a range established by the University. Monthly stipend payments for part-time GSR positions will be proportional to this standard. The University does not set a different stipend level for TA and GSA positions.

Tuition Scholarships

Full-time GSR/GSA/TAs are eligible to receive full tuition scholarships to cover up to and including 15 credits per term. Part-time positions are eligible for partial tuition scholarships in accord with their appointments, i.e., a half appointment receives a scholarship for six credits and a quarter appointment covers three credits per term.

Health Insurance

GSRs, GSAs, and TAs are provided individual coverage under the UPMC Health Plan for graduate students. Family coverage is available at an additional cost to the student.

University Policies

Learn about University policies regarding student assistantships.

Student Employment

Registered students can work in part-time student positions for a maximum of 20 hours per week in the fall and spring terms, and 37.5 hours per week in the summer term. Graduate students do not generally receive funding through the federal work-study program.

After creating a PittSource account (free of charge), students have access to postings for summer jobs and regular student employment. Postings include positions within Pitt Public Health, at other University departments, and through off-campus employers.

GSPH Primary Faculty

James, III, A. Everette | Health Policy & Management | Interim Dean and Professor | JD, Illinois Institute of Technology; MBA, Illinois Institute of Technology

Adibi, Jennifer J. | Epidemiology | Assistant Professor | ScD, Harvard University; MPH, Columbia University

Albert, Steven M. | Behavioral & Community Health Sciences | Professor | PhD, University of Chicago; MSc, Columbia University; MA, University of Chicago

Amoscato, Andrew | Environmental & Occupational Health | Research Associate Professor | PhD, University of Texas, Houston

Anderson, Stewart J. | Biostatistics | Professor | PhD, University of Colorado; MA, University of Kansas

Ayyavoo, Velpandi | Infectious Diseases & Microbiology | Professor | PhD, Madurai Kamaraj University; MSc, Thiagarajar College

Bandos, Andriy I. | Biostatistics | Assistant Professor | PhD, University of Pittsburgh; MS, Kharkiv National University

Bandos, Hanna | Biostatistics | Research Assistant Professor | PhD, University of Pittsburgh; MS, Kharkiv National University

Barchowsky, Aaron | Environmental & Occupational Health | Professor | PhD, Duke University

Barinas-Mitchell, Emma J.M. | Epidemiology | Assistant Professor | PhD, University of Pittsburgh

Barratt-Boyes, Simon | Infectious Diseases & Microbiology | Professor | PhD, University of California, Davis

Barron, Gerald Mark | Health Policy & Management | Associate Professor | MPH, University of Pittsburgh

Bear, Todd M. | Behavioral & Community Health Sciences | Assistant Professor | PhD, University of Pittsburgh; MPH, University of Pittsburgh

Bein, Kiflai | Environmental & Occupational Health | Assistant Professor | PhD, Wayne State University; MS, Addis Abeba University

Belle, Steven H. | Epidemiology | Professor | PhD, University of Michigan; MScHyg, University of Pittsburgh

Bertolet, Marnie | Epidemiology | Assistant Professor | PhD, Carnegie Mellon University; MS, Carnegie Mellon University; M.Eng, Cornell University

Bility, Moses Turkle | Infectious Diseases & Microbiology | Assistant Professor | PhD, Pennsylvania State University

Bodnar, Lisa M. | Epidemiology | Associate Professor | PhD, University of North Carolina; MPH, University of North Carolina

Boudreau, Robert M. | Epidemiology | Assistant Professor | PhD, University of Pittsburgh

Braund, Wendy E.. | Health Policy & Management | Professor | MD, Pennsylvania State University College of Medicine; MPH, Johns Hopkins Bloomberg School of Public Health

Brooks, Maria Mori | Epidemiology | Professor | PhD, University of North Carolina; MA, Harvard University

Broom, Kevin D. | Health Policy & Management | Associate Professor | PhD, University of Mississippi; MBA, Syracuse University

Brown, Andre L. | Behavioral & Community Health Sciences | Visiting Assistant Professor | PhD, University of North Carolina; MPH, University of North Carolina

Bryce, Cindy L. | Health Policy & Management | Associate Professor | PhD, Carnegie Mellon University; MPhil, Carnegie Mellon University

Buchanich, Jeanine M. | Biostatistics | Research Associate Professor | PhD, University of Pittsburgh; MEd, University of Pittsburgh; MPH, University of Pittsburgh

Burke, Donald S. | Epidemiology | Distinguished University Professor | MD, Harvard University

Burke, Jessica G. | Behavioral & Community Health Sciences | Professor | PhD, Johns Hopkins University; MHS, Johns Hopkins University

Carlson, Jenna C. | Biostatistics | Assistant Professor | PhD, University of Pittsburgh

Cauley, Jane A. | Epidemiology | Distinguished Professor | DrPH, University of Pittsburgh; MPH, University of Pittsburgh

Cecchini, Reena S. | Biostatistics | Research Assistant Professor | PhD, University of Pittsburgh; MS, University of Pittsburgh

Chen, Yue | Infectious Diseases & Microbiology | Assistant Professor | PhD, University of Pittsburgh; MD, Dalian Medical University; MS, Xian Medical University

Cloonan, Yona Keich | Epidemiology | Assistant Professor | PhD, University of Washington; MS, University of Washington; MS, University of Rochester

Cole, Evan S. | Health Policy & Management | Research Assistant Professor | PhD, Tulane University; MPH, University of Minnesota

Colvin, Alicia B. | Epidemiology | Research Assistant Professor | PhD, University of Pittsburgh

Costacou, Tina | Epidemiology | Associate Professor | PhD, University of South Carolina; MSc, University of Massachusetts

Costantino, Joseph P. | Biostatistics | Distinguished Service Professor | DrPH, University of Pittsburgh; MPH, University of Pittsburgh

Coulter, Robert W.S. | Behavioral & Community Health Sciences | Visiting Assistant Professor | PhD, University of Pittsburgh; MPH, Boston University

Degenholtz, Howard B. | Health Policy & Management | Associate Professor | PhD, University of Minnesota

Demirci, F. Yesim | Human Genetics | Associate Professor | MD, Istanbul University

Deslouches, Berthony | Environmental & Occupational Health | Visiting Assistant Professor | MD, University of Pittsburgh School of Medicine; PhD, University of Pittsburgh School of Medicine

Di, YuanPu | Environmental & Occupational Health | Associate Professor | PhD, State University of New York, Buffalo; MBA, University of California, Davis

Diergaarde, Brenda | Epidemiology | Associate Professor | PhD, Wageningen University; MSc, Leiden University

Ding, Ying | Biostatistics | Assistant Professor | PhD, University of Michigan; MS, University of Michigan; MA, Indiana University

Documet, Patricia I. | Behavioral & Community Health Sciences | Associate Professor | DrPH, University of Pittsburgh; MD, Universidad Peruana Cayetano Heredia; MPH, University of Pittsburgh

Donohue, Julie M. | Health Policy & Management | Associate Professor | PhD, Harvard University

Drake, Coleman | Health Policy & Management | Assistant Professor | PhD, University of Minnesota

Driessen, Julia | Health Policy & Management | Assistant Professor | PhD, Johns Hopkins University; MA, Johns Hopkins University

Durst, Andrea L. | Human Genetics | Assistant Professor | DrPH, University of Kentucky; MS, University of North Carolina, Greensboro

Egan, James | Behavioral & Community Health Sciences | Visiting Research Assistant Professor | PhD, University of Pittsburgh; MPH, Boston University

El Khoudary, Samar R. | Epidemiology | Associate Professor | PhD, University of Pittsburgh; MPH, Al-Quds University

Elias, Thistle | Behavioral & Community Health Sciences | Visiting Assistant Professor | DrPH, University of Pittsburgh; MPA, University of Pittsburgh

Fabio, Anthony | Epidemiology | Associate Professor | PhD, University of Pittsburgh; MPH, University of Pittsburgh

Fabisiak, James P. | Environmental & Occupational Health | Associate Professor | PhD, Pennsylvania State University; MS, New York State College of Veterinary Medicine

Fan, Kang-Hsien (Frank) | Human Genetics | Research Assistant Professor | PhD, University of Georgia

Feingold, Eleanor | Human Genetics | Professor | PhD, Stanford University

Felter, Elizabeth M. | Behavioral & Community Health Sciences | Assistant Professor | DrPH, University of Pittsburgh; MA, University of Georgia

Finegold, David N. | Human Genetics | Professor | MD, University of Pittsburgh

Fitz, Nicholas | Environmental & Occupational Health | Research Assistant Professor | PhD, Duquesne University

Frank, Linda Rose | Infectious Diseases & Microbiology | Professor | PhD, University of Pittsburgh; MSN, University of Pittsburgh

Friede, Samuel A. | Health Policy & Management | Assistant Professor | MBA, University of Chicago

Friedman, Mackey R. | Infectious Diseases & Microbiology | Assistant Professor | PhD, University of Pittsburgh; MPH, University of Pittsburgh

Friedman, Mark S. | Behavioral & Community Health Sciences | Assistant Professor | PhD, University of Pittsburgh; MPA, University of Pittsburgh; MSW, University of Pittsburgh

Garcia-Bates, Tatiana | Infectious Diseases & Microbiology | Research Assistant Professor | PhD, University of Rochester

Garland, Richard | Behavioral & Community Health Sciences | Assistant Professor | MSW, University of Pittsburgh

Gary-Webb, Tiffany L. | Behavioral & Community Health Sciences | Associate Professor | PhD, Johns Hopkins University; MHS, Johns Hopkins University

Glynn, Nancy W. | Epidemiology | Assistant Professor | PhD, University of Pittsburgh; MEd, University of Virginia

Goundappa, Balasubramani K. | Epidemiology | Research Assistant Professor | PhD, University of Madras; MPhil, University of Madras; MS, University of Madras

Grefenstette, John J. | Health Policy & Management | Professor | PhD, University of Pittsburgh; MS, University of Pittsburgh

Grubs, Robin E. | Human Genetics | Assistant Professor | PhD, University of Pittsburgh; MS, University of Pittsburgh

Gupta, Phalguni | Infectious Diseases & Microbiology | Professor | PhD, University of Wisconsin; MS, University of Wisconsin; MS, University of Calcutta

Haggerty, Catherine L. | Epidemiology | Associate Professor | PhD, University of Pittsburgh; MPH, University of Pittsburgh

Hartman, Amy L. | Infectious Diseases & Microbiology | Assistant Professor | PhD, University of Pittsburgh

Hawk, Mary E. | Behavioral & Community Health Sciences | Assistant Professor | DrPH, University of Pittsburgh; MSW, University of Pittsburgh

Hawkins, Marquis | Epidemiology | Assistant Professor | PhD

Hershey, Tina Batra | Health Policy & Management | Assistant Professor | JD, George Washington University; MPH, George Washington University

Huang, Zhentai | Environmental & Occupational Health | Research Instructor | PhD, Peking Union Medical College

Huber, George A. | Health Policy & Management | Professor | JD, Duquesne University; MSSM, University of Southern California; MSIE, University of Pittsburgh

Jalal, Hawre | Health Policy & Management | Assistant Professor | PhD, University of Minnesota; MS, University of Minnesota; MD, University of Suleimani

Jarlenski, Marian | Health Policy & Management | Assistant Professor | PhD, Johns Hopkins University; MPH, Yale University

Jeong, Jong H. | Biostatistics | Professor | PhD, University of Rochester; MA, University of Rochester; MS, Kang-Won National University

Kagan, Valerian E. | Environmental & Occupational Health | Professor | PhD, M.V. Lomonosov Moscow State University; DSc, USSR Academy of Sciences; MS, M.V. Lomonosov Moscow State University

Kamboh, M. Ilyas | Human Genetics | Professor | PhD, Australian National University; MSc, University of Punjab

Kammerer, Candace M. | Human Genetics | Associate Professor | PhD, Ohio State University

Kang, Chaeryon | Biostatistics | Assistant Professor | PhD, University of North Carolina; MS, Ewha Womans University

Kapralov, Oleksandr O. | Environmental & Occupational Health | Research Assistant Professor | PhD, Ukrainian Academy of Sciences; DSc, National Taras Shevchenko Kyiv University; MS, Kiev State University

King, Wendy C. | Epidemiology | Associate Professor | PhD, University of Pittsburgh

Kingsley, Lawrence A. | Infectious Diseases & Microbiology | Professor | DrPH, University of Pittsburgh; MPH, University of Pittsburgh

Koldamova, Radosveta P. | Environmental & Occupational Health | Research Associate Professor | PhD, Bulgarian Academy of Sciences; MD, Medical Academy of Bulgaria

Krafty, Robert | Biostatistics | Associate Professor | PhD, University of Pennsylvania; MA, University of Pennsylvania

Krier, Sara | Infectious Diseases & Microbiology | Assistant Professor | PhD, University of Pittsburgh; MPH, University of Pittsburgh

Kriska, Andrea M. | Epidemiology | Professor | PhD, University of Pittsburgh; MS, University of Pittsburgh

Kuipers, Allison | Epidemiology | Assistant Professor | PhD, University of Pittsburgh

Kumar, Supriya | Behavioral & Community Health Sciences | Visiting Research Assistant Professor | PhD, Carnegie Mellon University; MPH, University of Pittsburgh

Kurland, Brenda F. | Biostatistics | Research Associate Professor | PhD, University of Washington; MS, University of Washington; EdM, Harvard University

Lefterov, Iliya M. | Environmental & Occupational Health | Research Associate Professor | PhD, Bulgarian Academy of Sciences ; MS, Medical Academy of Bulgaria

Leikauf, George D. | Environmental & Occupational Health | Professor | PhD, New York University; MS, New York University

Lin, Yan | Biostatistics | Research Associate Professor | PhD, University of Pittsburgh; PhD, University of Michigan; MS, University of Pittsburgh

Luu, Hung N. | Epidemiology | Assistant Professor | MD, Thai Binh Medical University; PhD, University of Texas Health Science Center-Houston; MPH, Tulane University

Mackey, Rachel H. | Epidemiology | Assistant Professor | PhD, University of Pittsburgh; MPH, University of Pittsburgh

Mailliard, Robbie B. | Infectious Diseases & Microbiology | Assistant Professor | PhD, University of Amsterdam

Mair, Christina F. | Behavioral & Community Health Sciences | Assistant Professor | PhD, University of Michigan; MPH, University of Washington

Marques Jr., Ernesto T. A. | Infectious Diseases & Microbiology | Associate Professor | MD, Universidade Federal de Pernambuco; PhD, Johns Hopkins University

Marsh, Gary M. | Biostatistics | Professor | PhD, University of Pittsburgh; MS, University of Pittsburgh

Martinson, Jeremy J. | Infectious Diseases & Microbiology | Assistant Professor | DPhil, Oxford University

Maseru, Noble A-W | Behavioral & Community Health Sciences | Professor | PhD, Clark Atlanta University; MPH, Emory University School of Medicine

Mattila, Joshua T. | Infectious Diseases & Microbiology | Assistant Professor | PhD, University of Minnesota, Minneapolis-St.Paul

Mendez, Dara D. | Epidemiology | Assistant Professor | PhD, University of North Carolina; MPH, University of North Carolina

Miljkovic, Iva | Epidemiology | Assistant Professor | PhD, University of Pittsburgh; MD, University of Novi Sad

Miller, Rachel G. | Epidemiology | Research Assistant Professor | PhD, University of Pittsburgh; MS, University of Pittsburgh

Milosevic, Jadranka | Environmental & Occupational Health | Visiting Research Assistant Professor | PhD, University of Giessen

Minster, Ryan L. | Human Genetics | Assistant Professor | PhD, University of Pittsburgh; MSIS, University of Pittsburgh

Mor, Maria K. | Biostatistics | Research Assistant Professor | PhD, University of Pittsburgh

Nachega, Jean B. | Epidemiology | Associate Professor | PhD, University of Cape Town; MD, University of Louvain; MPH, Johns Hopkins University

Naimi, Ashley I. | Epidemiology | Assistant Professor | PhD, University of North Carolina; MSc, University of Montreal

Nam, Kyongnyon | Environmental & Occupational Health | Visiting Research Instructor | PhD, KyungHee University

Newman, Anne B. | Epidemiology | Professor | MD, University of Pittsburgh; MPH, University of Pittsburgh

Normolle, Daniel | Biostatistics | Associate Professor | PhD, State University of New York, Binghamton; MA, State University of New York, Binghamton

Opresko, Patricia Lynn | Environmental & Occupational Health | Associate Professor | PhD, Pennsylvania State University

Ortiz, Luis A. | Environmental & Occupational Health | Professor | MD, Universidad Pontificia Bolivariana

Padiath, Quasar Saleem | Human Genetics | Assistant Professor | PhD, Indian Institute of Science; MBBS, Kilpauk Medical College

Park, Hyun Jung (HJ) | Human Genetics | Assistant Professor | PhD, Rice University; MS, Texas A&M University

Park, Yong Seok | Biostatistics | Assistant Professor | PhD, University of Michigan; MS, University of Michigan; ME, Tsinghua University

Parker, Lisa S. | Human Genetics | Professor | PhD, University of Pittsburgh; MA, University of Pittsburgh

Pearce, Linda | Environmental & Occupational Health | Research Assistant Professor | PhD, Iowa State University

Peddada, Shyamal D. | Biostatistics | Professor | PhD, University of Pittsburgh; MA, University of Pittsburgh; MSc, Indian Agricultural Research Institute

Peterson, James | Environmental & Occupational Health | Associate Professor | PhD, University of Essex

Piazza, Paolo A. | Infectious Diseases & Microbiology | Research Assistant Professor | PhD, University of Milan

Pitt, Bruce | Environmental & Occupational Health | Professor | PhD, Johns Hopkins University; MHS, Johns Hopkins University

Pyne, Saumyadipta | Biostatistics | Professor | PhD, State University of New York at Stony Brook

Rappocciolo, Giovanna | Infectious Diseases & Microbiology | Assistant Professor | PhD, University of Milan

Rinaldo, Charles R. | Infectious Diseases & Microbiology | Professor | PhD, University of Utah

Roberts, Eric T. | Health Policy & Management | Assistant Professor | PhD, Johns Hopkins University

Roberts, Mark S. | Health Policy & Management | Professor | MD, Tufts University; MPP, Harvard University

Rockette-Wagner, Bonny | Epidemiology | Assistant Professor | PhD, University of Pittsburgh

Roman, Beth L. | Human Genetics | Associate Professor | PhD, University of Wisconsin

Rosano, Caterina | Epidemiology | Professor | MD, University of Palermo; MPH, University of Pittsburgh

Rosario-Rivera, Bedda L. | Epidemiology | Assistant Professor | PhD, University of Pittsburgh; MPH, University of Puerto Rico

Rosso, Andrea L. | Epidemiology | Assistant Professor | PhD, Drexel University; MPH, Drexel University

Ruppert, Kristine M. | Epidemiology | Assistant Professor | DrPH, University of Pittsburgh; MSN, Duquesne University

Sabik, Lindsay | Health Policy & Management | Associate Professor | PhD, Harvard University

Salk, Peter | Infectious Diseases & Microbiology | Visiting Professor | MD, Johns Hopkins University

Santanasto, Adam | Epidemiology | Assistant Professor | PhD, University of Pittsburgh; MPH, University of Pittsburgh

Sekikawa, Akira | Epidemiology | Associate Professor | PhD, University of Pittsburgh; PhD, Yamagata University; MPH, University of Pittsburgh

Shaffer, John R. | Human Genetics | Assistant Professor | PhD, University of Pittsburgh

Songer, Thomas J. | Epidemiology | Assistant Professor | PhD, University of Pittsburgh; MSc, London School of Economics; MPH, University of Pittsburgh

Stall, Ronald | Behavioral & Community Health Sciences | Professor | PhD, University of California, San Francisco; MPH, University of California, Berkeley; MA, University of Kentucky

Stoyanovksy, Detcho A. | Environmental & Occupational Health | Research Associate Professor | PhD, Bulgarian Academy of Sciences; MS, Sofia University

Strotmeyer, Elsa | Epidemiology | Associate Professor | PhD, University of Pittsburgh; MPH, University of Pittsburgh

Talbott, Evelyn O. | Epidemiology | Professor | DrPH, University of Pittsburgh; MPH, University of Pittsburgh

Tang, Gong | Biostatistics | Associate Professor | PhD, University of Michigan; MA, Johns Hopkins University; MS, Beijing University

Tang, Lu | Biostatistics | Assistant Professor | PhD, University of Michigan; MS, University of Virginia

Terry, Martha A. | Behavioral & Community Health Sciences | Associate Professor PhD, University of Pittsburgh; MA, Northern Illinois University

Tseng, George C. | Biostatistics | Professor | ScD, Harvard University; MS, National Taiwan University

Tyurin, Vladimir A. | Environmental & Occupational Health | Research Assistant Professor | PhD, Moscow State University; MS, Far East State University

Tyurina, Yulia Y. | Environmental & Occupational Health | Research Professor | PhD, Russian Academy of Science; MS, St. Petersburg State University

Urban, Zsolt | Human Genetics | Associate Professor | PhD, Semmelweis University; MS, University of Szeged

Van Nostrand, Elizabeth | Health Policy & Management | Assistant Professor | JD, Tulane University

Van Panhuis, Wilbert | Epidemiology | Assistant Professor | PhD, Johns Hopkins University; MD, Free University Medical Center of Amsterdam

Wahed, Abdus S. | Biostatistics | Professor | PhD, North Carolina State University; MA, Ball State University; MS, University of Dhaka

Wang, Hong | Biostatistics | Research Assistant Professor | PhD, Medical College of Wisconsin; MS, Peking University

Weeks, Daniel E. | Human Genetics | Professor | PhD, University of California, Los Angeles; MS, University of California, Los Angeles

Wenzel, Sally E. | Environmental & Occupational Health | Professor | MD

Wisniewski, Stephen R. | Epidemiology | Professor | PhD, University of Pittsburgh; MAS, The Ohio State University

Yothers, Greg | Biostatistics | Research Associate Professor | PhD, University of Pittsburgh; MA, University of Pittsburgh

Youk, Ada O. | Biostatistics | Associate Professor | PhD, University of Pittsburgh; MA, University of Pittsburgh

Yuan, Jian-Min | Epidemiology | Professor | PhD, University of Southern California; MD, Shanghai Medical University; MPH, Shanghai Medical University

Zmuda, Joseph M. | Epidemiology | Associate Professor | PhD, University of Pittsburgh; MPH, University of Pittsburgh; MS, University of Rhode Island

Tuition and Billing

The tuition and fees listed below reflect current information at the time of posting and are likely to increase in the next academic year. Rates are set by the University and the official postings should be consulted for current information.

Tuition Rates for 2018-2019

Status	Pennsylvania Resident	Out of State Resident
Full-time 9-15 credits	\$13,394 per term	\$22,726 per term
Part-time 1-8 credits	\$1,090 per credit	\$1,861 per credit
FTDR	\$500	\$500

During fall and spring terms, students registered full-time are billed a flat, full-time rate. Students enrolled part-time are billed on a per-credit basis. All students are billed on a per-credit basis during summer terms.

Doctoral students registered for full-time doctoral research (FTDR) pay a flat rate of \$500 plus full-time fees.

Additional Fees for 2018-2019

	Activity	Computer	Wellness	Security and Transportation
Full-time (includes FTDR)	\$30/term	\$175/term	\$130/term	\$90/term
Part-time	\$15/term	\$100/term	\$65/term	\$90/term

Billing Information

Contact the Student Payment Center, 412-624-7520, with billing questions.

Invoice Payment

Students and their Authorized Users will be notified twice before each due date if there is a balance due on the student account. Electronic invoices (eBills) are posted on the student's account after registration for classes, on or about the 20th of every month, and are due on the 17th of the next month. The University may also place a financial hold on overdue accounts.

Add/Drop

Students who drop courses by the term's deadline for add/drop may have their tuition for the term adjusted if they are part-time students, or if the drop changes their status from full-time to part-time.

Resignation Refunds Direct Deposit

Adjustments to tuition charges resulting from official resignation or Add/Drop are based on the effective date of resignation and in accordance with the federally mandated calculation. Contact the Student Payment Center (412-624-7520) for information on the amount of tuition adjustment.

Installment Payments

All students should enroll for direct deposit as refunds and financial aid are awarded through eRefunds.

They should also update their authorized users (parents, spouses, and others) so that they can have access to their student account.

Individual Development Plan

A Tool for Outlining Professional Development Objectives

A Graduate Student Independent Development Plan (IDP), is a tool for helping students and advisors outline and discuss short-term and long-term objectives to guide the student's professional development.

Graduate School of Public Health doctoral students and advisors are required to complete an IDP at least annually, typically timed to coincide with the required annual doctoral committee meeting. The school has an IDP template or students and advisors may substitute any other form that meets the same purpose (e.g. department-specific templates or templates provided by professional societies).

Completed IDP forms should be kept in student files at the department level. They should be treated as confidential student records. The Report on Requirements form for the doctoral preliminary exam and dissertation overview includes a checkbox that the committee should use to certify that an IDP has been completed within the six months prior to the exam.

IDPs are intended as a career development tool, and are not a substitute for a GSR evaluation that assesses job performance. For students whose GSR is closely tied to their dissertation research, it may be possible to combine the two, but it is still necessary to assess academic development and job performance separately.

IDPs are not required for master's students but they are highly recommended. This policy was voted and approved by the Educational Policies and Curriculum Committee and the GSPH Council on February 2015.

Department Student Services Staff

Department	Contact	Telephone	E-mail
Behavioral and Community Health Sciences	Paul Markgraf	412-624-3107	pjm111@pitt.edu
Biostatistics	Renee Valenti	412-624-3023	biostat@pitt.edu
Environmental and Occupational Health	Bryanna Snyder	412-383-7297	bms85@pitt.edu
Epidemiology	Lori Smith	412-383-5269	smithl@edc.pitt.edu
Health Policy and Management	Jessica Dornin	412-624-3625	jld115@pitt.edu
Human Genetics	Noel Harrie	412-624-3066	nce1@pitt.edu
Infectious Diseases and Microbiology	Chelsea Yonash	412-624-3331	cry8@pitt.edu
Multidisciplinary MPH	Summer Haston	412-624-3106	mmph@pitt.edu

School of Social Work

The University of Pittsburgh's School of Social Work, successor to the Division of Social Work in the Department of Sociology of the University, was founded in September 1918, and accepted its first class of MSW students that year. The school shares with the University a commitment to the advancement and application of knowledge. Students in Pitt's School of Social Work learn the knowledge, skills, and values to engage in culturally competent practice with diverse populations and communities. They learn to critically analyze personal, familial, and environmental factors affecting practice settings and practice techniques, and to advocate for those who confront barriers to fulfilling their potential.

The school's students and faculty members also engage in scholarly activities that contribute to professional knowledge about complex social problems and innovative approaches to ameliorate those problems. In addition, school students, alumni, and personnel serve local, national, and international communities by developing and participating in collaborations with social agencies, community-based organizations, government, and foundations.

The mission of the School of Social Work is to advance knowledge and to apply that knowledge for the fulfillment of human potential through the prevention and amelioration of social problems. The school is committed to promoting the values of social and economic justice. Recognizing the complexities of contemporary society, the school dedicates itself through its educational, research, and public service activities to advocating for a society that respects the dignity and achievement of all individuals, families, and communities.

In furtherance of its mission, the School of Social Work strives to:

- Educate professional social workers with the knowledge, skills, and values needed to engage in culturally competent practice with diverse populations and communities; to critically analyze personal, familial, and environmental factors affecting practice settings and practice techniques; and to advocate for those who confront barriers to maximizing the achievement of their fullest potential.
- Engage in scholarly activities that contribute to professional knowledge about complex social problems and innovative approaches to ameliorate those problems.
- Provide service to local, national, and international communities through the development of and participation in collaborations with social agencies, community-based organizations, government, and foundations.

The school offers a full continuum of social work educational programs at the undergraduate, master's, and doctoral levels (as well as a continuing education program for practicing social workers). The school's bachelor's and master's programs in social work are accredited by the Council on Social Work Education, and graduates are eligible for full membership in the National Association of Social Workers.

Degree Options

The School of Social Work offers the Master of Social Work (MSW) and the Doctor of Philosophy (PhD) degrees. MSW students may combine their degree work with course work leading to a certificate. In addition, the School of Social Work has joint and cooperative degree options with other schools in the University as well as external institutions. The degree options include:

Master of Social Work

<http://www.socialwork.pitt.edu/academics/master-social-work-msw>

- Skill Concentrations (one is required)
- Direct Practice with Individuals, Families, and Groups
- Community, Organization, and Social Action (COSA)
- Direct Practice Certificate Programs
- Gerontology Certificate
- Home and School Visitor/School Social Worker Certificate
- Children Youth and Families Certificate
- Mental Health Certificate
- Integrated Healthcare Certificate
- Human Services Management Certificate

Doctor of Philosophy

<http://www.socialwork.pitt.edu/academics/doctorate-social-work-phd>

Joint and Cooperative Degrees

<http://www.socialwork.pitt.edu/academics/msw/dualjoint-cooperative-degrees>

- **MSW**
- Master of Social Work/Master of Divinity
- Master of Social Work/Master of Public Administration
- Master of Social Work/Master of Public and International Affairs
- Master of Social Work/Master of International Development
- Master of Social Work/Doctor of Philosophy (PhD) in Social Work
- Master of Social Work/Master of Public Health
- Master of Social Work/Juris Doctorate
- Master of Social Work/Certificate of Advanced Study in Teaching
- Master of Social Work/Master of Business Administration
- **PhD**
- Master of Social Work/Doctor of Philosophy (PhD) in Social Work
- Master of Public Health/Doctor of Philosophy (PhD) in Social Work

Specific details regarding course requirements are described in this bulletin and on the School of Social Work Web site and in the Student Handbook.

Admissions

Admission to the MSW and PhD programs is for fall term (September) only. Applicants seeking full-time or part-time admission should submit the application far in advance of their expected entry into the program; all application materials are due no later than May 31 for the MSW program and December 31 for the PhD program of the year in which entry is expected. Applications are reviewed only upon receipt of all required materials. Application forms are available from:

School of Social Work
Office of Admissions
2104 Cathedral Of Learning
412-624-6302
E-mail: sswadmissions@pitt.edu
www.socialwork.pitt.edu/admissions/

Online applications are accepted via the MSW or PhD sections of our website located at <http://www.socialwork.pitt.edu>

For more specifics on admissions requirements for the MSW or the PhD, consult the description of the relevant degree program.

Admission of Students from Other Countries

The School of Social Work welcomes applications from students in other countries whose credentials meet the requirements and the standards of the School of Social Work and the Office of International Services of the University.

MSW and PhD applicants from other countries must apply directly to the School of Social Work. Applicants must submit the completed application form, additional required forms, and other required materials in English. Additional University of Pittsburgh application procedures for international students are described at <http://www.socialwork.pitt.edu/admissions-aid/international-students>. Other information and assistance for international students can be found online at www.ois.pitt.edu/intladmissions.html.

For MSW applicants only: International students who hold a baccalaureate degree in social work from a program that is not accredited by the Council on Social Work Education and who are interested in obtaining advanced standing credit must submit their transcript to the council for a determination of equivalency. Further Information can be found online at www.cswe.org.

Financial Assistance

Students interested in financial assistance to meet tuition and/or living costs should direct inquiries to both the Office of Admissions of the School of Social Work and the University's Office of Admissions and Financial Aid.

Students should be advised that limited resources often preclude any one funding source from granting awards that meet total financial needs. As a result, students are strongly encouraged to seek financial aid packages consisting of partial awards (including loans and scholarships) from a variety of sources, including the Office of Admissions and Financial Aid in Alumni Hall (412-624-PITT) and the School of Social Work Financial Aid Sources, Office of Admissions, Room 2104 Cathedral of Learning (412-624-6302; <http://www.socialwork.pitt.edu/admissions-aid/financial-aid> . *See also the University-wide information on Financial Aid.*

Applications for financial assistance are accepted only after an admissions decision has been made. Awards are made for a one-year period. New applications are required for each succeeding period.

Academic Standards

The School of Social Work's expectations for student and faculty conduct are described in school policies and embody the standards of professional social work. Students in the School of Social Work are required to adhere to the NASW Code of Ethics.

Academic Review Policy

The school maintains an academic review policy that applies to all degree students in the school and that seeks to ensure academic standards of achievement (i.e., satisfactory performance in the field, satisfactory grades for academic course work, and reasonable rates of progress toward completion of degree requirements). The policy statement on academic review appears in the Student Handbook.

Academic Integrity Policy

The school also has an academic integrity policy that applies to all students and faculty members in the school and seeks to ensure that students and faculty members respect the ethical standards expected of them in the performance of their duties and responsibilities. The policy statement on academic integrity appears in the School of Social Work Student Handbook.

Statute of Limitations for School of Social Work Degrees and Leaves of Absence

MSW Program

There is a four-year limitation on the earning of the MSW degree. The four-year period is counted from the date of entry into the program for four full academic calendar years. Under extenuating circumstances (listed below), an advisor can recommend an extension of time to the MSW program director and the associate dean for academic affairs. If approved, the period of extension and the conditions for completing the program will be recorded in the student's folder, with a copy sent to the student. Extenuating circumstances include the following:

- extended illness of the student,
- extended personal emergency,
- involuntary mobilization into a U.S. military unit, and

- death of a close family member.

Under special conditions, MSW students may be granted one leave of absence. A maximum leave of one full academic year may be granted to master's students. A student wishing to take a leave of absence must submit in advance to the MSW program director a written request that indicates the length and rationale for the leave. The MSW program director and the associate dean for academic affairs will review the request. If approved, the time of the leave will not count against the total time allowed for the degree being sought by the student. Readmission following an approved leave of absence is a formality.

PhD Program

There is an eight-year statute of limitations for the completion of the PhD for students who enter with an MSW and who are not pursuing an MPH. There is a 10-year statute of limitations for students in the MSW/PhD program or the MPH/PhD program. Course work and the comprehensive examinations should be completed within three years and the dissertation within five. Under exceptional circumstances, a candidate for the PhD may apply for an extension of the statute of limitations. Requests for an extension of the statute of limitations must be submitted to the doctoral program director and must be approved by the doctoral committee and the dean. The request must be accompanied by a program assessment of the work required of the student to complete the degree and evidence of the extenuating circumstances leading to the requested extension. Students who request an extension of the statute of limitations must demonstrate proper preparation for the completion of all current degree requirements.

Under special conditions, doctoral students may be granted one leave of absence. A maximum leave of two academic calendar years may be granted to doctoral students. A student wishing to take a leave of absence must submit in advance to the doctoral program director a written request that indicates the length and rationale for the leave. The doctoral program director and the associate dean for academic affairs will review the request. If approved, the time of the leave will not count against the total time allowed for the degree being sought by the student. Readmission following an approved leave of absence is a formality.

NASW Code of Ethics

Professional ethics are at the core of social work. The profession has an obligation to articulate its basic values, ethical principles, and ethical standards. The NASW Code of Ethics sets forth these values, principles, and standards to guide social workers' conduct. The Code is relevant to all social workers and social work students, regardless of their professional functions, the settings in which they work, or the populations they serve. The NASW code of ethics can be viewed online at www.naswdc.org/pubs/code/default.asp.

Advising

Students are assigned a faculty advisor at the beginning of the student's matriculation into the MSW or PhD program. Students in the MSW program are assigned an advisor from among the faculty and professional staff. The assignment is made by the MSW program director and remains in effect until changed after a request by an advisor or advisee, as indicated by field assignment or program change, or due to a change in the advisor's assignment.

Special Academic Opportunities

The school offers several academic resources and programs for its students, as detailed below:

Student Participation on School Committees

Students have opportunities to participate in the governance of the School of Social Work by serving on school committees. Information about the purposes and functions of the committees is distributed during the beginning of each fall term. Through the Office of the Associate Dean for Admissions and Student Affairs, students can volunteer to serve on committees and become full members of those committees.

Student Executive Council (SEC)

All degree students in the School of Social Work comprise the membership of the student organization that elects the Student Executive Council. The council concerns itself with student life and serves as a liaison with the administration and faculty.

The Student Executive Council relies heavily on student participation and it endeavors to be of service to the student body. Activities include the publication of a student newsletter, the development of discussion sessions around critical social issues, the provision of opportunities for social action, the participation in planning for orientation, and the planning of a variety of social events.

In addition, SEC members, representing the student body, are appointed to serve in the following organizations and/or committees: Black Action Society; Student Chapter, NASW; Student Chapter, NABSW; Alumni Association (Liaison); BASW Club; and Graduate and Professional Student Association (GPSA).

The Student Executive Council is working to strengthen its involvement in diversity initiatives to benefit the student body. More information regarding the activities and goals regarding diversity initiatives will be published as they are created.

The Student Executive Council supports the MSW student body and welcomes any feedback from all students. The SEC Office is located in Room 2201B CL. Please reach us at our e-mail address at pitt.sec@gmail.com.

SEC's website can be found at: <http://www.socialwork.pitt.edu/student-resources/student-executive-council>

Buhl Library

The Buhl Library of Social Work is a special collection of books, journals, and other resource materials specifically focused on social work. The Buhl Library is located on the first floor of Hillman Library and is staffed by a full-time social work librarian. Additionally, students at the School of Social Work have full access to the wide range of services provided by the University of Pittsburgh library system.

School of Social Work Faculty

James Andrews, MSW Program Coordinator, University of Pittsburgh-Johnstown, MSW, Rhode Island College

Yodit Betru, Clinical Assistant Professor and Agency Coordinator, Child Welfare Education and Research Program, DSW, University of Pennsylvania

Jaime Booth, Assistant Professor, PhD, Arizona State University

Laura Borish, Field Assistant Professor and CWEB/CWEL Agency Coordinator, MSW, University of Pittsburgh

Cynthia K. Bradley-King, Clinical Assistant Professor and Academic Coordinator, Child Welfare Education For Baccalaureates (CWEB) Program, PhD, Indiana University of Pennsylvania

Helen Cahalane, Clinical Associate Professor, Principal Investigator, Child Welfare Education and Research Programs; PhD, University of Pittsburgh

Keith Caldwell, Assistant Professor, BASW Program Director, MSW, University of Pittsburgh

Valire Carr Copeland, Associate Dean for Academic Affairs, School of Social Work, Graduate School of Public Health, PhD, University of Pittsburgh

Larry Davis, Director, Center on Race and Social Problems and Donald M. Henderson Chair, PhD, University of Michigan

Shaun M. Eack, Professor of Social Work and Psychiatry, James & Noel Browne Endowed Chair, Associate Dean for Research, PhD, University of Pittsburgh

Stephanie Eckstrom, Program Coordinator, Pitt-Bradford MSW Program, MSW, University of Maryland At Baltimore

Rafael J. Engel, Associate Professor, Associate Dean of Academic Affairs, PhD, University of Wisconsin at Madison

Elizabeth M.Z. Farmer (Betsy), Dean, PhD, Duke University

Sara Goodkind, Associate Professor, PhD, University of Michigan

Catherine Greeno, Associate Professor, Social Work, Department of Psychiatry, PhD, Stanford University

James Huguley, Assistant Professor, EdD, Harvard University

Leah Jacobs, Assistant Professor, PhD, University of California at Berkeley

Toya Jones, Lecturer, MSW, University of Pittsburgh

Brianna Lombardi, Assistant Professor, PhD, University of North Carolina at Chapel Hill

Aaron R. Mann, Associate Professor, PhD, University of Pittsburgh

Elizabeth Mulvaney, Lecturer, MSW, University of North Carolina at Chapel Hill

Christina Newhill, Professor, PhD, University of California at Berkeley

Mary L. Ohmer, Associate Professor, PhD, University of Pittsburgh

Marlo Perry, Research Assistant Professor, Child Welfare Education and Research Programs, PhD, University of Pennsylvania

Helen Petracchi, Associate Professor, PhD, University of Wisconsin at Madison

Mary Elizabeth Rautkis, Research Assistant Professor, PhD, University of Pittsburgh

Daniel Rosen, Professor, PhD, University of Michigan

Jeffrey Shook, Associate Professor, Doctoral Program Director, PhD, University of Michigan

Tracy Soska, Clinical Associate Professor, COSA Chair, and Director, Continuing Education, MSW, University of Pittsburgh

Fengyan Tang, Professor, PhD, Washington University in St. Louis

John Wallace, David E. Epperson Chair and Professor, School of Social Work, Katz School of Business, Department of Sociology, and Dietrich School of Arts & Sciences, PhD, University of Michigan

Darren Whitfield, Assistant Professor, School of Social Work and Department of Psychiatry, Direct Practice Chair, PhD, University of Denver

Liz Winter, Clinical Assistant Professor and Academic Coordinator, Child Welfare Education for Leadership, PhD, University of Pittsburgh

Hidenori Yamatani, Professor, PhD, University of Pittsburgh

Program and course Offerings

Master of Social Work Program

The leadership required from social work professionals demands an MSW practitioner who possesses a repertoire of specialized knowledge and skills and whose practice is informed by the values and ethics of the profession. Social workers in the 21st century confront a variety of new challenges, as well as many that have long existed. MSW practitioners, who work with and on behalf of individuals, families, groups, organizations, and communities, are faced with the need to develop innovative interventions in a rapidly changing practice environment. Such new, creative solutions to society's problems will be realized only if social work professionals have had a rigorous and thorough education. The goal of the MSW program is to prepare graduates with the specialized knowledge and skills needed to engage in empirically supported and culturally competent advanced social work practice—either direct practice with individuals, families, and small groups, or community organization and social administration—that reflects the social work profession's values, traditions, and philosophy. To accomplish this goal, the MSW program faculty have identified specific program objectives. Graduates of the MSW program will be able to:

- Demonstrate Ethical and Professional Behavior
- Engage Diversity and Difference in Practice
- Advance Human Rights and Social, Economic, and Environmental Justice
- Engage In Practice-informed Research and Research-informed Practice
- Engage in Policy Practice
- Engage with Individuals, Families, Groups, Organizations, and Communities
- Assess Individuals, Families, Groups, Organizations, and Communities
- Intervene with Individuals, Families, Groups, Organizations, and Communities
- Evaluate Practice with Individuals, Families, Groups, Organizations, and Communities

MSW Admissions

<http://www.socialwork.pitt.edu>

The following section details admissions information particular to applicants to the MSW program.

Persons seeking admission to the Master of Social Work (MSW) program must exhibit the leadership potential and professional capabilities essential to function effectively in the profession and must meet minimum academic requirements. An applicant must meet the following requirements:

- A bachelor's degree from an accredited college or university.
- It is recommended that all new applicants have a minimum of a B average (3.00 GPA on a 4.00 scale) in all undergraduate work. Applicants whose GPA is below 3.00 may be considered for admission under provisional status (see <http://www.socialwork.pitt.edu/admissions/msw/admission-qualifications>).
- It is recommended that all MSW applicants have a minimum of 60 undergraduate (or undergraduate plus graduate) credits in the liberal arts, of which 30 credits must be in the social and behavioral sciences and 30 credits must be distributed between the humanities and natural sciences. Course credits are counted from among the following:
 - The Humanities: English, fine arts, languages, literature, philosophy, religious studies, speech.
 - Social and Behavioral Sciences: anthropology, black studies, child development, economics, geography, history, legal studies, political science, psychology*, social
 - Natural Sciences: biology, computer science, mathematics, psychology*, statistics.
- *Note: Psychology courses may be counted as either natural or social science credits.
- Successful completion of a course in descriptive statistics.

Academic and field education credits are not granted in the MSW program for life, volunteer, or employment experience.

Readmission

Persons who were once enrolled as degree students in the graduate program and who have voluntarily withdrawn from the program for more than one year must submit an application for readmission. The application process in these instances is the same as for new applicants. The statute of limitations may prevent the student from applying some graduate credits already completed as progress toward graduation.

Application and Admission Materials

Completed applications include the school online application form, transcripts, three letters of reference, a written statement, a resume, an agreement to participate in field education form and a \$40 application fee. Applicants may request an interview, but this is not required. The director of admissions and student affairs may also request an interview.

Applications and other admissions information are available from:

Office of Admissions
 School of Social Work
 412-624-6302
 E-mail: sswadmissions@pitt.edu

Online applications are accepted at:
<http://www.socialwork.pitt.edu/admissions/msw/application-process>

Application materials may also be downloaded from the School of Social Work Web site or applications may be completed directly online. These materials are available at www.socialwork.pitt.edu/admissions/.

Selection of Skill Concentration

Applicants are required to designate one skill concentration chosen from either Community, Organization, and Social Action (COSA) or Direct Practice with Individuals, Families, and Groups. The appropriateness of the concentration selection is evaluated on the basis of the applicant's resume and written statement. If the applicant is uncertain about which concentration to select, the matter should be discussed with the director of admissions before an application is submitted.

Students indicate in their application to the MSW program the skill concentration they intend to complete. To request a change to these concentrations after beginning the MSW program, students must show that the change would contribute directly to their educational goals and career plans. Students also must be able to demonstrate in a projected plan of study that they will be able to complete all classes and field requirements in the new skill concentration within four years of their date of entry into the MSW program, as specified by the Council on Social Work Education. Such requests should be made and finalized during registration for the second semester of matriculation for full-time students and the third semester of matriculation for part-time students.

Admissions Interview

Admissions interviews may be initiated by the admissions officer of the school in some special circumstance. Decisions on applications for admission are usually made without such an interview. All applicants are welcome to seek information-sharing interviews.

Financial Assistance for MSW Students

The University of Pittsburgh School of Social Work recognizes that financing graduate education is extremely important, especially because the cost of higher education continues to increase each year. Please note that it is the University's Financial Aid Office that administers the process of awarding loans to graduate students. The School of Social Work awards scholarships and a limited number of training fellowships to its master's level students and scholarship and assistantships to its PhD students.

Financial aid is not awarded to any student until admission to the School has been granted. Early application for merit-based scholarship aid is strongly encouraged.

Students applying for financial aid must complete the Free Application for Federal Student Aid (FAFSA) form. Pitt's federal school code is **008815**. The FAFSA form is not available until January for those applying for the next academic year.

MSW Degree Requirements

The MSW curriculum is designed to be a two-year, full-time program. The MSW degree requires the satisfactory completion of a minimum of 60 credits—42 in class work and 18 in field practice—with a minimum GPA of 3.00. Although MSW students must take their required courses for a letter grade, elective courses offered and taken in the graduate program of the School of Social Work may be taken for a letter grade or an H/S/U grade. All graduate field instruction courses shall be taken for S/NC grades. No student will be permitted to graduate with a C, F, or U grade in a required course or an NC grade in the field practicum. Specific requirements for each of the skill concentrations are detailed in the student handbook and on the school's Web page, <http://www.socialwork.pitt.edu/academics/policies-handbooks>.

MSW Academic Standards: Probation

A student in the MSW program will be placed on academic probation if:

- after completing at least nine (9) quality point credits, the student's cumulative GPA falls below 3.00;

- the student receives a grade lower than a B- in a required course (including the five foundation courses, the required concentration skill courses, the second-level human behavior, policy, and research courses, and any specific courses needed to fulfill specialization or certificate requirements), or
- the student receives an NC grade for field placement (SWGEM 2009, SWINT 2009, or SWCOSA 2009).

The MSW program director will send a letter to the student and the student's advisor notifying them of the student's placement on academic probation. The letter will advise the student and the student's advisor of the date and location of an academic review meeting, to be convened by the MSW program director, to discuss the terms of the student's academic probation. A copy of this letter will be placed in the student's folder. Depending on the outcome of the meeting, a student placed on academic probation may be required to modify the student's course of study in the MSW program, including changing the academic courses for which the student is registered and/or delaying entry into or suspending field placement.

Part-Time MSW Students

Students pursuing a part-time course of study must complete the MSW degree in four academic years. Part-time students are expected to take their foundation courses (the equivalent of the first fall term for full-time students) on a part-time basis during the first year and then begin concentration courses and field instruction, on either a part-time or a full-time basis. Part-time students who have completed 21 credits of course work must begin their first field placement; enrollment in further courses after 21 credits is contingent on the initiation of the field placement. Part-time students doing field instruction must complete a minimum of 12 clock hours each week, with at least eight of those hours done during the regular work day of the agency. In order to earn their MSW degree in four years, all part-time students must recognize that they will need to enroll for a minimum of two courses per term in each of the three terms during the academic year. The following options are acceptable:

- Two courses (3 credits per course) *or*
- One course (3 credits) plus a minimum of 3 field credits *or*
- A minimum of 6 field credits (equivalent to two courses)

Advanced Standing and Exemptions for MSW Course Work

Students entering the MSW program may be granted advanced standing, receive transfer credit, or be exempt from specific course requirements if their coursework was completed within the past 7 years. The definition for each is:

Advanced Standing is defined as the awarding of academic credit toward a degree by the School of Social Work for prior baccalaureate course or field work completed at an undergraduate social work program accredited by the Council on Social Work Education when such work is evaluated as entirely comparable. A maximum of 12 course credits and 6 field work credits may be considered.

Transfer Credit is defined as the awarding of academic credit toward a degree by the School of Social Work for post-baccalaureate course or field work completed at an accredited academic institution when such work is evaluated as entirely comparable.

Exemption is defined as the waiving of a required academic course by the School of Social Work following an evaluation of the student's previous course work that is determined to be essentially identical to the required course being waived. Such an exemption does not, however, reduce the number of credits required for graduation.

Specific details and limitations regarding this policy and related procedures are described in the Student Handbook and on the School of Social Work Web site, <http://www.socialwork.pitt.edu/academics/policies-handbooks>.

Consistent with the Council on Social Work Education's (CSWE's) Educational Policies and Accreditation Standards, the School of Social Work's MSW program does not grant advanced standing, transfer credit, or exemption for prior life, volunteer, or employment experience.

Organization of the MSW Curriculum

The MSW program entails both class and field requirements distributed across foundation and skills concentration curricula. The MSW foundation curriculum is the same for all MSW degree students. All students must complete the school's designated class and field requirements for one of two skills concentrations: Community, Organization, and Social Action (COSA) or Direct Practice with Individuals, Families, and Groups. Students must complete the MSW Foundations requirements before being permitted to take concentration courses.

A change in concentration after matriculation is not advisable. (*See Selection of Skill Concentration for further details on changing concentrations.*)

Certificate

Children, Youth and Families Certificate

The Children Youth and Families Certificate is designed to prepare graduates of the MSW program to provide services to at-risk children and families through a wide range of public and private agencies. Through specialized coursework and internship opportunities, students are prepared for professional practice in settings such as family service agencies, child protection, the courts, early intervention, community-based treatment, and other child and family-focused programs. The Children, Youth and Families Certificate is awarded by the School of Social Work, and provides students with the opportunity to enhance professional competency in providing services to young persons and their families.

Gerontology Certificate

The Certificate Program in Aging has been in place since 1980 and continues to attract numerous MSW students. The goals of the Gerontology Certificate program are to enhance students' understanding of the aging process and to provide them with the skills relevant to practice with and/or on behalf of the elderly and their family members. Knowing how to work with the elderly as a social work professional offers many opportunities in an era when that segment of the population continues to increase steeply.

Through courses and the field placement experience, Gerontology Certificate students are exposed to the various roles and settings that constitute contemporary social work practice in aging. Emphasis is given to understanding client and family strengths; diversity among the aged population; the social, cultural, community, and policy contexts of aging; and how these factors inform, and may be influenced by, social work practice. Gerontology Certificate students are encouraged to apply to the Hartford Program Partnership in Aging Education Fellowship.

Home and School Visitor Certificate

Since the 1930s, the School of Social Work has offered a Home and School Visitor/School Social Worker certificate. The program was started by pioneering social work practitioner and educator Marion Hathway. The H&SV/SSW is an interprofessional Educational Specialist certificate program, operated jointly with the University of Pittsburgh School of Education and the Pennsylvania Department of Education, and is intended for students who plan to deliver social work services in elementary or secondary schools. There are three models for certification:

- Certification earned while earning the MSW
- Certification earned post-MSW
- Certification earned without an MSW

The H&SV/SSW certificate program is designed to enhance professional competency in the development and delivery of high quality social work services to diverse student populations in both public and private elementary and secondary schools. The certificate program is organized around the Direct Practice concentration and offers students the opportunity to gain advanced knowledge and skills via courses taken in the Schools of Social Work and Education and a field placement in an educational setting.

For further information, please contact Deborah Robinson, MSW, LSW, Director, dcrl6@pitt.edu.

Home and School Visitor/School Social Worker Certificate

The Home and School Visitor/School Social Worker (H&SV/SSW) certificate, a joint effort with the University of Pittsburgh School of Education that is accredited by the Pennsylvania Department of Education, prepares students for professional practice in both public and private educational settings throughout Pennsylvania. The H&SV/SSW certificate program is designed to enhance professional competency in the development and delivery of high-quality social work services to diverse student populations in elementary and secondary schools.

Human Services Management Certificate

Many MSW's often find themselves moving up quickly into supervisor, management, and even executive positions. The generalist perspective and systems knowledge from their social work education provides a strong basis for leadership growth in a range of social work settings. However, to better prepare macro practice/COSA students to take advantage of leadership opportunities and enhance their personal and professional development, the School now offers the Human Services Management Certificate in collaboration with the Network of Social Work Management under a new University partnership initiative.

This national Human Services Management Certificate can be completed by COSA students in the course of their MSW studies. Students pursuing this certification option must complete twelve credits through the following COSA core and skill electives course work covering Network of Social Work Management (NSWM) competency and practice behaviors in the areas of:

- Social Administration/Human Services Management
- Community Organizing (Community Collaboration)
- Human Resources & Financial Management with Supervision
- Grants, Proposals, and Funding Development

COSA students are encouraged to take other skill electives in COSA, as well as skills courses in other schools. For more information on the NSWM competencies: <https://socialworkmanager.org/competencies>

In addition, COSA student in Social Administration/Human Service Management must also complete a COSA concentration field placement (12 credits) in a community-based or human services organization to apply their course knowledge, values, and skills in the organizational setting.

For more information on the Human Services Management Certificate, please contact the Community Organization, and Social Action Concentration Chair, Tracy M. Soska, at 412-624-3711 or tsssw@pitt.edu.

Integrated Healthcare Certificate

The Integrated Healthcare Certificate Program prepares graduate social work students specializing in direct practice with the knowledge and skills necessary to work with individuals, families, groups, and communities in a variety of institutional and community-based health-related settings. With a focus on leadership and advocacy, the goal of the certificate program is to increase the number of students focused on health and social work. Master's level social work training (MSW), along with a Certificate in Integrated Healthcare, provides the knowledge and skills to work in a variety of integrated healthcare settings. Students completing the Integrated Healthcare Certificate Program will have a deeper understanding of the relationship between behavioral health (e., mental health, substance use) and physical health. New opportunities abound in health care for social workers trained in an interdisciplinary approach who are prepared to bridge the gap between health care providers and patient needs within a coordinated system of care.

Students interested in integrated healthcare may also apply for the Edith Baker Behavioral Healthcare Fellowship, a competitive program that will provide successful applicants with stipends of \$10,000 during their concentration field placement

For more information regarding this fellowship, please e-mail BHWET@pitt.edu.

Mental Health Certificate

The Certificate in Mental Health is designed to prepare MSW graduates for professional practice with individuals, families, and/or groups with mental and/or behavioral health challenges through a wide range of social and human service agencies. Students in the MSW Program take a series of required and elective courses leading to the Certificate in Mental Health within the normal MSW requirements and need not exceed the length of the degree program. Direct practice social workers in mental health services have a wide array of career opportunities across a range of public and private settings, including psychiatric inpatient services, outpatient psychotherapy services, child and family services, partial hospitalization and case management services, drug and alcohol services, and private practice.

Joint Degree

Social Work, MSW/MBA

The MBA/Master of Social Work joint degree program is designed to provide students with a unique combination of social work knowledge and skills, with exceptional strength in management decision-making and leadership. The degree is offered jointly through the University of Pittsburgh School of Social Work and the Joseph M. Katz Graduate School of Business.

Faced with an increasingly competitive market, nonprofit organizations are beginning to emulate management methods and paradigms being practiced by for-profit companies, such as financial operations, human resource and data management, market and economic analysis, and evidence-based strategic planning. As philanthropic organizations become more concerned about their accountability and utility of financial supports provided to various human service organizations, they are beginning to evaluate nonprofits beyond program outcomes or average cost per client to more advanced assessments, such as cost-efficiency and effectiveness and cost-benefit ratio. Unfortunately, such analytic methodologies are rarely offered to social work students by the traditional social work curriculum.

Initially, the proposed MSW/MBA dual-degree program will be open to the SSW's Community Organization and Social Action (COSA) students. Upon successful execution of this initiative, the school plans to open the program to all MSW full-time students (COSA and Direct Practice students).

Students who want to earn a dual-degree must gain acceptance into both graduate degree programs by applying separately to each school. The joint-degree program applicants will also be required to submit their Graduate Management Admission Test (GMAT) or Graduate Records Exam (GRE) examination scores to both schools. Specific questions may be addressed to:

Dr. Hide Yamatani, Ph.D., MSW, MBA
School of Social Work
University of Pittsburgh
2117 Cathedral of Learning
Pittsburgh, PA 15260
Email address: hzy@pitt.edu

Requests for further information concerning the Katz Graduate School of Business, see <http://www.business.pitt.edu/katz/>. Specific questions may be addressed to:

Dr. Rabikar Chatterjee, Ph.D.
Associate Dean
Katz Graduate School of Business
University of Pittsburgh
301 Mervis Hall
Pittsburgh, PA 15260
Email address: rabikar@katz.pitt.edu

MSW/MBA Joint Degree Admissions Criteria

- SSW Requirement
- A Baccalaureate degree that must be completed prior to the program start date. Applications must include transcripts of coursework completed at the time of submission of the application. Admission will be contingent upon submission of an official, final transcript of the completed Bachelors program before the start of the MSW program.
- Undergraduate students with social work and human service backgrounds are preferred.
- In general, we would expect an undergraduate GPA of 3.0 or better for admission.
- International students must submit originals or certified copies of transcripts/mark sheets and degree/diploma certificate in the original language plus a certified English translation (if the original is not in English).
- Paid work experience is preferred but not required.
- GMAT/GRE scores are not required for regular MSW students applicants but for the joint degree applicants in MSW and MBA must have their official Graduate Management Admission Test (GMAT) or Graduate Record Examination (GRE) score reports forwarded directly to the University of Pittsburgh, Katz Graduate School of Business (KGSB), by the admission deadline.
- Applicants will submit a 3-5 page double spaced typed personal statement describing their post-graduate career goals, skills in which they excel, and key accomplishments.
- Applicants will submit three recommendations from persons who have known the applicant in academic or professional capacities. At least one from a faculty member is preferred. (Recommendations from friends and family will not be accepted.)
- Applicants will submit their current resume.
- English Proficiency Exams (for international applicants who are citizens of countries where the official language is not English)-- the Test of English as a Foreign Language (TOEFL) with minimum acceptable score: Internet-based test: 100; paper-based test: 600.

- Non-refundable application fee is \$40.
- Prospective candidates, domestic or international, may be interviewed before admission, in person or by telephone.
- Submission of online MSW application form by the admissions deadline date of **May 31**.
- Katz GSB Requirement
- A Baccalaureate degree that must be completed prior to the program start date. Applications must include transcripts of coursework completed at the time of submission of the application. Admission will be contingent upon submission of an official, final transcript of the completed Bachelors program before the start of the MBA program.
- Undergraduate students with strong analytical backgrounds are preferred.
- In general, we would expect an undergraduate GPA of 3.0 or better for admission.
- International students must submit originals or certified copies of transcripts/mark sheets and degree/diploma certificate in the original language plus a certified English translation (if the original is not in English).
- Work experience is not necessary, though highly desirable.
- GMAT/GRE scores: Applicants must have their official Graduate Management Admission Test (GMAT) or Graduate Record Examination (GRE) score reports forwarded directly to the University of Pittsburgh, Katz Graduate School of Business, by the admission deadline. In general, we would expect a GMAT score of 600 or higher for admission. (Corresponding GRE scores will be equivalent to these levels, after conversion.).
- Applicants will submit a 250 word essay describing their post-graduate career goals, skills in which they excel, and key accomplishments.
- Applicants will submit two recommendations from persons who have known the applicant in academic or professional capacities. At least one from a faculty member is preferred. (Recommendations from friends and family will not be accepted.)
- Applicants will submit their current resume.
- English Proficiency Exams (for international applicants who are citizens of countries where the official language is not English): Either the Test of English as a Foreign Language (TOEFL) or the International English Language Testing Systems (IELTS) is required.
- TOEFL Minimum acceptable score: Internet-based test: 100; paper-based test: 600.
- IELTS Minimum acceptable score: 7.0
- \$50 non-refundable application fee.
- Prospective candidates, domestic or international, may be interviewed before admission, in person or by Skype.

Learning outcome goals

The MSW/MBA dual-degree program is designed to provide students with a unique combination of social work knowledge and skills, with exceptional strength in management decision-making and leadership. In addition to the MSW learning outcomes that are already in place, supplementary MSW/MBA objectives include:

- Proficiency in the management functions of accounting, finance, computer information systems, marketing, operations management, organizational behavior, human resource management, and social enterprise.
- Special emphasis on development of skills and abilities to lead strategically and to position an organization effectively for continued growth and development in both for-profit and nonprofit sectors.
- Knowledge and understanding of complex organizations, their development and transformation, administrative principles, the decision-making process, and competence in managerial functions.
- To provide applied learning experiences, the required field practicum will include professional supervision through appropriate concentration settings that will focus on community and human service organization management.

Program requirements

- A graduate-level course grade of B or higher must be maintained throughout the joint-degree program.
- The MBA program requires 51 credits for the part-time or one-year program, of which at least 34 credits must be from KGSB courses, while the balance maximum of 17 credits may be from other graduate programs.

Core Courses

The following MBA "core" courses (total of 22. 5 credits) are required:

- BACC 2401 - FINANCIAL ACCOUNTING

- BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS
- BQOM 2401 - STATISTICAL ANALYSIS: UNCERT
- BFIN 2409 - FINANCIAL MANAGEMENT 1
- BMKT 2409 - MARKETING MANAGEMENT
- BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS
- BQOM 2421 - DECISION TECHN IN MFG & OPER MGT
- BSPP 2409 - STRATEGIC MANAGEMENT
- BMIS 2409 - INFORMATION SYSTEMS
- BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM
- BIND 2444 - MANAGEMENT SIMULATION CAPSTONE

Program requirements

- All MSW/MBA joint degree students will be required to take at least 34.5 credits of KGSB credits, consisting of the above 22.5 credits of core courses plus an additional 12 credits of KGSB electives. Thus, up to 16.5 credits will be accepted from courses successfully completed in the MSW program to achieve the total of 51 credits required for the completion of the Katz MBA degree.
 - All MSW/MBA joint degree students will be required to take a course entitled Social Entrepreneurship (1.5 credits) from the KGSB.
 - The following KGSB courses will count as credits towards the MSW degree:
 - BACC 2401 - FINANCIAL ACCOUNTING (3 credits) will qualify as equivalent to SWCOSA 2085 - FINCL MGT HUMAN SERVICE INSTITNS (3 credits), and will count as 3 credits for both the MSW and MBA programs,
 - BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS (1.5 credits) and Strategic Management (1.5 credits) will qualify as equivalent to SWRES Organizational Research, and will count as 3 credits for both the MSW and MBA programs (SA track only),
 - SW General Elective 1-One 3-credit or two 1.5-credit required MBA courses (e.g., BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS, 3 credits), which will count as 3 credits for both the MSW and MBA programs, and
 - SW General Elective 2- One 3-credit or two 1.5-credit required MBA courses (e.g., BIND 2444 - MANAGEMENT SIMULATION CAPSTONE, 3 credits), which will count as 3 credits for both the MSW and MBA programs.
- Thus, the double-counted credits make it possible for students to earn both degrees without having to take the total sum of credits required for completing the two degree programs separately.

- It should be noted that a long-standing educational policy of the SSW is that students who, within the past seven academic calendar years, have received a social work degree from a CSWE-accredited undergraduate program are eligible for advanced standing. Those granted advanced standing during the admission process can receive up to 12 academic credits and six field education credits that will count towards completion of the MSW program.
- Thus, full-time COSA students with advanced standing must earn grand total of 64.5 credits for CO students, and 61.5 credits for SA students (adding all MSW and MBA courses). This means total of 30 social work credits (including total of 12 field credits) to be taken by CO students and 27 credits (including total of 12 field credits) to be taken by SA students. Additionally, they must take minimum of 34.5 credits of MBA courses, which includes 22.5 and 12 credits of required and electives, respectively.
- Full-time COSA students **without** advanced standing must earn grand total of 85.5 credits for CO students, and 82.5 credits for SA students (adding all MSW and MBA courses). This means total of 51 social work credits to be taken by CO students and 48 credits to be taken by SA students. Additionally, they must take minimum of 34.5 credits of MBA courses, which includes 22.5 and 12 credits of required and electives, respectively.

Master's

Social Work - Community, Organization, and Social Action Concentration, Community Organization Track, MSW

Community, Organization, and Social Action (COSA) Concentration Curriculum Requirements

COSA offers concentration courses in Human Behavior and the Urban Environment, Organizational Policy Analysis, and a social work research course related to either of the two COSA specialization tracks from which students may choose: Community Organization or Social Administration. Students must take one of the required specialization core skill courses; however, many students prefer to pursue both COSA specializations. Students fulfill their remaining credits from a range of COSA skill elective courses, which include such topics as Supervision and Personnel Management, Financial Management, Public Relations/Marketing, Issue-Based Organizing, Community and Economic Development, and Grants, Proposals and Social Work, Social Work and the Law, and Race and Social Problems. Students may also pursue elective courses in other related professional schools. All students must complete six credits of foundation field work followed by twelve credits of concentration field placement in a range of organizational settings across an array of social work issues and program areas.

Required Skill Courses

- SWCOSA 2084 - INTRODUCTION TO SOCIAL ADMINISTRATION
- SWCOSA 2088 - COMMUNITY ORGANIZING AND PLANNING

Second-Level HBSE Course

- SWBEH 2008 - HUMN BHVR: URBAN ENVIRONMENT

Second-Level HBSE Course

- SWWEL 2087 - ORGANIZATIONS AND PUBLIC POLICY

Second-Level Research Course

Select one of the two courses below based on your specialized track (CO or SA)

- SWRES 2009 - ORGANIZATIONAL AND COMMUNITY DEVELOPMENT RESEARCH (SA)
- SWRES 2023 - DIRECTED STUDY IN RESEARCH (CO)

Electives and Field Placement

- COSA Skill Electives - 6 credits (two courses related to CO or SA track - see below)
- General Electives - 6 credits
- SWCOSA 2099 - FIELD WORK - 12 credits (related to CO or SA track)

Community Organizing Electives

- SWCOSA 2090 - WORKING WITH GROUP AND INTERGROUP RELATIONS: FACILITATION/NEGOTIATION/MEDIATION
**
- SWCOSA 2092 - ORGANIZING FOR COMMUNITY CHANGE: ISSUE, LABOR AND POLITICAL ORGANIZING
- SWCOSA 2096 - COMMUNITY PLANNING AND DEVELOPMENT

Note:

**Courses required for Human Services Management Certificate (COSA or DP)*

*** Courses can count for either Social Administration or Community Organizing*

Social Work - Community, Organization, and Social Action Concentration, MSW

Foundation Requirements

All MSW students must complete the MSW Foundation requirements listed below before being permitted to take concentration skill courses; second-level human behavior and the social environment, social welfare, or research courses; skill electives; and concentration field practicum, unless they are exempted via Advanced Standing credit or examination or an academic plan that is approved by the advisor and the program director.

The foundation course requirements (15 credits total) are:

- SWRES 2021 - GENERALIST SOCIAL WORK RESEARCH
- SWBEH 2063 - HUMAN BEHAVIOR & SOCIAL ENVIRONMENT
- SWWEL 2081 - SOCIAL WELFARE
- SWGEN 2098 - GENERALIST SOCIAL WORK PRACTICE
- SWGEN 2034 - SOCIAL WORK PRACTICE WITH DIVERSE POPULATIONS

Note:

In addition to the five courses listed above, students must complete 6 credits of Foundation Field Work. Students entering with advanced standing may be exempted from part or all of the Foundation Field Work requirement.

Skill Concentration Curricula

Upon completion of the foundation requirements, students begin course work in either of the two skill concentrations: Direct Practice with Individuals, Families, and Groups or Community, Organization, and Social Action (COSA). In each skill concentration, students can opt to choose a University of Pittsburgh certificate program, or a School of Social Work certificate program.

Community, Organization, and Social Action

The Community Organization and Social Action (COSA) concentration prepares socially active and civically engaged students for leadership careers in community service, community change, and community development organizations. Students can pursue specialized course work along one of two tracks-community organization or social administration-but many prefer to combine studies in both specialization areas. Many courses incorporate service learning and applied research that draw on field internships to enhance learning experience and build a professional portfolio. The COSA concentration also provides opportunities for networking with other students through a COSA student group and with faculty, field faculty, alumni, and seasoned community leaders from the greater Pittsburgh region, both in the field and at the school. Information about curriculum requirements is available on the school's Web site, <http://www.socialwork.pitt.edu/academics/msw/concentrations/cosa>

MSW students in the COSA concentration can elect as part of their graduate studies to obtain a certificate in human service management.

Information about the human services certificate program is available on the school's Web site, <http://www.socialwork.pitt.edu/academics/msw/concentrations/direct-practice/certificates/human-services-management>

Electives:

MSW Courses

Social Work - Community, Organization, and Social Action Concentration, Social Administration Track, MSW

Community, Organization, and Social Action (COSA) Concentration Curriculum Requirements

COSA offers concentration courses in Human Behavior and the Urban Environment, Organizational Policy Analysis, and a social work research course related to either of the two COSA specialization tracks from which students may choose: Community Organization or Social Administration. Students must take one of the required specialization core skill courses; however, many students prefer to pursue both COSA specializations. Students fulfill their remaining credits from a range of COSA skill elective courses, which include such topics as Supervision and Personnel Management, Financial Management, Public Relations/Marketing, Issue-Based Organizing, Community and Economic Development, and Grants, Proposals and Social Work, Social Work and the Law, and Race and Social Problems. Students may also pursue elective courses in other related professional schools. All students must complete six credits of foundation field work followed by twelve credits of concentration field placement in a range of organizational settings across an array of social work issues and program areas.

Required Skill Courses

- SWCOSA 2084 - INTRODUCTION TO SOCIAL ADMINISTRATION
- SWCOSA 2088 - COMMUNITY ORGANIZING AND PLANNING

Second-Level HBSE Course

- SWBEH 2008 - HUMN BHVR: URBAN ENVIRONMENT

Second-Level HBSE Course

- SWWEL 2087 - ORGANIZATIONS AND PUBLIC POLICY

Second-Level Research Course

Select one of the two courses below based on your specialized track (CO or SA)

- SWRES 2009 - ORGANIZATIONAL AND COMMUNITY DEVELOPMENT RESEARCH (SA)
- SWRES 2023 - DIRECTED STUDY IN RESEARCH (CO)

Electives and Field Placement

- COSA Skill Electives - 6 credits (two courses related to CO or SA track - see below)
- General Electives - 6 credits
- SWCOSA 2099 - FIELD WORK - 12 credits (related to CO or SA track)

Social Administration Electives

- SWCOSA 2040 - GRANT PROPOSAL WRITING */**
- SWCOSA 2053 - COMMUNICATIONS AND PUBLIC RELATIONS
- SWCOSA 2054 - LEADERSHIP ** (*cross-listing with GSPIA*)

Note:

**Courses required for Human Services Management Certificate (COSA or DP)*

*** Courses can count for either Social Administration or Community Organizing*

Social Work - Direct Practice with Individuals, Families, and Groups Concentration, MSW

Foundation Requirements

All MSW students must complete the MSW Foundation requirements listed below before being permitted to take concentration skill courses; second-level human behavior and the social environment, social welfare, or research courses; skill electives; and concentration field practicum, unless they are exempted via Advanced Standing credit or examination or an academic plan that is approved by the advisor and the program director.

The foundation course requirements (15 credits total) are:

- SWRES 2021 - GENERALIST SOCIAL WORK RESEARCH
- SWBEH 2063 - HUMAN BEHAVIOR & SOCIAL ENVIRONMENT
- SWWEL 2081 - SOCIAL WELFARE
- SWGEN 2098 - GENERALIST SOCIAL WORK PRACTICE
- SWGEN 2034 - SOCIAL WORK PRACTICE WITH DIVERSE POPULATIONS

Note:

In addition to the five courses listed above, students must complete 6 credits of Foundation Field Work. Students entering with advanced standing may be exempted from part or all of the Foundation Field Work requirement.

Skill Concentration Curricula

Upon completion of the foundation requirements, students begin course work in either of the two skill concentrations: Direct Practice with Individuals, Families, and Groups or Community, Organization, and Social Action (COSA). In each skill concentration, students can opt to choose a University of Pittsburgh certificate program, or a School of Social Work certificate program.

Direct Practice with Individuals, Families, and Groups

Direct practice skills form the basis of service in family and children's agencies, mental health and mental retardation programs, health services, work with juvenile delinquents and adult offenders, and substance abuse treatment. Through course work and field practicum, students in the direct practice concentration acquire the knowledge and skills needed to engage in direct practice with diverse populations of individuals, families, and small groups. Practice approaches include psychodynamic-psychosocial, cognitive-behavioral, and social systems. Consistent with an emphasis on client strengths and the values and traditions of the social work profession, students become skilled at mobilizing a variety of formal and informal support systems to assist clients in addressing their needs and realizing their potential.

Direct practice certificates entail a specific array of courses and field placement experiences that permit students to tailor their education and professional preparation.

Six certification programs are available to direct practice students. Direct practice students in the MSW program can elect to pursue a certificate in:

- Children, Youth and Families Certification (School of Social Work Certificate)
- Gerontology (University of Pittsburgh Certificate)
- Home and School Visitor (School of Social Work, School of Education, and PA Department of Education Certificate)
- Integrated Health Certificate (University of Pittsburgh Certificate)
- Mental Health Certification (School of Social Work Certificate)

Students are not required to pursue a certificate. Those who choose to do so, must declare their choice of a certificate program no later than the end of the first term of full-time study. Individuals intending to complete the Home and School Visitor certificate must declare their interest in their application for admission to the MSW program. Information about curriculum requirements, specialization, and certificate programs are available on the school's Web site, <http://www.socialwork.pitt.edu/academics/msw/concentrations/direct-practice>

Electives:

Social Work, MSW

MSW Degree Requirements

The Master of Social Work (MSW) degree can be completed in two academic calendar years of full-time study and requires the satisfactory completion of a minimum of 60 credits-42 class and 18 field practicum. Candidates for the MSW degree must demonstrate successful completion of the required foundation courses, concentration-specific courses, and field practicum, and must have a minimum overall GPA of 3.00.

Doctorate in Social Work Program

Social work doctoral education prepares people for leadership roles in social work research, social work education, social policy and planning, and administration. The goal of the doctoral program of the School of Social Work is to provide students with advanced research and policy analysis skills based on a foundation of social science theory and social welfare. The doctoral program is committed to the school's mission to address human worth and dignity, social justice, and social equity for diverse populations. Program graduates will be able to conduct research that addresses social work and social welfare and policy problems and to disseminate knowledge to researchers, social work educators, social work practitioners, and policy makers.

The University of Pittsburgh has one of the oldest social work doctoral programs in the United States, awarding its first DSW degrees in 1949. In 1963, the program's degree was changed to a PhD. Information regarding the Doctor of Philosophy Program is available online at www.socialwork.pitt.edu/academic-programs/phd/.

In addition to the description of the PhD in Social Work given below, doctoral students should consult the Regulations Pertaining to Doctoral Degrees in the General Academic Regulations section of this document.

Admission to Doctoral Program

<http://www.socialwork.pitt.edu/admissions-aid>

Contact Information

Ms. Jessalynn Oliver
Office of Admissions
School of Social Work
Room 2104 Cathedral of Learning
412-624-6302
E-mail: j.oliver@pitt.edu
www.socialwork.pitt.edu

Applications should be received no later than December 31 of each year. Admission to the program is on a full-time basis for the Fall Term only. The doctoral program is strongly committed to a policy of equal educational opportunity for people of all races, creeds, and ethnic origins.

Program Transfer Credits

Students who have earned doctoral-level credits at the University of Pittsburgh or at another accredited institution within seven years preceding entry to the doctoral program may be eligible for advanced standing. Advanced standing consists of awarding academic credit toward the degree for post-master's work completed when such work is evaluated as entirely comparable. Official transcripts certifying graduate course work completed in a degree-granting graduate program should be submitted at the time of application. The maximum number of credits that can be transferred and accepted for advanced standing is 12.

Financial Support for Doctoral Students

Financial Support for Doctoral Students Doctoral students are supported in years one and two by research-based graduate student assistantships (GSAs), and in years three and four by teaching assistantships (TAs). Exceptional students with teaching experience and two years post -MSW experience may apply for our teaching fellowships (TFs). Both GSAs and TAs/TFs provide tuition remission and stipends for the fall, spring, and summer terms. There is a 20-hour-per-week work requirement.

Typically the student receives their GSA or TA support for four years as long as the student is making satisfactory progress toward the degree. If a fifth year is required, it usually is supported by adjunct teaching. Students also are encouraged to apply for predoctoral research traineeships and other awards.

Doctoral Curriculum Objectives

The program curriculum strongly emphasizes social problem areas, as well as coordinating themes in theory, research methodology, and social policy courses. The overall goal is to integrate the acquisition of basic advanced knowledge, methods of empirical testing, and application to real-world situations. Course materials draw heavily on several priority areas of social work concern, including aging, mental health, income maintenance, child welfare, women's issues, child and family policy, and health services, and social justice. diversity issues.

By the time students have completed the program, they should have acquired the following:

- Knowledge of relevant social science theory
- Advanced skills in research methodology and statistics
- Advanced knowledge of social welfare policy (historical and contemporary) and policy analysis
- Knowledge of relevant fields of practice, theoretical and policy perspectives, and research findings
- Exposure to an interdisciplinary frame of reference through mechanisms provided internally by the doctoral program and externally through access to other disciplines and professions in the wider University

Although entering students are not required to have completed course work or other experience relevant to computer literacy, possessing basic computer skills will be an asset to students beginning the program.

Doctoral

Social Work, PhD

PhD Degree Requirements

The PhD program requires 10 core courses, one policy elective, plus a minimum of five electives, which may be 2-, 3- or 4-credit courses. During their first year, all students are required to take the Doctoral Seminar (0 credits). Students will spend two years meeting their course requirements. Full-time status is defined as nine or more credit hours per semester. Fifty (50) credit hours must be completed before students are permitted to take the comprehensive examination.

Doctoral Requirements

During the first two academic years in the program, full-time students are primarily involved in taking the required courses in the four essential areas of study: social welfare, social science theory, research methods, and social policy. Students take courses in the fall and spring terms of their first and second years; summer courses are necessary if a student is enrolled in one of our joint degree programs or desires a nine-credit schedule for the fall and spring terms.

Curriculum

Courses are taken in the fall and spring terms during the student's first and second years; summer courses are needed if a student desires a nine-credit schedule for fall and spring terms and/or is enrolled in one of the joint degree programs (no more than 12 credits are recommended for the student's first semester in the program). Learn more about our curriculum.

Comprehensive Examination

Students take a comprehensive examination after completion of all required and elective courses. The Comprehensive examination is taken in the summer of the second year. For students in the MSW/PhD program, the comprehensive examination is taken in the summer of the 3rd year.

Doctoral Dissertation

The doctoral dissertation involves:

- Dissertation Research: begins after passing the comprehensive examination
- Defense of a Dissertation Overview: occurs after a committee review of the dissertation overview and includes an introduction to the problem, a literature review, and a detailed methodology (admission to PhD candidacy)
- Final Dissertation Defense: occurs at least one year following admission to candidacy

Grades in Course Work

It is required that students will maintain an average grade point average of 3.00 or better in all course work. If a student receives a grade lower than B- in a required course, the course will have to be repeated. Whether the courses are required or elected, more than one grade of C+ or lower will be the basis for a formal Academic Review.

Program Flexibility and Individualization

An individual student's program should reflect the student's developing professional expertise, career goals, and personal interest. This program, therefore, maintains as much flexibility and individualization as possible.

This individualization is built upon the core curriculum through planning for elective course work and enrichment experiences, including teaching and research assistantships. The PhD program provides a set of structured and integrated core courses that can be applied to each students' area of specialization. This core curriculum is supplemented by six elective courses that allow students to obtain more depth in their specialization areas. Faculty advisors work closely with students in planning their course work and progress through the doctoral program.

A minimum of three years of full-time study is required for doctoral program completion. The curriculum is distributed between a nine-course core curriculum and elective courses followed by the comprehensive examination and doctoral dissertation.

Core Doctoral Curriculum

During the first two academic years in the program, students are primarily involved in taking the required courses in the four essential areas of study: social welfare, social science theory, research methods and statistics, and social policy. These core courses are provided by the doctoral program. A brief description of each area of study follows with a listing of credits awarded and terms offered. All 1st year students are required to take the non-credit Doctoral Seminar. More information on each doctoral course is available in the Student Handbook.

Required (Core) Courses

Research Methods (17 total credits)

- SWRES 3020 - RESEARCH METHODS 1

- SWRES 3029 - INFERNTL STAT SOCL WORKERS
- SWRES 3021 - MULTIVARIATE ANALYSIS
- SWRES 3022 - RESEARCH METHODS: CAPSTONE SEMINAR 1
- SWRES 3023 - RESEARCH METHODS: CAPSTONE SEMINAR 2
- SWRES 3066 - SEMINAR IN SOCIAL WORK EDUCATION - 3 credits
- Doctoral Seminar - 0 credits

Theory (6 total credits)

- SWGEN 3044 - THEORY 1
- SWGEN 3053 - THEORY 2

Policy (6 total credits)

- SWWEL 3030 - EVAL OF AMERICAN SOCIAL WELFARE
- SWWEL 3037 - SOCIAL POLICY ANALYSIS

Elective Courses (21 credits)

In addition to the above core course requirements, the student selects seven elective courses to pursue more specialized interests. All electives must be at least 2 credit graduate level courses with a credit total = 21 credits. Elective options available in the program, including the Joint Public Health Master's/Social Work PhD option and the graduate certificate in women studies offer particular advantages but tend to restrict the number of electives open to students. Although some doctoral elective courses are offered within Social Work, students are encouraged to take relevant course work in other schools and departments of the University. Many social welfare-related fields are open: sociology, economics, women's studies, political science, law, urban affairs, public health, and others. The student can choose his or her courses from all graduate programs in the University. The students may take no more than two MSW courses for elective credit. All electives must be approved by the student's advisor as contributing to the student's area of specialization.

Interdisciplinary Components of Doctoral Curriculum

In addition to the core doctoral courses, the student has seven elective course selections to pursue more specialized interests. Certain options available in the program, especially the Joint Public Health Master's/Social Work PhD option and the graduate certificate in women's studies, offer particular advantages but tend to restrict the number of electives open to students. Students are encouraged to take graduate-level course work in other schools and departments of the University insofar as this is feasible within their program requirements. Many social welfare-related fields are open: sociology, economics, women's studies, social psychology, political science, law, urban affairs, public health, and others. The student can choose his or her courses from all graduate programs in the University. The student may take no more than two MSW courses as electives.

Cooperative Degrees Program

<http://www.socialwork.pitt.edu/academics/master-social-work-msw>

In addition to the MSW and PhD degrees, graduate students in the School of Social Work have the opportunity to select from several unique dual degree programs. MSW students can avail themselves of one of the eight joint or cooperative degree programs; two joint degree programs are available to PhD students.

Detailed below are joint degree programs offered by the School of Social Work in tandem with the Graduate School of Public and International Affairs, the Graduate School of Public Health, the School of Law, the School of Education, the School of Business, and the Pittsburgh Theological Seminary.

MSW/Master of Public Administration, MSW/Master of Public and International Affairs, and MSW/Master of International Development

Three unique joint degree programs are offered by the University of Pittsburgh School of Social Work, through its COSA concentration, and the Graduate School of Public and International Affairs. These joint programs provide students with a broad professional education to prepare them for eventual service in urban non-profit and government organizations, community development policy, and social and urban planning. They provide experienced students with opportunities to expand their knowledge base and enable other students to develop more marketable professional skills than are usually acquired through single-degree programs. Students in these joint programs earn a Master of Social Work from the School of Social Work and a Master of Public Administration, Master of Public and International Affairs or a Master of International Development from the Graduate School of Public and International Affairs.

Students must be admitted to both programs in order to qualify for admission to the joint degree program. Degree candidates must meet the minimum foundation, concentration, and specialized requirements of both schools, except where substitutions are appropriate and approved by the faculty advisors. Depending upon which joint degree program the student elects, the total number of credits required for graduation ranges from 72 to 88 credits. For most students, this means that individual programs can be completed within six to seven terms of full-time residency. Students electing to terminate the joint degree program before its completion must complete all the work required by the respective schools for either degree in order to receive that degree separately.

The easiest way to apply to the Master's Degree in Social Work Program at the University of Pittsburgh School of Social Work is to use our online application.

University of Pittsburgh
Graduate School of Public and International Affairs
Office of Admissions
3601 Wesley W. Posvar Hall
Pittsburgh, PA 15260
412-648-7640
www.gspia.pitt.edu

MSW/Master of Public Health program

The MSW/MPH program requires a three year curriculum plan. Students will complete the required core courses in both the MSW and the MPH program. Selected required courses from each program will count as elective courses toward the degree in the other program. A reciprocal agreement between both programs with regards to the acceptance of student electives will facilitate effective curriculum planning.

The total number of credits to be taken will be 86 (50 in Social Work, and 36 in GSPH). Students will be required to complete two field placements (one in the first year and one in the second) as required by the MSW program, and as is consistent with the practicum requirements of the MPH program.

The second field placement will have a public health emphasis and count as the required MPH practicum experience. All students will be required to complete the GSPH Capstone course, and complete an essay as required by the MPH program. Students will be assigned faculty advisors from both SSW and GSPH and these advisors will work collaboratively with the student to plan the academic course of study.

Upon completion of the joint degree program, the student would receive the Master of Public Health and the Master of Social Work degrees from the respective schools. The curriculum is established in an effort to have the requirements for both degrees met by having certain classes at one school fulfill requirements at the other.

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For more information on the MSW/MPH program please contact:

University of Pittsburgh
School of Social Work
Office of Admissions
2104 Cathedral of Learning
University of Pittsburgh
Pittsburgh, PA 15260
(412) 624-6302
E-mail: sswadmissions@pitt.edu

MSW/Juris Doctorate

The School of Social Work (SSW) and the School of Law offer a cooperative educational program through which students may earn both the Master of Social Work (MSW), the primary professional degree in social work, and the Juris Doctor (JD) degree, the first professional degree in law. The MSW-JD program will enable students with interests in a wide range of areas where law and social work converge - such as child welfare, aging, health, mental health, juvenile and criminal justice, family issues, and housing - to engage in a highly integrative educational experience that will include academic courses, field placements, and research opportunities at the intersection of both professions. The joint degree program allows one to earn both degrees in four years rather than five.

Increasingly, social work professionals and attorneys are working together to promote the well-being of their clients. These areas of convergence exist in practice with individuals, families, and groups as well as with communities and organizations. The intersection of legal and social work concerns is also evident at the policy level, and research from both professional disciplines has been used to inform these activities. It is not uncommon for practitioners from both fields to work in concert to draft, implement, and/or advocate for legislation at the local, state, and federal levels.

The MSW-JD program is one among several programs that the Schools of Social Work and Law have jointly established throughout their long and rich history of collaboration.

Neither degree may be granted prior to fulfillment of all requirements for the joint degree program.

Faculty Advisors

University of Pittsburgh School of Law
Professor Kevin Deasy, MSW, JD
3900 Forbes Avenue
Pittsburgh, PA 15260
(412) 648-5642
deasy@pitt.edu

University of Pittsburgh School of Social Work
Professor Jeffrey Shook, MSW, JD, PhD
2117 Cathedral of Learning
Pittsburgh, PA 15260
(412) 648-9365
jes98@pitt.edu

Master of Social Work/Master of Business Administration

Faced with an increasingly competitive market, nonprofit organizations are beginning to emulate management methods and paradigms being practiced by for-profit companies, such as financial operations, human resource and data management, market and economic analysis, and evidence-based strategic planning. As philanthropic organizations become more concerned about their accountability and utility of financial supports provided to various human service organizations, they are beginning to evaluate nonprofits beyond program outcomes or average cost per client to more advanced assessments, such as cost-efficiency and effectiveness and cost-benefit ratio. Unfortunately, such analytic methodologies are rarely offered to social work students by the traditional social work curriculum.

Initially, the proposed MSW/MBA dual-degree program will be open to the SSW's Community Organization and Social Action (COSA) students. Upon successful execution of this initiative, the school will lean towards opening the program to all MSW full-time students (Direct Practice students included).

Students who want to earn a dual-degree must gain acceptance into both graduate degree programs by applying separately to each school. The joint-degree program applicants will also be required to submit their Graduate Management Admission Test (GMAT) or Graduate Records Exam (GRE) examination scores to both schools.

Faculty Coordinator:

Dr. Hide Yamatani, Ph.D., MSW, MBA

School of Social Work

University of Pittsburgh

2112 Cathedral of Learning

Pittsburgh, PA 15260

Requests for further information concerning the Katz Graduate School of Business, see <http://www.business.pitt.edu/katz/>. Specific questions may be addressed to:

Dr. Rabikar Chatterjee, Ph.D.

Associate Dean

Katz Graduate School of Business

University of Pittsburgh

301 Mervis Hall

Pittsburgh, PA 15260

Master of Social Work with a Secondary Education Teaching Certificate

Overview

The Master of Social Work with a Certificate of Advanced Study in Teaching in Secondary Education (MSW/CAST) combined program is designed to cultivate school-based practitioners that will have a wide range of skills for supporting vulnerable adolescents and families in urban school contexts. The MSW/CAST curriculum design incorporates the person-in-context approach of social work with culturally relevant secondary teaching methods. As such, graduates will be trained to identify, design, and facilitate programmatic responses to the unique needs of children in schools in urban communities, and also to enhance classroom teaching and student learning through their specialized evidence-based expertise.

The program is efficiently designed to be completed in two years (5 semesters). In the first year the bulk of the courses are taken in the School of Education, as students complete the teaching certification portion of the program. In this time students are trained to be secondary education teachers (grades 7-12) in one of five core disciplines: English, Mathematics, Science, Social Studies, or Foreign Language. Students will then shift to the second half of the program, where the bulk of the courses are taken in the School of Social Work and where students will earn an MSW degree over the course of 3 semesters. By combining courses of study in the School of Education and School of Social Work, graduates will:

- 1) Understand the learning environment of students in the urban settings

- 3) Understand schools as organizations in context
- 2) Utilize culturally relevant classroom instruction to promote academic growth of adolescents
- 4) Facilitate intervention programs and student support services that focus on the social and emotional needs of students

Upon successful completion of this combined program graduates will be awarded a Masters Degree in Social Work (MSW) from our direct practice concentration, and certifications in secondary school teacher (grades 7-12) and school social work (pending praxis and licensure exams for relevant certifications).

Admissions and Prerequisites

Candidates for this combined program will need to enter having completed sufficient credits at the baccalaureate or higher level in fields relevant to one of the five secondary teaching disciplines: English, Mathematics, Science, Social Studies or Foreign Language. If a candidate is from a related field and just shy of credits (e.g. political science), they may choose to take relevant courses prior to enrollment. Also, two education courses (6 total credits) are also required as prerequisites and are available the summer before the start of the program (Foundations of Special Education; Teaching English Language Learners). All prerequisites must be met by the start of the first fall semester of year 1.

Interested candidates should apply to the School of Social Work MSW program and the School of Education Instruction 1 program separately, indicating their interest in the MSW/CAST program where asked in the respective application materials. Applicant qualifications for each school will be reflective of the general standards of each individual program. Candidates who are accepted to both programs will be accepted to the combined program, and will be notified and welcomed to the upcoming cohort.

Program Requirements

Coursework. In this uniquely rigorous and efficient program, students will meet an adapted set of the core requirements of both schools, whereby a number of pre-approved courses electives in one program count dually toward course requirements in the other. The total number of credits taken will be 51-54 in Social Work and 22-25 in Education. These credits include required field experiences for both programs.

Fieldwork. The Professional Year (year 1) School of Education field experiences will consist first of ten hours a week during the fall semester observing and teaching in a grade 7-12 classroom alongside an experienced mentor teacher. In the spring semester, the students will complete a full-time student teaching experience in the same classroom. Then in the summer semester following year 1, students will complete their foundation field placement for the School of Social Work. Finally, the concentration field practicum for social work will occur in the fall and spring semesters of year two. This field practicum will be in a primary social work role within a school setting.

Tuition

Students will pay the tuition of whichever school they are enrolled in for the majority of their credits that term. Specifically, fall and spring Year 1 students will pay School of Education tuition, and the remainder of the program will be paid to the School of Social Work. Significant scholarship support is available to students in the program.

Employment

The secondary education focus, along with the 2 calendar year quickened pace, makes MSW/CAST program one-of-a-kind nationally. Upon graduation, students will be prepared to serve either a School Social Worker or a Classroom Teacher. To the teaching profession, graduates bring therapeutic, person-in-context, and family-relations perspectives that will uniquely equip them to build positive relations and supports for students in particularly challenging contexts. Conversely, a school social worker with teacher training will have enhanced skills to support teachers in identifying effective interventions to address psychosocial issues in the classroom. More broadly, a social work with teacher training will be able to construct and deliver instruction more effectively to impact change and understanding amongst his/her clients, colleagues, and staff.

In sum, graduates of this program are uniquely qualified for, although not limited to, work in high need urban educational environments. Ultimately, this degree is a rare and powerful distinction for individuals looking for enhance their preparation and employability in secondary schools.

Contact Us

James Huguley
Assistant Professor
412-624-2542
huguley@pitt.edu
2217G Cathedral of Learning

PhD Joint Degree Programs

The School of Social Work offers two joint degree programs to PhD students: one leading to the MSW and the PhD and another with the Graduate School of Public Health. (Separate applications are required for either MSW or MPH admission.)

Joint Degree

Social Work, JD/MSW

Master of Social Work/Juris Doctorate

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The MSW-JD program is one among several programs that the Schools of Social Work and Law have jointly established throughout their long and rich history of collaboration.

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Faculty Advisors

University of Pittsburgh School of Law

Professor Kevin Deasy, MSW, JD
3900 Forbes Avenue
Pittsburgh, PA 15260
(412) 648-5642
deasy@pitt.edu

University of Pittsburgh School of Social Work

Professor Jeffrey Shook, MSW, JD, PhD
2117 Cathedral of Learning
Pittsburgh, PA 15260
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Social Work, MID/MSW

Joint Degree Programs with the Graduate School of Public and International Affairs

Master of Social Work/Master of Public Administration

Master of Social Work/Master of Public and International Affairs

MSW/Master of International Development

Three unique joint degree programs are offered by the University of Pittsburgh School of Social Work, through its COSA concentration, and the Graduate School of Public and International Affairs. These joint programs provide students with a broad professional education to prepare them for eventual service in urban non-profit and government organizations, community development policy, and social and urban planning. They provide experienced students with opportunities to expand their knowledge base and enable other students to develop more marketable professional skills than are usually acquired through single-degree programs. Students in these joint programs earn a Master of Social Work from the School of Social Work and a Master of Public Administration, Master of Public and International Affairs or a Master of International Development from the Graduate School of Public and International Affairs.

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Graduate School of Public and International Affairs

Complex and emerging issues influence us, our towns, our countries, and our world: Fair housing. Economic and community development. Environmental sustainability. Emergency preparedness. Disaster response. Human rights. International security.

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University of Pittsburgh
Graduate School of Public and International Affairs
Office of Admissions
3601 Posvar
Pittsburgh, PA 15260

Social Work, MPA/MSW

Joint Degree Programs with the Graduate School of Public and International Affairs

Master of Social Work/Master of Public Administration

Master of Social Work/Master of Public and International Affairs

MSW/Master of International Development

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Social Work, MPH/MSW

MSW/MPH

MSW/Master of Public Health Program

The MSW/MPH program requires a three year curriculum plan. Students will complete the required core courses in both the MSW and the MPH program. Selected required courses from each program will count as elective courses toward the degree in the other program. A reciprocal agreement between both programs with regards to the acceptance of student electives will facilitate effective curriculum planning.

The total number of credits to be taken will be 87 (51 in Social Work and 36 in GSPH). Students will be required to complete two field placements (one in the first year and one in the second) as required by the MSW program, and as is consistent with the practicum requirements of the MPH program.

The second field placement will have a public health emphasis and count as the required MPH practicum experience. All students will be required to complete the GSPH Capstone course and complete an essay as required by the MPH program. Students will be assigned faculty advisors from both SSW and GSPH and these advisors will work collaboratively with the student to plan the academic course of study.

Upon completion of the joint degree program, the student would receive the Master of Public Health and the Master of Social Work degrees from the respective schools. The curriculum is established in an effort to have the requirements for both degrees met by having certain classes at one school fulfill requirements at the other.

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For more information on the MSW/MPH program please contact:

School of Social Work
Office of Admissions
2104 Cathedral Of Learning
412-624-6302
E-mail: sswadmissions@pitt.edu
www.socialwork.pitt.edu/admissions/

Social Work, MPH/PhD

The University of Pittsburgh School of Social Work and the Graduate School of Public Health Center for Maternal and Child Health Leadership Training in Public Health Social Work (based in the Department of Behavioral and Community Health Sciences) program has been in operation since 1965 and represents a unique collaboration. The program's primary objectives are to train social workers for leadership positions in public health systems and prepare them for research and teaching posts.

The program emphasizes a broad range of maternal and child health issues, including infant mortality reduction, adolescent health, youth and maternal substance abuse, services to children with disabilities, injury and violence prevention, child abuse and neglect, pediatric AIDS, and others. The program has excellent links with both the local and state maternal and child health systems as well as with the federal Maternal and Child Health Bureau. Students have numerous opportunities to work with local organizations on a variety of planning, evaluation, and research activities. In recent years, a number of students have participated in federally sponsored summer internship experiences.

The program offers students a joint program to study for both a PhD in Social Work and a Master of Public Health (MPH).

The joint MPH/PhD program, is designed for social workers seeking administrative, policy, and/or academic positions. The overall training program clearly emphasizes leadership training rather than basic professional preparation. All trainees are Masters of Social Work (MSWs) (or equivalent) with at least two years of professional practice experience.

Master of Public Health/Doctor of Philosophy (PhD) in Social Work | School of Social Work | University of Pittsburgh

Objectives

The overall educational objective of the project is to provide the trainees with a "public health approach" to maternal and child health.

This involves:

- a primary focus on populations at risk rather than individuals
- use of an interdisciplinary approach
- a focus on primary prevention of social and health problems
- reliance on systematic data collection and analysis for administrative decision making

The learning objectives include:

- Understanding incidence, prevalence, prevention, treatment, and epidemiological trends of the health and social needs of mothers and children
- Becoming aware of the health and social work systems available for prevention, treatment, and rehabilitation
- Understanding the interrelationship of the identified population-at-risk with other populations needing maternal and child health services
- Understanding the impact of socioeconomic, racial, cultural, geographical, and financial factors on health service delivery and use
- Understanding the technical and legal issues related to service delivery to the population-at-risk
- Understanding the implications of legislation and policy on program funding, planning and development, and patterns of service delivery

It is expected that graduates also will be prepared through the educational experience to:

- Coordinate maternal and child health services within primary, secondary, and tertiary sites
- Effectively access and allocate federal, state, county, and local resources for maternal and child health services
- Develop and coordinate regional public health and social work services for mothers and children
- Develop social work consultation and training skills and apply them to interdisciplinary settings
- Use epidemiological data and statistics, and conduct community needs assessments to support program and policy development
- Prepare technical reports, proposals, and publications

Academic Curriculum

The MPH/PhD curriculum comprises core courses in public health and social work, with a heavy emphasis on research methods and statistics. Specific classes on maternal and child health and public health social work are also required for this degree program. The following list of courses is provided as an example, as the exact course requirements may vary by student.

Requirements:

This joint degree requires the completion of a minimum of 81 credits, a comprehensive examination and successful defense of a dissertation. Graduate Students in the joint MPH/PhD program generally apply 12 credits from the MPH curriculum toward their elective course work for the PhD.

Social Work, MPIA/MSW

Joint Degree Programs with the Graduate School of Public and International Affairs

Master of Social Work/Master of Public Administration

Master of Social Work/Master of Public and International Affairs

MSW/Master of International Development

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Social Work, MSW/MDiv

Social work and theology have many historical, philosophical, and applied commonalities. In an effort to integrate the two educational experiences and prepare professionals competent to integrate their practice skills, the School of Social Work, in cooperation with the Pittsburgh Theological Seminary, has developed a cooperative degree program leading to the Master of Social Work and Master of Divinity degrees.

This program provides a full social work and theological education that may be completed in four years by virtue of mutual and reciprocal educational planning between the institutions. Candidates for the degrees normally enter the seminary and concentrate on theological studies during the first two years of the program. The third and fourth years are spent primarily in the School of Social Work with approximately one course each term being taken at the seminary. Students electing to terminate the cooperative degree program before its completion must complete all the work required by the respective institutions for either degree in order to receive that degree separately. Applications for admission are processed independently by each institution.

Requests for further information concerning the Pittsburgh Theological Seminary and its various programs may be addressed to the Director of Admissions, Pittsburgh Theological Seminary, 616 North Highland Avenue, Pittsburgh, PA 15206, or call 412-362-5610, ext. 2116. The seminary's Web site is www.pts.edu.

Social Work, MSW/PhD

An MSW degree from an accredited school of social work is required to be considered for admission to our PhD program. Those applicants without an MSW degree, who wish to pursue a social work academic career, can apply to the joint MSW/Ph.D. program. Such applicants typically are interested in grounding themselves in the practice base of the social work profession, while also seeking to develop their advanced research and teaching expertise.

If you are interested in a faculty position in a school of social work after completing your PhD, please note that the Council on Social Work Education, the accrediting body for social work undergraduate and master's programs, requires that social work practice courses be taught by faculty with the MSW plus the equivalent of two years of full time practice experience. Therefore, it is strongly recommended that individuals who do not possess an MSW and who desire an academic position in a school of social work consider the option of our joint MSW-PhD program. We also strongly encourage those who do not have the requisite practice experience to obtain it before completing their PhD., preferably before entering the program.

Separate applications are required for admission to each program. Those seeking further information regarding this dual degree program are encouraged to contact Dr. Jeffrey Shook, director of the doctoral program, (412) 648-9365, jes98@pitt.edu.

University Center for International Studies

The University Center for International Studies (UCIS) is the primary resource for initiating and managing international programs, studies and support services while promoting the University's reputation as a leader in global education. A key goal of UCIS is to cultivate globally capable and engaged students toward lives of impact in their community and beyond. In short, to prepare graduate students who are global ready. This is achieved by certificate programs, study abroad, curriculum development, and seminars. UCIS offers 7 graduate certificates, which are academic credentials that attest to acquisition of international knowledge about a particular world region or global issue, cross-cultural understanding, and language proficiency relevant for international careers or for advanced degrees. Certificates are available in:

- African Studies
- Asian Studies
- European Union Studies
- Global Studies
- Latin American Studies
- Russian Studies
- West European Studies

The certificates are administered through the African Studies Program, Asian Studies Center, European Studies Center, Global Studies Center, Center for Latin American Studies, and the Center for Russian and East European Studies. Four centers--European Studies Center, Global Studies, Latin American Studies, and Russian and East European Studies--are designated by the federal government as National Resource Centers.

UCIS certificates evidence language proficiency, regional knowledge and cultural competency that students find useful for international careers.

Contact Information

University of Pittsburgh
University Center for International Studies
4413 Wesley W. Posvar Hall
Pittsburgh, PA 15260
412-648-7390
btorres@pitt.edu
www.ucis.pitt.edu

Admission to Certificate Programs

For admission, graduate students must first apply to the relevant professional school or academic department within the Dietrich School of Arts and Sciences. Applicants are encouraged to contact a UCIS international advisor as early as possible with questions about their interest in a world region or global issue. Formal admission to the UCIS certificate programs is accomplished by completing a simple application form. Generally, no additional tuition is charged for enrollment as a certificate student. Students holding a master's degree from an accredited institution may obtain any of the UCIS graduate certificates without enrolling in a graduate degree program at the University of Pittsburgh. They may apply directly to the UCIS center or program if they wish to enroll only in the certificate program.

Certificate Requirements

UCIS Graduate certificates are awarded after completion of all certificate requirements *as well as* completion of all requirements for the master's degree, or *after* the student has passed the comprehensive examinations for the doctorate. Upon graduation, both the academic degree and the certificate are posted on the student's transcript. Specific certificate requirements for each international studies certificate are listed under the program offerings below.

Advising

All UCIS certificate programs provide personalized advising services to students interested or registered in its programs in addition to those routinely offered by the students' major advisors. Center advisors assist in selecting courses, language training, and arranging internships or study abroad to fit the students' academic and personal interests. See the program offerings below for contact information.

Program Offerings

African Studies Certificate
Asian Studies Certificate
European Union Studies, ADVCT
Global Studies Certificate
Latin American Studies Certificate
Russian, East European, and Eurasian Studies Certificate
West European Studies, ADVCT

Special Academic Opportunities

For an overview of the many opportunities and resources that are available to students through UCIS, please visit www.ucis.pitt.edu/main/students

myPittGlobal

This new student platform is your one-stop-shop to integrate the curricular achievements with study abroad, civic & global engagement and professional development opportunities. The online tools will help you access all UCIS academic programs, study abroad, international events and activities, advisors and your peers. To learn more, [click here](#).

UCIS Affiliated Faculty

African Studies Program

<http://www.ucis.pitt.edu/africa/faculty>

Asian Studies Center

<http://www.ucis.pitt.edu/asc/academics/faculty>

Center for Latin American Studies

http://www.ucis.pitt.edu/clas/faculty_list

Center for Russian & East European Studies

<http://www.ucis.pitt.edu/crees/about/faculty>

European Studies Center

<http://www.ucis.pitt.edu/esc/about/affiliated-faculty>

Global Studies Center

<http://www.ucis.pitt.edu/global/affiliates>

African Studies Program

Contact Information

Dr. Macrina Lelei
Graduate Advisor and Interim Director
African Studies Program
4137 Wesley W. Posvar Hall
Pittsburgh, PA 15260
412-648-2058
Fax: 412-648-7214
E-mail: africast@pitt.edu
www.ucis.pitt.edu/africa

The Graduate Certificate

The African Studies Program offers the graduate certificate in African Studies designed to provide students the opportunity for the interdisciplinary study of Africa. Students seeking a graduate degree at any school within the University may pursue a graduate certificate in African Studies by enrolling in the program and meeting the stipulated requirements. The Graduate Certificate program is specifically designed for graduate students who desire an opportunity to intensify their study of Africa and develop real insights into issues of critical importance in their fields of research and career interests as relates to Africa. The program provides students with fundamental grounding in African Studies through exposure to the major areas of research and knowledge on Africa in their respective disciplines. In addition, students are provided with opportunities to participate in research projects, symposia, lectures, conferences, and workshops on Africa. They are also encouraged to participate in internship opportunities with a specific focus on Africa.

Admission to the Certificate Program

Although formal admission to the program is allowed at any point in the student's academic career, students are encouraged to apply for admission early enough to allow them ample time to complete all the requirements in a timely manner. Application information can be obtained from the African Studies Web site or students can apply for admission to the program at our office.

Certificate

African Studies Certificate

Contact Information

Dr. Macrina Lelei, Associate Director
African Studies Program
4137 Wesley W. Posvar Hall
Pittsburgh, PA 15260
412-648-2058
macrina@pitt.edu
www.ucis.pitt.edu/africa

The Graduate Certificate

The African Studies Program offers the graduate certificate in African Studies designed for students who wish to intensify their study of Africa as a world region. Students seeking a graduate degree at any school or department within the University may pursue a graduate certificate in African Studies by enrolling in the program and meeting the stipulated requirements. This certificate is specifically designed for graduate students who desire to develop real insights into issues of critical importance in their fields of research and career interests as relates to Africa. The program provides students with fundamental grounding in African Studies through exposure to the major areas of research and knowledge on Africa in their respective disciplines and professions. In addition, students are provided with opportunities to participate in research projects, symposia, lectures, conferences, fellowships, internships and workshops on Africa. Successful completion of a certificate in African Studies can provide an important building block for careers in international development, foreign service, government, business, law, academia and public service.

Certificate Requirements

To receive the Graduate Certificate in African Studies, students must complete the following requirements:

- **African Studies Courses:** Students will complete six courses (18 credits) with at least 25% or more Africa related content. One of these courses must be taken from outside the student's department or professional school. Any Graduate Class can count towards the Certificate if there is at least 25% African content and individual students may focus on an issue or country in Africa while doing their project and or research paper for the class. In special instances, with the consent of the academic advisor, approved upper-level undergraduate courses may be accepted. For a full list of approved undergraduate courses, [click here](#).
- Graduate students should complete a minimum of 6 unique credits of coursework. In other words, at least 6 credits of the course work used to complete the requirements of any graduate level certificate in UCIS must be in addition to the credits used to complete the student's primary degree program. In consultation with the academic advisor, students may fulfill these standards through one of the following options, [click here](#)
- For students completing two graduate level UCIS certificates, *at least nine (9) credits* of the course work used to complete the certificate requirements *must be in addition to the credits used to complete the student's primary degree program*. At least 3 of these credits must be in content coursework. *All 9 cannot be language course credits*
- **Language Proficiency:** Students will complete two years (4 semesters) of college level study of an African language or equivalent Proficiency of a European language other than English relevant to African Studies as a consequence of Africa's historical experience-a student with two years or more of French, Portuguese, German or Spanish meets the language proficiency requirement.
- **Capstone Research Paper:** Each student will complete a **capstone paper, which** will be the culmination of his or her learning experience in the African Studies program. Each student will select a topic focused on his or her area of concentration and work on this project under the supervision of an African Studies affiliated faculty.
- **GPA in African Studies Courses should be 2.5 or higher.**

Academic Opportunities

Internships: There are several internship opportunities locally and in Africa for student internships. Meet with the academic advisors to learn about these opportunities and sources of funding.

Professional Development: The African Studies Program offers graduate fellowships every semester where a student is given full exposure to the field of African Studies while they also develop their professional skills such as networking, public speaking, communications, media relations, critical thinking, and knowledge of Africa through the various assignments. Graduate students will especially build their outreach, networking and organizational skills through coordinating and hosting community engagement programming.

UCIS International Career Toolkit Series: The Toolkit Series introduces students to the multitude of careers available by meeting and interacting with professionals in a variety of fields. Many of the guests are Pitt alumni and those that graduated with an International Studies Certificate. By attending one of these panels students will gain insight on career choices, what specific careers entail, how to articulate and prepare for short and long term career goals, and utilize resources at Pitt to make their goals a reality. Each year, students enrolled in the certificate program will have the opportunity to visit Washington, DC to interact with professionals and learn about a variety of opportunities for employment possibilities.

Asian Studies Center

Contact Information

University of Pittsburgh
University Center for International Studies
Asian Studies Center
Emily Rook-Koepsel, Undergraduate & Graduate Advisor and Assistant Director for Academic Affairs
4109 Wesley W. Posvar Hall
Pittsburgh, PA 15260
Phone: 412-648-7370
rookkoepsel@pitt.edu
<http://www.ucis.pitt.edu/asc/academics/certificate-program/graduate-certificate-program>

The Asian Studies Center at the University of Pittsburgh is widely recognized as being among the best and most comprehensive in the country in research, public service, and teaching about East Asia. The center's mandate is to promote an enhanced understanding of East Asia, South Asia, Southeast Asia, and the Pacific Islands through exceptional undergraduate and graduate academic programs, strong interdisciplinary faculty development, and energetic community outreach. ASC has nationally recognized programs in Chinese and Japanese language and culture studies, with growing strengths in Indian and Korean studies. Its affiliated faculty spans the disciplines. Typically more than 3,500 graduate and undergraduate students enroll each year in Asia-related courses. Undergraduate students from any field or school interested in Asia can supplement and strengthen their major field of study by enrolling in the Asian Studies certificate program.

The East Asian Library (EAL)

<http://www.library.pitt.edu/east-asian-library>

Located in Hillman Library, the EAL contains significant collections of books and periodicals in both the Chinese and Japanese languages, in addition to materials in English and other Western languages housed in the general collections. Those pursuing research on current topics concerned with Japan can make use of the Japan Information Center (JIC), which gives users direct access to a wide array of government documents, economic reports, and a wide range of data related to social and economic issues.

Financial Assistance

Asian Studies Certificate students may be eligible for a variety of scholarships and research awards. For information, visit <http://www.ucis.pitt.edu/asc/funding/graduate>

Certificate

Asian Studies Certificate

University of Pittsburgh
University Center for International Studies
Asian Studies Center
Emily Rook-Koepsel, Undergraduate & Graduate Advisor and Assistant Director for Academic Affairs
4109 Wesley W. Posvar Hall
Pittsburgh, PA 15260
Phone: 412-648-7370
rookkoepsel@pitt.edu
<http://www.ucis.pitt.edu/asc/academics/certificate-program/graduate-certificate-program>

Advanced Certificate Requirements

The Advanced Certificate in Asian Studies may be earned by U.S. and international students from any department or school at the University. The certificate combines the language training and multidisciplinary area studies necessary for both communicative and cultural competence. The certificate is designed for students who wish to intensify their study of Asia, either because they would like to be able to use their knowledge of that critical part of the world in their careers after graduation, or because they recognize the importance of an understanding of Asian history, language, and culture for all well-informed people.

- **A minimum of five upper-level courses or graduate seminars dealing with Asia, in at least two departments.** The five courses must include one seminar outside the student's major department.
- Graduate students should complete a minimum of 6 unique credits of coursework. In other words, at least 6 credits of the course work used to complete the requirements of any graduate level certificate in UCIS *must be in addition to the credits used to complete the student's primary degree program*. In consultation with the academic advisor, students may fulfill these standards through one of the following options:
 - Students may contextualize non-credit bearing internships that are required in various graduate degree programs as credit bearing experiences for UCIS certificate programs. Prior approval must be received from the academic advisor to pursue this option.
 - Students who can add content courses without affecting their tuition bill will be encouraged to do so.
 - Students who are exempt from the language requirement because of previous coursework or heritage language skills may use language course credits towards the requirement for "additional work beyond the graduate degree."
 - The 6 credits may be comprised of the following combinations:
 - Two language courses (* see notes below)
 - A language course (* see notes below) and a content course
 - Two content courses

* Language courses may be used in the following circumstances:

For certificate programs that require three years of language proficiency, students may count language courses in the third year (i.e. grammar, conversation, courses taught in target language) that are above the intermediate level.

For students in any certificate program who are exempt from the language requirement due to previous coursework or as a heritage speaker, the introductory courses in a second language (either LCTLs, or a commonly taught language with a clear and stated relevance to their research or professional goals) will count.

For students completing two graduate level UCIS certificates, *at least nine (9) credits* of the course work used to complete the certificate requirements *must be in addition to the credits used to complete the student's primary degree program*. At least 3 of these credits must be in content coursework. *All 9 cannot be language course credits.*

- **A research paper.** The student can fulfill this requirement by presenting either an interdisciplinary seminar paper or thesis (which draws upon more than one scholarly discipline). The paper can be used to complete departmental requirements for a graduate degree as well as for the certificate, but must include research using the student's approved Asian language.
- **Demonstration of proficiency in reading and speaking an approved Asian language related to one of the student's countries or regions of interest.** Proficiency is interpreted to mean at least three years of study or the equivalent, and may be demonstrated by successfully completing courses or by passing a special examination.
- **GSPIA option:** Students enrolled in the Graduate School of Public and International Affairs (GSPIA) may fulfill a more targeted set of requirements for their program. For details, visit <http://www.ucis.pitt.edu/asc/academics/certificate-program/graduate-certificate-program>
- **GPA requirement** is 3.0 for all courses to be counted towards the Asian Studies Certificate.

Financial Assistance

Asian Studies Certificate Students are eligible for a variety of scholarships, grants, and fellowships for research, presentations at conferences, language learning, and tuition replacement. For information visit <http://www.ucis.pitt.edu/asc/funding/graduate>.

European Studies Center

Contact Information

Graduate Advisor: Dr. Allyson Delnore
 European Studies Center
 4215 Wesley W. Posvar Hall
 412-624-5404
 Fax: 412-648-2199
 E-mail: adelnore@pitt.edu
<http://www.ucis.pitt.edu/esc/>

Since 1984, the European Studies Center formerly (ESC) has offered a strong curriculum on Europe by bringing together the rich assets of a major research university to create a unique learning community. The ESC has developed an international scholarly reputation in European Union studies and was selected by the European Commission to host one of only ten European Union Centers of Excellence in the United States.

Hillman Library at the University of Pittsburgh has been a depository library for EU publications since 1974. Dr. Phil Wilkin, the West European bibliographer, has developed the Archive of European Integration that provides a wide array of EU-related documents through the Web. Please visit <http://aei.pitt.edu> for details.

Financial Assistance

The ESC offers several possible funding opportunities to students in its certificate program. Please visit <http://www.ucis.pitt.edu/euce/content/graduate-student-funding-opportunities> for further details.

Certificate

European Union Studies, ADVCT

Graduate Advisor: Dr. Allyson Delnore
 European Studies Center
 4215 Wesley W. Posvar Hall
 Phone: 412-624-5404
adelnore@pitt.edu
<http://www.ucis.pitt.edu/esc/>

The Certificate of Advanced Study-European Union Studies enables students to complement a graduate or professional degree in any discipline (including the sciences) with an interdisciplinary set of courses related to the EU and proficiency in a relevant language. Students may enroll in the Certificate through the European Studies Center (ESC) or the Center for Russian and Eastern European Studies (REES).

Requirements:

Students seeking the Certificate of Advanced Study-European Union Studies must fulfill the following requirements:

- Complete **18 credits of EU studies courses** in at least two schools or disciplines, with at least nine credits from outside the student's home department or school. Six credits must be selected from the list of core courses. Courses must be approved by the ESC.
- Graduate students should complete a minimum of 6 unique credits of coursework. In other words, at least 6 credits of the course work used to complete the requirements of any graduate level certificate in UCIS *must be in addition to the credits used to complete the student's primary degree program.* In consultation with the academic advisor, students may fulfill these standards through one of the following options:
 - Students may contextualize non-credit bearing internships that are required in various graduate degree programs as credit bearing experiences for UCIS certificate programs. Prior approval must be received from the academic advisor to pursue this option.
 - Students who can add content courses without affecting their tuition bill will be encouraged to do so.
 - Students who are exempt from the language requirement because of previous coursework or heritage language skills may use language course credits towards the requirement for "additional work beyond the graduate degree."
 - The 6 credits may be comprised of the following combinations:
 - Two language courses (* see notes below)
 - A language course (* see notes below) and a content course
 - Two content courses
- * Language courses may be used in the following circumstances:

For certificate programs that require three years of language proficiency, students may count language courses in the third year (i.e. grammar, conversation, courses taught in target language) that are above the intermediate level.

For students in any certificate program who are exempt from the language requirement due to previous coursework or as a heritage speaker, the introductory courses in a second language (either LCTLs, or a commonly taught language with a clear and stated relevance to their research or professional goals) will count.

For students completing two graduate level UCIS certificates, *at least nine (9) credits* of the course work used to complete the certificate requirements *must be in addition to the credits used to complete the student's primary degree program.* At least 3 of these credits must be in content coursework. *All 9 cannot be language course credits.*

- For the approved course list, click [here](#).
- Write an **interdisciplinary research paper** of 15-25 pages that ideally entails the use of second language materials. The paper may be prepared for a course, but students are urged to conceptualize it with the certificate in mind.
- **Language proficiency:** Students must have three years of progressive college-level instruction in an official EU Member State or official EU candidate country language other than English, or the equivalent proficiency. Students for whom English is a second language may use English to meet the requirement.
- Participate in an EU-related cocurricular activity approved by the ESC's Graduate Advisor.
- Be awarded a graduate or professional degree.

For the full requirements for the graduate certificate, please click [here](#).

West European Studies, ADVCT

Graduate Advisor: Dr. Allyson Delnore
European Studies Center
4215 Wesley W. Posvar Hall
Phone: 412-624-5404
adelnore@pitt.edu
<http://www.ucis.pitt.edu/esc/>

Certificate of Advanced Study

The Certificate of Advanced Study-West European Studies enables students to complement a graduate or professional degree in any discipline (including the sciences) with an interdisciplinary set of courses related to Western Europe and proficiency in a relevant language.

Requirements:

Students seeking the Certificate of Advanced Study-West European Studies must fulfill the following requirements:

- Complete **18 credits of West European Studies courses** in at least two schools or disciplines, with at least nine credits from outside the students home department or school. Distribution of these 18 credits is tailored to each academic program. Courses must be approved by the ESC.
- Graduate students should complete a minimum of 6 unique credits of coursework. In other words, at least 6 credits of the course work used to complete the requirements of any graduate level certificate in UCIS *must be in addition to the credits used to complete the student's primary degree program.* In consultation with the academic advisor, students may fulfill these standards through one of the following options:
 - Students may contextualize non-credit bearing internships that are required in various graduate degree programs as credit bearing experiences for UCIS certificate programs. Prior approval must be received from the academic advisor to pursue this option.
 - Students who can add content courses without affecting their tuition bill will be encouraged to do so.
 - Students who are exempt from the language requirement because of previous coursework or heritage language skills may use language course credits towards the requirement for "additional work beyond the graduate degree.
 - The 6 credits may be comprised of the following combinations:
 - Two language courses (* see notes below)
 - A language course (* see notes below) and a content course
 - Two content courses
- * Language courses may be used in the following circumstances:

For certificate programs that require three years of language proficiency, students may count language courses in the third year (i.e. grammar, conversation, courses taught in target language) that are above the intermediate level.

For students in any certificate program who are exempt from the language requirement due to previous coursework or as a heritage speaker, the introductory courses in a second language (either LCTLs, or a commonly taught language with a clear and stated relevance to their research or professional goals) will count.

For students completing two graduate level UCIS certificates, *at least nine (9)credits* of the course work used to complete the certificate requirements *must be in addition to the credits used to complete the student's primary degree program.* At least 3 of these credits must be in content coursework. *All 9 cannot be language course credits.*

- For a listing of approved courses, click [here](#).
 - Write an **interdisciplinary research paper** of 15-25 pages that ideally entails the use of second language materials. The paper may be prepared for a course, but students are urged to conceptualize it with the certificate in mind.
 - **Language proficiency:** Students must have three years of progressive college-level instruction in a West European language other than English, or the equivalent proficiency. Students for whom English is a second language may use English to meet the requirement.
 - Be awarded a graduate or professional degree.
- For the full requirements for the graduate certificate, please click [here](#).

Global Studies Program

Contact Information

Graduate Advisor: Elaine Linn
Assistant Director for Global Studies
Global Studies Program
4101 Wesley W. Posvar Hall
412-648-2113
Fax: 412-624-4672

E-mail: global@pitt.edu
www.ucis.pitt.edu/global

The Global Studies Program provides students with a "global competence," the ability to communicate effectively across cultural and linguistic boundaries and to focus on issues that transcend cultures and continents. The global studies graduate certificate is a joint offering of the University Center for International Studies (UCIS) and the Graduate School of Public and International Affairs (GSPIA), and is open to all students enrolled in a graduate program at the University.

The Global Studies Program draws on the strengths of the Area Studies Centers within the University Center for International Studies and the departments and schools at the University of Pittsburgh. The Asian Studies Center, the Center for Latin American Studies, the Center for Russian and East European Studies, and the Center for West European Studies have been designated by the U.S. Department of Education as National Resource Centers. The University Library System possesses extensive holdings of books and journals to support research and study in these world areas.

Admission to Global Studies Program

Applications to the Global Studies Program may be submitted either at the same time as applications to the University or after the student has been admitted. In either case, students cannot be accepted until they have received notification of admission to the University of Pittsburgh.

Students holding a master's degree from an accredited institution may obtain the Graduate Certificate in Global Studies. They may apply directly to the program if they wish to enroll only for the graduate certificate.

Global Studies Faculty Affiliates

<http://www.ucis.pitt.edu/global/affiliates>

Certificate

Global Studies Certificate

University of Pittsburgh
University Center for International Studies
Global Studies Center
Elaine Linn, Assistant Director for Academic Affairs
4100 Wesley W. Posvar Hall
Pittsburgh, PA 15260
Phone: 412-648-2113
eel58@pitt.edu
<http://www.ucis.pitt.edu/global/>

Global Studies is an exciting - and evolving - interdisciplinary field. It is concerned with transnational structures, processes, and interactions, and how these affect social, economic, cultural, political, and ecological environments. Scholars of Global Studies understand and analyze how these structures, processes, and interactions both connect people and places and disrupt established norms, communities, institutions, and relationships. That is, they think globally about these processes.

Within the Global Studies Certificate, graduate students from the Dietrich School of Arts and Sciences can tailor a unique plan of interdisciplinary study within their field of interest drawn from more than 200 courses across 6 global concentrations. The certificate allows students to adopt a transnational lens that can inform their research projects, and to conduct research in one of 35 languages offered at Pitt.

Global Concentrations: To complete the certificate, student choose one of five global concentration/themes:

- **Cultural Dynamics**
- **Peace, Conflict, and Security**
- **Ecology and Sustainability**

- **Health and Well-Being**
- **Politics and Economy**

In addition to the certificate, the Global Studies Center offer numerous complementary programs and opportunities that support students' intellectual and personal development: research skills, career exploration and career readiness, experiential education and civic engagement, and a critical understanding of current events. The center offers tuition remission for students studying less commonly taught languages and internship positions.

Certificate Requirements

Six Global Thematic Courses (18 credits): After students select a global concentration, they choose from a comprehensive and dynamic list of courses ensuring three disciplines are represented to provide an interdisciplinary perspective on their chosen global concentration.

- Graduate students should complete a minimum of 6 unique credits of coursework. In other words, at least 6 credits of the course work used to complete the requirements of any graduate level certificate in UCIS *must be in addition to the credits used to complete the student's primary degree program.* In consultation with the academic advisor, students may fulfill these standards through one of the following options:
 - Students may contextualize non-credit bearing internships that are required in various graduate degree programs as credit bearing experiences for UCIS certificate programs. Prior approval must be received from the academic advisor to pursue this option.
 - Students who can add content courses without affecting their tuition bill will be encouraged to do so.
 - Students who are exempt from the language requirement because of previous coursework or heritage language skills may use language course credits towards the requirement for "additional work beyond the graduate degree."
 - The 6 credits may be comprised of the following combinations:
 - Two language courses (* see notes below)
 - A language course (* see notes below) and a content course
 - Two content courses
- * Language courses may be used in the following circumstances:

For certificate programs that require three years of language proficiency, students may count language courses in the third year (i.e. grammar, conversation, courses taught in target language) that are above the intermediate level.

For students in any certificate program who are exempt from the language requirement due to previous coursework or as a heritage speaker, the introductory courses in a second language (either LCTLs, or a commonly taught language with a clear and stated relevance to their research or professional goals) will count.

For students completing two graduate level UCIS certificates, *at least nine (9) credits* of the course work used to complete the certificate requirements *must be in addition to the credits used to complete the student's primary degree program.* At least 3 of these credits must be in content coursework. *All 9 cannot be language course credits.*

Language Proficiency: Building on Pitt's vast offering of over 30 languages, a minimum of three years of college-level study (six semesters) in a foreign language is required. Students can fulfill this requirement by passing a proficiency exam at the Intermediate mid proficiency level.

Global Studies Capstone Research Paper: This research paper is the culmination of a student's learning experience related to their global concentration. It demonstrates analytical skills within a transnational context. It must be written as part of a course and graded by a faculty member.

Center for Latin American Studies

Contact Information

University of Pittsburgh
 University Center for International Studies
 Center for Latin American Studies
 Luis G. Van Fossen Bravo, Undergraduate Advisor
 4202 Wesley W. Posvar Hall

Pittsburgh, PA 15260
412-648-7393
bravo@pitt.edu
www.ucis.pitt.edu/clas

The Center for Latin American Studies (CLAS), established in 1964, is internationally recognized for excellence in undergraduate, graduate, and professional education. In 1979 the U.S. Department of Education designated CLAS as a comprehensive National Resource Center (NRC) on Latin America—a distinction it has retained continuously to the present.

CLAS' programs cover the entire Latin American and Caribbean region. Two academic programs are especially noteworthy: The Latin American Archaeology Program, housed in the Department of Anthropology, involves research, training, and publications and emphasizes collaboration between North American and Latin American archaeologists. Fellowships and a bilingual publication series (funded by the Howard Heinz Endowment and The Andrew W. Mellon Foundation) further enhance this exceptional program. The Latin American Social and Public Policy Program draws on the impressive array of faculty and student expertise on Latin American policy issues available at the University of Pittsburgh. The program brings together researchers from different fields with the goal of contributing information of relevance to policy decisions facing Latin America. Social and Public Policy Fellowships are annually awarded to scholars interested in studying various dimensions of social policy at the University of Pittsburgh. The Latin American Social and Public Policy Graduate Certificate is available to students in this more specialized program.

Admission to the Center for Latin American Studies

http://www.ucis.pitt.edu/clas/grad_admissions

Applications to the Center for Latin American Studies may be submitted either at the same time as applications to the University or after the student has been admitted. In either case, the center cannot accept students until they have received notification of admission to the University.

Latin American Library Collection

<http://www.library.pitt.edu/eduardo-lozano-latin-american-collection>

One of the major resources on Latin America available to students at the University of Pittsburgh is the Eduardo Lozano Latin American Library Collection. Its resources include exceptional collections on Bolivia and Cuba as well as extensive holdings on Argentina, Brazil, Ecuador, Guatemala, Mexico, Peru, and Venezuela.

Financial Assistance

Latin American Studies offers a variety of financial assistance to students in its certificate programs. Please visit http://www.ucis.pitt.edu/clas/grad_funding for further details.

Certificate

Latin American Studies Certificate

University of Pittsburgh
University Center for International Studies
Center for Latin American Studies
Luis G. Van Fossen Bravo, Graduate Advisor
4207 Wesley W. Posvar Hall
Pittsburgh, PA 15260
412-648-7393

Requirements for Certificates

CLAS offers two graduate certificates: the Certificate in Latin American Studies and the Certificate in Latin American Social and Public Policy. Requirements for each are detailed below. GPA requirement is 3.0 for all courses to be counted toward any Latin American Studies Certificate. For a list of approved courses, [click here](#).

- Graduate students should complete a minimum of 6 unique credits of coursework. In other words, at least 6 credits of the course work used to complete the requirements of any graduate level certificate in UCIS *must be in addition to the credits used to complete the student's primary degree program*. In consultation with the academic advisor, students may fulfill these standards through one of the following options:

- Students may contextualize non-credit bearing internships that are required in various graduate degree programs as credit bearing experiences for UCIS certificate programs. Prior approval must be received from the academic advisor to pursue this option.
- Students who can add content courses without affecting their tuition bill will be encouraged to do so.
- Students who are exempt from the language requirement because of previous coursework or heritage language skills may use language course credits towards the requirement for "additional work beyond the graduate degree."
- The 6 credits may be comprised of the following combinations:
 - Two language courses (* see notes below)
 - A language course (* see notes below) and a content course
 - Two content courses

* Language courses may be used in the following circumstances:

For certificate programs that require three years of language proficiency, students may count language courses in the third year (i.e. grammar, conversation, courses taught in target language) that are above the intermediate level.

For students in any certificate program who are exempt from the language requirement due to previous coursework or as a heritage speaker, the introductory courses in a second language (either LCTLs, or a commonly taught language with a clear and stated relevance to their research or professional goals) will count.

For students completing two graduate level UCIS certificates, *at least nine (9) credits* of the course work used to complete the certificate requirements *must be in addition to the credits used to complete the student's primary degree program*. At least 3 of these credits must be in content coursework. *All 9 cannot be language course credits*.

Graduate Certificate in Latin American Studies

To fulfill the requirements for this certificate, students must complete six Latin American area studies courses: two courses in the student's major department or school and four courses in at least two departments/schools other than that in which the student is receiving the advanced degree. The courses should total 18 credits. In addition, students are required to be proficient in a language of the area and to submit a research paper as detailed below.

Graduate Certificate in Latin American Social and Public Policy

To fulfill the requirements for this certificate, students must complete six courses focusing on social and public policy issues of Latin America: three courses should be in the student's major department or school and three courses should be in at least two departments/schools other than that in which the student is receiving the advanced degree. The courses should total 18 credits. In addition, students are required to be proficient in a language in their area and to present a research paper as detailed below.

Language Proficiency

The certificates in CLAS require three years, or the equivalent, of college-level Spanish, Portuguese, or an Amerindian language of the area. Students must have adequate proficiency to converse and conduct research in Latin America. A standardized examination is given to each candidate by a faculty member of the Department of Hispanic Languages and Literatures.

Interdisciplinary Research Paper

Students in CLAS certificate programs must complete a research paper on Latin America that reflects competence in at least two disciplines. The master's thesis or a revised research paper may be used to fulfill this requirement.

Center for Russian and Eastern European Studies

Contact Information

Graduate Advisor: Andrew Behrendt
Associate Director
Center for Russian and Eastern European Studies
4402 Wesley W. Posvar Hall
Phone: 412-648-7403
aeb72@pitt.edu
www.ucis.pitt.edu/crees

Established in 1965, the Center for Russian and Eastern European Studies (REES) at the University of Pittsburgh is designated by the U.S. Department of Education for Title VI funding as a National Resource Center.

There are three broad focus areas for the research conducted by faculty and graduate student specialists in the REES program. They are (1) contemporary Russian, East European, and Eurasian cultures, (2) politics, economics, and societies of Russia, Eastern Europe, and Eurasia (3) foreign policy issues as they relate to the REES world area.

The Center for Russian and East European Studies offers graduate certificates in East European Studies, Russian Studies, or Soviet Studies to students who successfully combine second language expertise and multidisciplinary area-focused courses.

Admission Information

Application for admission to graduate study is made directly to the academic department or graduate/professional school of the student's choice. The applicant should include a statement requesting admission to the REES certificate program.

To enroll in one of the certificate programs, admitted students should make an appointment with the REES graduate advisor as soon as possible after their arrival at the University.

Financial Assistance

The Center for Russian and East European Studies offers several means of financial assistance to students in its certificate program. Please visit <http://www.ucis.pitt.edu/main/scholarships> for further details.

Certificate

Russian, East European, and Eurasian Studies Certificate

Contact Information

Center for Russian, Eastern European, and Eurasian Studies
4415 Wesley W. Posvar Hall

Overview

REEES is one of a select few National Resource Centers for Russian, East European, and Eurasian Studies funded by the US Department of Education. REEES has 72 affiliated faculty members and has programs with 14 Arts and Sciences departments and five professional schools. Our many areas of focus include subjects such as the transformations of post-communist societies, history, foreign policy and international relations, anthropology, music, film, and contemporary culture and literatures. Recognizing that regional boundaries are constantly contested and redefined, our geographic scope includes Russia, Ukraine, Belarus, the Baltic states, Central Asia and the Caucasus, the Western Balkans, Poland, Hungary, Slovakia, Czech Republic, Romania, Bulgaria, Moldova, Mongolia, and Turkey. REEES currently offers Certificates in Advanced East European Studies, Russian Studies, or Soviet Studies, which may be earned in conjunction with most masters and doctoral programs in the School of Arts and Sciences and a number of professional schools.

Requirements for REEES Certificates

The requirements for each of the REEES graduate certificates are as follows:

- Completion of **six approved Russian, East European, and Eurasian area studies courses**, including four courses from at least two departments other than the student's home department, for a total of 18 credits.
- Graduate students should complete a minimum of 6 unique credits of coursework. In other words, at least 6 credits of the course work used to complete the requirements of any graduate level certificate in UCIS *must be in addition to the credits used to complete the student's primary degree program*. In consultation with the academic advisor, students may fulfill these standards through one of the following options:
 - Students may contextualize non-credit bearing internships that are required in various graduate degree programs as credit bearing experiences for UCIS certificate programs. Prior approval must be received from the academic advisor to pursue this option.
 - Students who can add content courses without affecting their tuition bill will be encouraged to do so.
 - Students who are exempt from the language requirement because of previous coursework or heritage language skills may use language course credits towards the requirement for additional work beyond the graduate degree.
 - The 6 credits may be comprised of the following combinations:
 - Two language courses (* see notes below)
 - A language course (* see notes below) and a content course
 - Two content courses

* Language courses may be used in the following circumstances:

For certificate programs that require three years of language proficiency, students may count language courses in the third year (i.e. grammar, conversation, courses taught in target language) that are above the intermediate level.

For students in any certificate program who are exempt from the language requirement due to previous coursework or as a heritage speaker, the introductory courses in a second language (either LCTLs, or a commonly taught language with a clear and stated relevance to their research or professional goals) will count.

For students completing two graduate level UCIS certificates, *at least nine (9) credits* of the course work used to complete the certificate requirements *must be in addition to the credits used to complete the student's primary degree program*. At least 3 of these credits must be in content coursework. *All 9 cannot be language course credits*.

- Demonstration of **language proficiency** equivalent to three years of college-level study in a language of the former Soviet Union (plus Mongolia) or Eastern Europe (including Turkish).
- Completion of a **research paper** of at least 15 pages in length, based substantially on primary sources in one or more languages of the REEES world area.
- Students must maintain a minimum GPA of 3.0 in REEES-related coursework.

Special Academic Opportunities

Special academic opportunities provide students with ways to augment their education and experience with expanded study programs both on and off campus, in both university and professional settings.

Area of Concentration (subplans) and Minors (plans)

Some graduate programs may include approved areas of concentration or minors. Areas of concentration define and describe the student's training and expertise within the broader discipline. Minors represent significant course work completed in an area related to the student's specialty. A graduate minor offered by the faculty at the Pittsburgh campus is available to any graduate student enrolled in an academic degree program on the campus provided that the school from which the student is graduating recognizes this minor. See the Schools, Departments, and Programs section of this bulletin for available areas of concentration and minors.

Certificate Programs

Students may enrich their educational experience by electing to take an academic interdisciplinary certificate program in the areas listed at the start of the Schools, Departments, and Programs section of this bulletin.

A certificate program at the graduate level is a coherent set of courses and related work in a particular area. Most certificate programs require a minimum of 15 credits, of which 12 credits must be earned at the University of Pittsburgh. The certificate may appear on the transcript as a degree goal and will appear on the final transcript as an awarded certificate.

A student must be formally admitted into a certificate program. The requirements for each certificate vary and students should contact the certificate program director.

Cross-Registration

Carnegie Mellon University, Duquesne University, the Pittsburgh Theological Seminary, Robert Morris University, and the University of Pittsburgh offer graduate students the opportunity for cross-registration in graduate programs in the five institutions in the fall and spring terms. See Cross-Registration in the Registration section of this bulletin for further details.

Two Independent Degree Programs Simultaneously

Students may pursue two independent graduate degrees simultaneously in two different schools within the University (joint degree) or two different departments within the same school (dual degree). Students desiring to enroll in two degree programs must have approval from both program faculties and their respective deans, must be admitted into both programs, and must satisfy the degree requirements of both programs. Students are billed at the tuition rate of the primary academic program. Normally, such students should be enrolled for no more than a total of 15 credits per term.

The same examination, thesis, or dissertation cannot be used to fulfill requirements for two independent degrees, although a maximum of 6 credits of course work may be used in partial fulfillment of the requirements of both degrees. It is the responsibility of the dean or deans, if two schools are involved, to ensure that this regulation is enforced.

Cooperative, Dual-Degree, and Joint-Degree Programs

Dual- and joint-degree programs result in two degrees being awarded. Requirements for these programs include all or most of the requirements of two distinct academic degree programs. These programs may result in a student earning two separate master's degrees, a master's and a first-professional degree, or a master's or first-professional degree and a doctoral degree, but never result in a student earning two separate doctoral degrees. Dual programs exist within a single school; joint programs exist between two or more schools; cooperative

programs are administered by two or more institutions. The same course, examination, or thesis may be used to fulfill requirements only if so specified in the documents formally establishing the joint- or dual-degree program approved by the University.

Students must be admitted to both academic programs offering the dual or joint degrees being sought and must graduate from both degree programs at the same time. Students are advised to see the individual school for other specific requirements that apply.

Course Information

Please note, when searching courses by Catalog Number, an asterisk () can be used to return mass results. For instance a Catalog Number search of " 2* " can be entered, returning all 2000-level courses.*

Admin and Policy Studies

ADMPS 2004 - THEORIES OF EDUCATIONAL INEQUALITY

Minimum Credits: 3

Maximum Credits: 3

This course is the first of a required two-course sequence designed for students to explore the meaning and expectations of doctoral study in the department of administrative and policy studies. The doctoral core is planned with a curriculum for radical transition to doctoral studies as students increasingly are called upon to take responsibility for their doctoral experience. Students have the opportunity to organize their own learning proclivities by managing resources such as study group and faculty-led deliberations, readings, computer-based technologies, individual research, and field activities. Students cultivate their identities as practitioner/scholar/citizens.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

ADMPS 2050 - RACE AND RACISM IN EDUCATION AND SOCIETY

Minimum Credits: 3

Maximum Credits: 3

This course focuses on issues of equity in education based upon the divisions of American society by social constructs of "race". The course is designed to expose students to conceptual frameworks of culture, society, race, class and gender from the social sciences and humanities for understanding the experiences of subordinated minority groups in school and society. The practical problems of social and school reform in American communities and schools will be addressed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: African Studies

ADMPS 2052 - M. ED INTERNSHIP IN HIGHER EDUCATION

Minimum Credits: 3

Maximum Credits: 3

This course is a practicum experience for med in the higher education management. The internship course is unique in that students are required to be working in an institution of higher education while enrolled. An on-site supervisor will provide learning opportunities to students in conjunction with the course instructor, while the instructor will enhance the experience through weekly activities and course assignments. The course is also an opportunity to combine research and practice and to develop the professional skills necessary for a fruitful career in academic or student affairs or management in higher education.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 2053 - MANAGEMENT & ORGANIZATION EFFECTIVENESS

Minimum Credits: 3

Maximum Credits: 3

This is one of a two course series (ADMPS 2053 & 2054) for M.Ed. students in the higher education management specialization. The Organization and Management effectiveness course provides students a professional foundation of the practical application of managerial skills required of first and second-line supervisors in higher education. Course topics devote special attention to: the mission and challenges of HE organizations, organization structures and environments, responsibilities and expectations of managers, financial management, budget development and oversight,

time and resource management, process improvement, the role of technology in complex organizations, decision making and communicating. In addition, the course will explore the role of supervisors in budget creation and resource management within a broader functional and institutional context.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 2054 - ORGANIZATION DEVELOPMENT & LEADING CHANGE

Minimum Credits: 3

Maximum Credits: 3

This is one of a two course series (ADMPS 2053 & 2054) for M.Ed. students in the higher education management specialization. The Organization development and Leading Change course explores the practical challenges of strategic planning and the role managers play in its implementation. In addition, the course builds students essential managerial skills in: people and process oversight, understanding and leading transformational change, building competencies through creating measurable performance objectives, developing staff accountability, human resource management and the role of technology as an agent of change.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 2055 - STUDENT DEVELOPMENT THEORY

Minimum Credits: 3

Maximum Credits: 3

This course provides foundational knowledge about the nature and history of student development theory, focusing on both a solid overview of theory and the application of theory in the design of effective practice in academic and student services contexts. This course also explores developmental issues facing college students as well as factors that promote and impede development. An understanding of student development theory is integral to working in higher education and this course is designed for students pursuing both scholarly and practitioner focused careers.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 2056 - STUDENT SERVICES PROGRAM ASSESSMENT

Minimum Credits: 3

Maximum Credits: 3

This course introduces the subject of assessment and program evaluation in colleges and universities. Issues related to assessment theory, assessment and evaluation models and methodologies, as well as the political and social contexts of assessment are explored. Students complete a hands-on assessment project from start to finish as a part of the course. Students need to have completed student development theory or an equivalent course prior to enrolling in this course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 2086 - CURRICULUM IN SCHOOLS

Minimum Credits: 5

Maximum Credits: 5

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 2089 - SPECIAL TOPICS

Minimum Credits: 3

Maximum Credits: 3

This course is for administrative and policy studies newly instituted and experimental courses.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

ADMPS 2090 - RESEARCH SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Final seminar for candidates for the master of education degree in which each student prepares an original research paper.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

ADMPS 2093 - SUPERVISOR CURRICULUM AND INSTRUCTION INTERNSHIP

Minimum Credits: 1

Maximum Credits: 3

The practicum reviews the field based clinical experience of curriculum and instruction students for state certification.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

ADMPS 2097 - INTERNSHIP

Minimum Credits: 1

Maximum Credits: 12

Each candidate for an educational leadership certification in pa is linked with schools/ for 360 hours of university supervised and principal-mentored internship/fieldwork experiences over the 12-month lifecycle of the school. Mentors are from various geographical locations at all levels; elementary, middle, and secondary. Candidates register for one credit of internship for each of the four consecutive terms of the k-12 principal program.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad SN Basis

ADMPS 2098 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 6

Study approved and directed by an academic advisor.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

ADMPS 2099 - GUIDANCE IN THE MASTER'S DEGREE

Minimum Credits: 1

Maximum Credits: 6

A registration unit for students preparing a master's overview and thesis.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

ADMPS 2101 - PENNSYLVANIA SCHOOL LAW

Minimum Credits: 3

Maximum Credits: 3

The principal is the educational leader in the school building. As such, the principal is responsible for maintaining an enterprise that fulfills the legal requirements of the Pennsylvania school code of 1949 (amended) and the attendant case law as interpreted by the state and federal courts. In this course, the aspiring principal will learn about local school boards, the organization and governance of education in Pennsylvania, the role of the federal government, and a variety of the legal responsibilities of the building administrators.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 2104 - LATIN AMERICA SOCIAL & PUBLIC POLICY

Minimum Credits: 3

Maximum Credits: 3

This seminar explores contemporary issues of social and public policy in Latin America through complexity, systems, gonadal, policy diffusion, comparative, and case-study approaches. In the first section participants review general policy concepts and theories, to be followed by the historical, economic and political context of public and social policy in the region. The second section examines several policy areas such as education, employment, poverty alleviation, public administration, social security, health, minorities, and violence. Using complexity and systems perspectives it is possible to understand how social and public policy influences the development and practice of fields like education and it could be also influenced by those fields. Disciplines such as economics, history, health, political science, anthropology, and sociology shape and help to make sense of educational issues and vice versa. This seminar is an opportunity for students in education and other disciplines to engage in interdisciplinary deliberation on policy issues in this region and fulfills the requirements for certificates in Latin American studies. Materials for the class include current news, scholarly publications, videos and other material published in English, Spanish, and possibly Portuguese (students must be able to read at least basic Spanish).

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ADMPS 2106 - INTERNATIONAL AND GLOBAL EDUCATION

Minimum Credits: 3

Maximum Credits: 3

The course introduces different perspectives of the world as well as various conceptions of global development. Students consider these issues in examining how formal and non-formal education programs, as well as the media, contribute to developing individual's views of and engagement in local, national, international, and global communities.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Attributes: African Studies, Global Studies, Russian & East European Studies

ADMPS 2115 - SUPERVISION AND TEACHER LEARNING

Minimum Credits: 3

Maximum Credits: 3

This course focuses on skills and strategies school leaders need to know to supervise teachers and develop structures for on-going teacher learning and development. Students study the history of supervision and how it continues to evolve. They analyze their own district's induction and professional development plans and design supervision models appropriate for a differentiated teaching staff.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 2117 - DIFFERENTIATED INSTRUCTIONAL PRACTICES

Minimum Credits: 3

Maximum Credits: 3

This course is designed to give practitioners a strong theoretical background in differentiated modes of instruction and the skills needed to work with

teachers as they strive to improve and expand their pedagogy. Discussions and readings will explore classroom strategies that improve student achievement, the elements of effective instruction, instructional design related to state standards, and ways to use assessment to drive instruction. Finally, the course will discuss ways that school leaders can work with teachers to enhance their instruction and student learning.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 2120 - CAPSTONE SEMINAR IN STUDENT SERVICES

Minimum Credits: 3

Maximum Credits: 3

Students will learn about the knowledge & skills required of a college or University student services administrator. It is assumed students will have administrative responsibility in future aspect of student services. Responsibilities may include development of vision & mission statement, designing organizational structure & budget. Focus on strategies to effectively manage & administer student services of diverse college & University campuses. Explore how organizational theory can be applied to improve policy making, personnel mgt, resource allocation & organization of administrative units.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

ADMPS 2123 - SUMMER LEADERSHIP INSTITUTE

Minimum Credits: 3

Maximum Credits: 3

Students learn to diagnose adaptive leadership challenges while developing a foundation of individual and group communication skills and a disciplined practice of reflection. The leadership institute will offer a coherent experience of teaching and learning about and for leadership supported by an approach to adult development as meaning/making (Kegan, 1994). The institute develops skills in: team building, problem framing analysis, group process skills, interpersonal skills, communication skills, writing (annotated bibliography, art of critique), shared decision-making, multicultural education/diversity (awareness of diversity, classroom interactions, and diversity in schools), school culture, and reflective practice.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ADMPS 2128 - LEADERSHIP

Minimum Credits: 3

Maximum Credits: 3

This course examines theories about leadership and provide students with feedback on their own leadership styles. Teams, as one context for demonstrating leadership, are explored in depth and methods for recognizing and managing group dynamics are introduced. Students learn how to explore concepts regarding leadership, teams and organization culture; assess their own leadership skills and style; receive feedback from colleagues on their style and behavior; and plan for their own leadership development.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 2131 - HIGHER EDUCATION ADMINISTRATION

Minimum Credits: 3

Maximum Credits: 3

This course addresses major organizational theories and how they relate to higher education institutions. Students will develop conceptual frameworks that can be utilized as a generic base for the practice of administration and as a diagnostic tool that will assist in identifying organizational problems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: Global Studies

ADMPS 2133 - GENDER AND EDUCATION

Minimum Credits: 3

Maximum Credits: 3

This seminar examines the role that gender plays in the lives as students, researchers, educators, and policy makers. Major topics may include: changing trends of participation and success in k-16 schooling; childhood and professional socialization; media and curricular bias; coming of age; embodiment, sexuality, and sexual harassment, gender and the educational professions; feminist and anti-bias teaching; leadership and transnational communities of practice; activism and engaged feminist scholarship.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: African Studies

ADMPS 2181 - DECONSTRUCTING THE UNIVERSITY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 2302 - STATE/NATIONAL POLITICS OF EDUCATION

Minimum Credits: 3

Maximum Credits: 3

Students in this course analyze the broad national and international political issues relating to schooling and school systems. School politics are viewed from a variety of social science perspectives using a number of case studies and theoretical texts. An examination will be made of the dialectical relations between the state and the school in an effort to illuminate social, economic, and cultural reproduction.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 2305 - SOCIOLOGY OF EDUCATION

Minimum Credits: 3

Maximum Credits: 3

This course surveys the classic and contemporary literature on schools and socialization. The relevance of sociological theory and research to education policy debate is also highlighted. Students will increase their understanding of the forces shaping learning and development that are beyond the classroom and are embedded in the larger social context.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 2306 - HISTORY OF EDUCATION

Minimum Credits: 3

Maximum Credits: 3

Both a chronological order and a thematic/conceptual investigation will constitute the structure of this course. The literature on past and contemporary historical developments will be compared. Emphasis will be placed on the ideas that prevailed in different time periods. Students will examine the conflicting organizational arrangements, competing theories, and growing external pressures on education.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 2307 - POLITICS AND HISTORY OF HIGHER EDUCATION

Minimum Credits: 3

Maximum Credits: 3

This course surveys the perennial forces which have shaped the character of America's colleges and universities. In situational control and governance. Curricular goals and organization, and faculty and student life are examined against the background of political, economic, religious, social and intellectual developments in American culture.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 2310 - CONTEMPORARY PHILOSOPHY OF EDUCATION

Minimum Credits: 3

Maximum Credits: 3

Examines how philosophies of education can contribute to one's vision of educative experience. Central educational concepts (e.g., Knowing, learning, thinking, valuing, and being) are analyzed in alternative ways.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 2342 - EDUCATION AND CULTURE

Minimum Credits: 3

Maximum Credits: 3

The active experiences in the course are intended to challenge students to investigate and analyze the dynamic relationship between schooling, education, popular culture and society by addressing the normalizing effects of cultural narratives and images that influence our taken-for-granted assumptions, beliefs and actions. Class activities involve considering the moral, social and political dimensions of our educational practice by expanding our sense of what happens outside of schools and classrooms that contribute to shaping our worldviews. We work to better understand the dynamics of culture and the relationships among culture, history, power, language and knowledge. Thus we are challenged to become informed and invigorated professionals that can help reverse the patterns of dehumanization and social control that are often overlooked in the everyday world of practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: African Studies, Asian Studies, Global Studies

ADMPS 2343 - EDUCATION AND CULTURE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 2344 - LEADERSHIP IN SERVICE LEARNING

Minimum Credits: 3

Maximum Credits: 3

This seminar offers participants opportunities to engage and lead with their heads, hearts, and hands. Course modules introduce such critical issues as the ethics and philosophies of experiential modules on cross-cultural understanding geared to the proposed service-site. Students play active leadership roles in shaping and facilitating the seminar.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: African Studies

ADMPS 2352 - ANTHROPOLOGY OF EDUCATION

Minimum Credits: 3

Maximum Credits: 3

This introductory course provides an overview of anthropological approaches to the study of education. Ethnographic cases drawn from many cultures, knowledge systems, and time periods help to provide a broad, holistic view of education in diverse community and institutional contexts. Modules may include: nurturing a sense of place; comparing folk, popular, and elite cultures; understanding cultural continuity and change; celebrating rituals and holidays; fostering cultural resilience and responsive reform policies; framing multicultural education; and appreciating the sociolinguistics of schools and home. Students have opportunities to participate in authentic schooling activities, to draft public advocacy pieces, to create team presentations, and to refine a personalized synthesis of a topic of interest. Anthropological field research methods are discussed as a means to craft compelling analytical accounts, but research training is not part of this course

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: African Studies, Asian Studies, Global Studies, West European Studies

ADMPS 2353 - APPLIED ANTHROPOLOGY OF EDUCATION

Minimum Credits: 3

Maximum Credits: 3

This advanced seminar explores practical applications of anthropology to educational programs in varied cultural settings around the world. Topics may include: theories of development and social change, the role of schooling in cultural continuity and change, globalization and transnational influences on curriculum and policy; public advocacy and scholarship; school reform and social inequities. Authentic professional activities and meaningful case studies help students to see themselves in the field. Demonstrations of professional skills such as constructive criticism, teamwork, meeting methodological challenges, and critical analysis of texts help students to enhance their academic cv and engaged scholarship portfolio.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: African Studies

ADMPS 2355 - ADVANCED QUALITATIVE RESEARCH

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ADMPS 2356 - FIELD METHODS

Minimum Credits: 3

Maximum Credits: 3

Designed to acquaint students with basic ethnographic field work techniques. Topics addressed include taking and managing field notes on participant-observation and use of archival materials. There will also be some discussion of the relationship among research design, data collection, and data analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ADMPS 2359 - GENDER IN EDUCATION

Minimum Credits: 3

Maximum Credits: 3

This seminar examines and critiques the international division of labor, focusing on the roles and status of women in western as well as non-western and "less-developed" societies. Participants will examine the intersection of gender, development, and education. Education is discussed in its broadest sense, as socialization, knowledge transmission, and institutionalized training.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade
Course Attributes: African Studies

ADMPS 2398 - ECONOMICS OF EDUCATION

Minimum Credits: 3
Maximum Credits: 3

This class introduces students to the economic analysis of education in the U.S. And developing countries. Among the topics to be covered are: human capital theory, educational production functions. Rate of return analysis, various issues in educational policy and finance

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ADMPS 2399 - POLITICAL ECONOMY OF EDUCATION

Minimum Credits: 3
Maximum Credits: 3

In this class students will continue (from "economics of education") to develop techniques for economic analysis. The subject is placed in a broader intellectual and political context. Particular attention is given to critique of neoclassical economic analysis, to alternative frameworks for economic analysis, including class-conflict and institutional approaches and the applications of economic analysis in the educational policy process. The course covers issues in industrialized and developing countries.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Global Studies

ADMPS 2402 - HEALTH, MENTAL HEALTH AND SAFETY

Minimum Credits: 2
Maximum Credits: 2

Within the leader as learner block in leadership initiative for transforming schools (lifts), a k-12 principal certificate program, the health, mental health, and safety module will focus on creating the optimal conditions for teaching and learning. Aspiring school leaders will gain the knowledge and skills needed to conduct a school-wide mental health and safety audit. In addition, they will learn about implementing a crisis management plan and the role and responsibilities of a crisis management team.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ADMPS 2403 - TEACHER SUPERVISION AND EFFECTIVENESS

Minimum Credits: 2
Maximum Credits: 2

The course is designed to give practitioners a strong theoretical background in supervision and the knowledge and skills necessary to work with teachers as they strive to improve and expand their pedagogy. Students will learn about various theories and models of supervision and will apply them to the current school setting with an emphasis on improving student learning. The course is designed as a project-based learning experience.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ADMPS 2404 - INSTRUCTIONAL LEADERSHIP

Minimum Credits: 5
Maximum Credits: 5
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ADMPS 2405 - PUBLIC LEADERSHIP: SCHOOL LAW

Minimum Credits: 1

Maximum Credits: 1

The principal is the educational leader in the school building. As such, the principal is responsible for maintaining an enterprise that fulfills the legal requirements of the Pennsylvania school code of 1949 (amended) and the attendant case law as interpreted by the state and federal courts. In this course, the aspiring principal will learn about local school boards, the organization and governance of education in Pennsylvania, the role of the federal government, and a variety of the legal responsibilities of the building administrators

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 2406 - PUBLIC LEADERSHIP: ASSESSMENT AND ACCOUNTABILITY

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 2407 - POLITICS OF EDUCATION: SCHOOL COMMUNITY PARTNERSHIP

Minimum Credits: 1

Maximum Credits: 1

A major premise of this course is that to serve as a community leader, one must have a clear vision and a strong organizational style that mirrors a community's social, political, economic and organizational profile. A second premise is that to be truly effective within a community, a community leader must epitomize Aristotle's belief that we have the responsibility to be 'political animals'.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 2408 - POSITIVE BEHAVIOR SUPPORT

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 2410 - INSTITUTIONAL LEADERSHIP

Minimum Credits: 3

Maximum Credits: 3

The course is designed to give practitioners a strong theoretical background in supervision and the knowledge and skills necessary to work with teachers as they strive to improve and expand their pedagogy. Students will learn about various theories and models of supervision and will apply them to the current school setting with an emphasis on improving student learning. The course is designed as a project-based learning experience.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 2412 - LEADERSHIP FOR INCLUSIVE SCHOOLS

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

ADMPS 3001 - RESEARCH METHODS IN EDUCATION POLICY AND PRACTICE

Minimum Credits: 3

Maximum Credits: 3

The disciplinary and methodological bases for knowledge and associated inquiry in educational administration and policy study are addressed. Examples of research from various paradigms, disciplines, and professional fields are used to show the relationship among theory, method, and knowledge. The relative importance of substantive and methodological concerns in doing research are emphasized. Positivistic, interpretive, and critical theory inquiry can be addressed by students in their required pilot study.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 3003 - THEORIES OF EDUCATIONAL INEQUALITY

Minimum Credits: 3

Maximum Credits: 3

This course is the first of a required two-course sequence designed for students to explore the meaning and expectations of doctoral study in the department of administrative and policy studies. The doctoral core is planned with a curriculum for radical transition to doctoral studies as students increasingly are called upon to take responsibility for their doctoral experience. Students have the opportunity to organize their own learning proclivities by managing resources such as study group and faculty-led deliberations, readings, computer-based technologies, individual research, and field activities. Students cultivate their identities as practitioner/scholar/citizens.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

ADMPS 3004 - APS DOCTORAL CORE 2

Minimum Credits: 3

Maximum Credits: 3

This is the second of a required two-course sequence during which students focus on institutional, state and sector-based policy analysis, team building and communications skills. The course builds upon the professional goals set forth in core 1, while sustaining its reflective individual and study group components. Students read extensively about current and complex p-20 educational reform efforts from different points of view. Students will apply analytical tools, and communicate their findings external audiences such as elected officials. In addition, students form cross-sector research teams to address problems and construct solutions for contemporary challenges facing education at all levels. This course concludes with a comprehensive portfolio review and preliminary examination which are requisite for continuation in our doctoral programs.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

ADMPS 3006 - SOCIAL THEORIES & EDUCATION IN GLOBAL CONTEXT

Minimum Credits: 3

Maximum Credits: 3

Ultimately, this course is about the student, and the student situating herself in an increasingly global context, driven by technology and globalization. As a consequence, the course is designed to guide the student in exploring a range of social theories that may be helpful in informing how the student understands and operates in educational institutions in local, national, and global economic, political and cultural contexts. By examining and comparing a variety of theories and contexts, the student will be encouraged to develop/refine her own theories of a) how and why society and education are organized as they are; b) how and why education and/or society have or have not changed; and c) how and why education and/or society should be changed. What do you believe in passionately? How can social theories help strengthen and challenge your views? How can they help you gain a deeper and richer understanding of society's past, present and future? Far from being dry, academic reading, they drive policy - politics, business, and many other aspects of the student's everyday life. What kind of leadership role does the student want to create for herself in your career? What is the student willing to advocate for? How can this course help? Many students have very jumbled thinking about the things they feel most strongly about. They know what is right for them, but often can't explain how very clearly. This makes it difficult to convince anyone

besides those who already agree with the student. This will limit the student's political success, as contested issues need complicated, but clear thinking. How can the various social theories help guide the student's thinking and understanding of the issues from multiple perspectives? One of SCAE's international strengths is learning how to manage multiple perspectives, a critical skill in a globalizing world. How do people construct the world so that it makes sense to them? How do we negotiate the contested meanings that arise? Finally, how does the next generation learn about its cultural endowments?

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 3007 - EDUCATION AND INTERNATIONAL DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

This course will explore a wide range of contemporary social issues and trends in educational development from historical as well as comparative perspective. We will read and analyze educational problems and seek to design policy that can have impact in solving the problems. A central focus of this course is social analysis emphasizing educational issues in schools and colleges not only in the United States, but in other global contexts as well. We will critically explore key themes, definitions and approaches to education in individuals' lives across the lifespan, and examine how education helps shape social life in urban/rural areas and other settings from a comparative perspective. We will interrogate theoretical approaches used to understand the problems and current debates in the field of education by all stakeholders including institutions involved with educational development in diverse global settings, such as the United Nations and the World Bank.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 3008 - COMMUNITY ENGAGEMENT IN EDUCATION

Minimum Credits: 3

Maximum Credits: 3

This course explores a range of contemporary issues and trends in community engagement in education. It addresses educational issues in schools and colleges, not only in the United States but in global contexts as well. It explores critically key themes, definitions and approaches to community engagement in education in individuals' lives across the lifespan, and examines how education helps shape social life in urban/rural areas and other settings. It interrogates policy documents used to understand the problems and current debates related to community engagement in education by individual stakeholders and policymakers as well institutions involved with educational development in diverse local, national and global settings, including the UNESCO "Incheon Declaration." This course is designed to provide students with the grounding they need to perform confidently and competently in areas of their professional practice. It is an opportunity for the critical study of community engagement in education that is relevant to students' professional goals. The course provides tools to explore and assess the theories, ideologies and issues of education from multiple perspectives as well as to situate students' thinking about the issues in searching for policy and practice interventions. Students will frame the discussions within the contextual and practical realities of life in schools and other educational institutions through a range of conceptual lenses, exploring the debates over the meaning and nature of social justice in education, debates that intersect with questions about the person, society, education and knowledge as they strive to understand the complex issues in the field of education. Goals and objectives are aligned with SCAE program commitments to developing in students: deep specialized knowledge; intellectual/practical skills in innovation; taking personal/social responsibility for change; applying/integrating knowledge/understanding to problems of practice; understanding/embracing a commitment to equity; active, intentional, and ongoing engagement with diversity.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 3010 - SURVEY RESEARCH

Minimum Credits: 3

Maximum Credits: 3

Course is designed as a basic introduction to the research methods and analyses associated with various types of survey research. Identification of populations and sampling frames, execution of non-probability and probability sampling techniques, item construction, questionnaire design and implementation of various types of surveys are presented. Use of relevant survey analysis software (e.g., SPSS, NVivo, etc.) For the analysis of sample descriptive statistics in survey research is presented. Students will apply the skills presented through the development of a proposal and an instrument that can be employed in a workable survey.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

ADMPS 3011 - SUMMER LEADERSHIP RETREAT

Minimum Credits: 3

Maximum Credits: 3

Summer leadership retreat uses actual case studies to provide an activity driven introduction to a career as an executive school leader. The retreat promotes problem solving, relationship building, professional networking, skill building, and career planning. Led by clinical professors, the class features practical exercises in leadership.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

ADMPS 3012 - QUALITATIVE DATA MANAGEMENT ANALYSIS AND PRESENTATION

Minimum Credits: 3

Maximum Credits: 3

This course introduces software and technological tools to organize, conceptualize, systematically analyze, and effectively present qualitative data of diverse kinds in varied media. Students work in teams with real data in this project-based lab course. Technological skills are paired with conceptual discussions of such key operations as coding, thematic analysis, reflexive and analytical notes, framing questions, and assessing significance.

Critiques of core readings, demonstrations, and iterative formal presentations provide opportunities to model professional skills.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 3014 - DOCTORAL SEMINAR IN EDUCATION AND SOCIETY

Minimum Credits: 3

Maximum Credits: 3

This course is designed for those seeking to enhance their professional careers with scholarship. The EDD degree offers an intensive cohort experience and preparation for rigorous, applied research based on a broad, but in-depth acquaintance with the contexts within which phenomena, issues, policies and practices have emerged in the past and continue to evolve in our times. First, students will have the opportunity to develop an enhanced scholarly knowledge base encompassing the various facets of education/society relations by exploring the social, political, economic and cultural contexts within which education/educating take place and within which government agencies, educational institutions, policy-makers, educators and other stakeholders are situated or situate themselves when considering, fashioning, implementing, or reacting/responding to educational phenomena and policies/practices/reforms. Second, preparation for rigorous applied research should follow from understanding the rationales for and challenges of undertaking any of a number of possible research approaches to studying specific phenomena or problems of policy/practice and considering the complications imposed by these contexts in terms of what must be taken into consideration when applying research methods to human conditions and environments.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 3015 - ETHICAL ISSUES IN HIGHER EDUCATION

Minimum Credits: 3

Maximum Credits: 3

The ethical issues that present themselves in the educational setting are examined. Students are expected to recognize and evaluate these ethical issues in terms of their own value system as well as that of others. Each student is expected to prepare a case study that questions the ethical issues involved.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

ADMPS 3016 - INTRODUCTION TO QUALITATIVE RESEARCH

Minimum Credits: 3

Maximum Credits: 3

Course introduces students to distinct discourse communities that have coalesced around different inquiry traditions (e.g., Empirical, interpretive, critical) and modes of research (e.g., Narrative, ethnographic, historical, rhetorical, and linguistic). Emphasis given to interpretive tradition, in which techniques of data collection and data analysis strategies are secondary to the ways in which researchers make meaning of their data.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

ADMPS 3087 - SPECIAL TOPICS 2

Minimum Credits: 1

Maximum Credits: 1

Students in this one credit course will have the opportunity to concentrate their efforts on writing for publication. We will attend to editing and revising drafts that members are working on (such as manuscripts for journal articles, conference proposals, CVS, dissertation proposals, etc.). As well as essentials of publishing, topics may include: identifying voice and stance; framing propositions and arguments; portraying evidence; reviewing relevant discourses, and other syntax at hand. Class organization is intended to encourage self-reflection, analysis, and revision as a result of instructor and peer-review, and whole group discussion.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad SN Basis

ADMPS 3088 - COMPETENT KNOWLEDGE MANAGEMENT AND UTILIZATION

Minimum Credits: 3

Maximum Credits: 3

Knowledge management considers knowledge as a strategic asset within emerging contexts. Using technologies and systems, KM deals with the policies, tools and practices that an organization uses to classify, produce, implement, and safeguard information. Contemporary school districts and non-profit organizations are increasingly dedicating resources to knowledge management in their educational, business, technology, and human resource operations. Knowledge management focuses on organizational goals such as improved student performance, data management, organizational development and innovation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 3089 - SPECIAL TOPICS

Minimum Credits: 3

Maximum Credits: 3

A course listing for newly instituted and experimental courses.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

ADMPS 3090 - DISSERTATION RESEARCH SEMINAR

Minimum Credits: 3

Maximum Credits: 3

A seminar for doctoral students developing research prior to the preparation of a dissertation overview.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

ADMPS 3092 - HIGHER EDUCATION INTERNSHIP

Minimum Credits: 1

Maximum Credits: 6

An internship in administration in higher education.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad LG/SU3 Basis

ADMPS 3093 - INTERNSHIP IN CENTRAL OFFICE ADMINISTRATION

Minimum Credits: 1

Maximum Credits: 3

Provides an opportunity for the student to gain practical experience and demonstrate the knowledge, skills, and competencies obtained during the process of the training program in educational administration. It also furnishes the context of reality within which the student may acquire additional knowledge skills, and competencies as theory translated in the working world of the school system.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad LG/SU3 Basis

ADMPS 3097 - SUPERVISED RESEARCH

Minimum Credits: 1

Maximum Credits: 6

Doctoral study initiated by the student with advisor's approval and related to the student's program of study.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad HSU Basis

ADMPS 3098 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 6

Doctoral study approved and directed by an academic advisor.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

ADMPS 3099 - GUIDANCE IN THE DOCTORAL DEGREE

Minimum Credits: 1

Maximum Credits: 18

A registration unit for students preparing a doctoral dissertation or dissertation overview.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

ADMPS 3101 - COMPETENT MANAGEMENT OF FISCAL RESOURCES

Minimum Credits: 3

Maximum Credits: 3

This is a required course for all students in administrative studies which reviews and analyzes major issues and the means for managing institutional resources in education. Emphasis is placed on fiscal, human, and physical resources in both basic and higher education.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 3104 - HIGHER EDUCATION INSTITUTIONAL STRATEGIC PLANNING

Minimum Credits: 3

Maximum Credits: 3

This course will provide a framework for the development of an integrated institutional strategic plan. It will examine the emergence of higher education planning, the development of preplanning activities, situational analysis, and the establishment of a planning process for the preparation of institutional and department plans.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

ADMPS 3106 - STRATEGIC PLANNING AND EVALUATION

Minimum Credits: 2

Maximum Credits: 2

This course will focus on a variety of planning issues and evaluation processes in basic educational organizations. School leadership expectations regarding institutional, program and personnel planning and evaluation tasks will be addressed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 3114 - COMPETENT MANAGEMENT OF STUDENT PERSONNEL SERVICES

Minimum Credits: 3

Maximum Credits: 3

Schools have a responsibility for students' health and safety while they are at school. Students who successfully complete this course will demonstrate their knowledge of research-based approaches to apply in accordance with Pennsylvania law in the areas of health, mental health, safety, and crisis management.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

ADMPS 3116 - COMPETENT MANAGEMENT OF HUMAN RESOURCES

Minimum Credits: 3

Maximum Credits: 3

This course presents a review of organization theories as they apply to schools and universities. Topics include organizational typologies, competing models of organizational structure, organization-environment linkages, and the evaluation of organizational effectiveness.

Academic Career: Graduate

Course Component: Lecture

Grade Component: LG/SU3 Elective Basis

ADMPS 3127 - CURRICULUM: PERSPECTIVES AND ISSUES (K-12)

Minimum Credits: 3

Maximum Credits: 3

The course draws on current content in the field of curriculum studies. Contemporary approaches to development and research draw on increasingly diverse disciplinary perspectives and diverse methods of inquiry. Curriculum perspectives and issues are central to the often contentious educational discourses in the public arena as well as in the academy as curriculum decisions are being made related to policy, practice and research, informed points of view are crucial to those engaged in such work. This course is intended to capture some of the contentious local, national and international discourses for which the curriculum field is known and, in particular, how these discourses influence curriculum policy and practice toward intended and unintended consequences.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 3128 - HIGHER EDUCATION BUDGET MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

This course will focus on the sources of revenues available to colleges and universities and various methods for allocating these funds to academic and administrative functions. Specific attention will be given to topics of fund accounting, sources of revenue, the budget process, fiscal controls and monitoring.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

ADMPS 3129 - HIGHER EDUCATION HUMAN RESOURCE MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

This course will focus on the development of human resource systems that facilitate the conduct of activities in colleges and universities through the effective and efficient utilization of faculty and staff. It will include such topics as human resource strategic planning, position control and monitoring systems, recruitment and selection procedures, evaluation procedures, development and training, incentive systems, salary administration, and fringe benefits administration. Various human resource policies and practices will be explored.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

ADMPS 3130 - HIGHER EDUCATION PROGRAM MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

This course is concerned with faculty and staff within an academic institution. It focuses on how faculty should be managed in order to achieve optimal organization performance. Specific topics addressed include: organizational theory, institutional goals, faculty and staff responsibilities and workload, research curriculum and academic organization. Special attention is also given to faculty and administrative evaluation and development. Group discussion and case studies are the principal instructional formats utilized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 3131 - STUDENT, CAMPUS, AND SOCIETY

Minimum Credits: 3

Maximum Credits: 3

A seminar focusing on current research dealing with the impact of campus environments, experiences on and off campus, and family background on achievement, values, personal development, and life goals of students in higher education.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ADMPS 3135 - SEMINAR IN COLLEGE TEACHING

Minimum Credits: 3

Maximum Credits: 3

The course is intended to provide a practicum-like experience for graduate students in the professions and disciplines who are teaching or expect to teach in higher education. Challenging topics include: analyzing and critiquing current syllabuses of class members; structuring the curriculum; teaching for understanding; process and content; teaching and learning in groups; becoming a dialogic classroom; encountering and responding to contentious discussion; and evaluating learning. Although topics will be considered conceptually through readings, the primary curriculum will develop as members of the class present specific issues from their emergent work. Participants will have the opportunity to explore their beliefs in teaching and learning as they consider a web between themselves, their subject and their students, in order to help their students learn how to weave a world for themselves.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ADMPS 3136 - COMPARATIVE HIGHER EDUCATION

Minimum Credits: 3

Maximum Credits: 3

This seminar focuses on contemporary problems in post-secondary education throughout the world. The seminar will begin with a brief historical introduction, followed by a review of case studies and other documents on higher education in the United States and other countries. Special attention will be given to an examination of comparative and contrasting policies and issues in higher education as they unfold in various developing regions and in the United States.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Attributes: African Studies, Asian Studies, Global Studies, Russian & East European Studies

ADMPS 3137 - CULTURE, INNOVATION & ORGANIZATION PERFORMANCE

Minimum Credits: 3

Maximum Credits: 3

Whether leading a department of 50 people or a division of 500, leaders need to understand the concepts, skills and practices that build strong organizational cultures. This course explores the cultural facets of organizational life in universities with special emphasis on improvement opportunities such as values clarification, cultural norms, innovation, process and people integration, key performance indicators, the balanced scorecard and the alignment of human resources systems such as hiring, faculty and staff development, performance management and career development. Students are introduced to a variety of methods used to encourage creative problem solving in teams; diffusion of innovation is explored in depth. Students work in teams with an actual University client to implement a benchmarking project, an important tool in improving organizational performance.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 3139 - LEGAL ASPECTS OF HIGHER EDUCATION

Minimum Credits: 3

Maximum Credits: 3

The focus of the course is on federal and state law and higher education in the United States. Although time will be devoted to historical issues pertaining to higher education, most of the time will be devoted to in-depth discussions of contemporary issues. Issues that will be discussed include promotion and tenure, academic freedom, faculty dismissal, sexual harassment, research integrity, campus violence, and student affairs.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 3141 - POLICY STUDIES IN HIGHER EDUCATION

Minimum Credits: 3

Maximum Credits: 3

After broad consideration of key policy issues in higher education--finance, quality, and access--this course considers organization theories in relation to theories of governance, decision-making processes in various institutions, and policy outcomes of these processes are also considered. American higher education is the major focus, international policy perspectives are included, as well.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 3142 - ADVANCED SEMINAR IN HIGHER EDUCATION

Minimum Credits: 3

Maximum Credits: 3

The purpose of this course is to introduce students to current developments in the field of education. This course is designed for students who have completed a substantial part of their academic program and is presented in a seminar format. The specific topics addressed are changed from term to term to reflect the most current emerging issues.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 3145 - CASE STUDIES IN POLITICS AND GOVERNANCE

Minimum Credits: 2

Maximum Credits: 2

This course provides an examination of politics and governance at the local, state, and federal levels. Through case studies of strategic importance, the class will examine critical leadership issues.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 3147 - SOCIAL DYNAMICS AND ETHICAL LEADERSHIP

Minimum Credits: 1

Maximum Credits: 1

Students explore issues of equity, justice, right and wrong as these are practiced in contemporary America.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 3148 - STRUCTURE AND CULTURE OF COMMUNITIES

Minimum Credits: 2

Maximum Credits: 2

A community's culture is important because it shapes the way that citizens react to events and policies. The way that a leader deals with culture can unite or divide a community. Culturally skilled leaders assess the uniqueness and structure of a community's culture, understand its diversity, manage cultural differences, and recognize cultural knowledge and traditions. A culturally proficient leader effectively interacts with a community's culture in ways that build trust and unity of purpose.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 3201 - INTRODUCTION TO EDUCATIONAL EVALUATION

Minimum Credits: 3

Maximum Credits: 3

Provides a general overview of evaluation, which is defined as "providing information useful to decision-making". The various purposes of evaluation are identified, and the use of different types of information for each purpose are discussed. The variables that affect the usefulness of information are emphasized. Both evaluation theory and practical experience are utilized to prepare people who will be fulfilling an evaluation function, or using evaluation results for professional decision making.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ADMPS 3207 - SECTOR ANALYSIS AND PROJECT DESIGN

Minimum Credits: 3

Maximum Credits: 3

This is a reading and discussion seminar in which participants examine selected analytical and technical approaches used by multilateral and bilateral agencies in the design of appropriate policy meant to intervene in school systems around the world. The class will survey a number of examples of sector studies, projects, and project evaluations. Visiting lecturers will contribute experiences from their own international work in this area.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Attributes: African Studies, Global Studies

ADMPS 3208 - CASE STUDY METHODS IN EDUCATION

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the use of case study research methods in investigations of educational policy and practice. The limitations and possibilities of different approaches are considered. Knowledge and skills are acquired through field-based projects.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ADMPS 3209 - HIGHER EDUCATION INSTITUTIONAL ASSESSMENT & ACCREDITATION

Minimum Credits: 3

Maximum Credits: 3

Course addresses processes and criteria used for evaluation and accreditation of post-secondary and higher education in situations and programs.

How to identify, obtain, and use meaningful information for organizational decision-making, such as institutional assessment, program evaluation, and benchmarking are investigated.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

ADMPS 3301 - SOCIAL THEORIES AND EDUCATION GLOBAL CONTEXT

Minimum Credits: 3

Maximum Credits: 3

Students will explore a range of social theories that may be helpful in informing how they understand and operate in educational institutions in local, national, and global economic, political, and cultural contexts. By examining and comparing a variety of theories and contexts, students will be encouraged to develop/refine their own theories of a) how and why society and education are organized as they are; b) how and why education and/or society have or have not changed; and c) how and why education and/or society should be changed.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Attributes: African Studies

ADMPS 3302 - EDUCATION AND DEVELOPMENT DEBATES

Minimum Credits: 3

Maximum Credits: 3

This seminar introduces participants to the broad field of international and development education. The seminar considers alternative views about the roles played by education systems in progress and change. Case studies of education policy are related to intended and unintended consequences for national integration, economic growth, the distribution of welfare, and other outcomes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: African Studies, Global Studies

ADMPS 3311 - WAYS OF KNOWING

Minimum Credits: 3

Maximum Credits: 3

In making a distinction between ways of knowing and procedures for knowledge generating, students in this seminar will examine various epistemological, ontological and axiological schools of thought that are the basis for educational inquiry. The focus will include assumptions that form the logics of justification for truth claims embedded in educational research.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ADMPS 3314 - EDUCATIONAL REFORM

Minimum Credits: 3

Maximum Credits: 3

This course examines the recurrent phenomenon of educational reform in a variety of settings and from a variety of social scientific perspectives. Focus is placed on the analysis of competing explanations of educational reform and the investigation of case studies from a variety of countries and time periods. Emphasis is given to examining whether reform campaigns are structurally similar and whether a general theory of educational reform is possible.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ADMPS 3343 - COMPARATIVE EDUCATION

Minimum Credits: 3

Maximum Credits: 3

This seminar introduces participants to the complementary fields of comparative, international, and development education (CIDE). Emphasis is on social justice issues in CIDE and the comparative analysis of policies and practices that constitute the organization, content, processes of education systems and institutions. Selected topics of continuing interest to educational researchers, policy makers, and practitioners are examined in relation to national and global cultural, economic, and political dynamics. Historical and contemporary examples are used to highlight the contributions of and challenges for those involved in CIDE.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Attributes: African Studies, Global Studies

ADMPS 3347 - INTERNATIONAL ORGANIZATION DEVELOPMENT EDUCATION

Minimum Credits: 3

Maximum Credits: 3

This seminar reviews policies and practices of key international organizations and actors in the complementary fields of comparative, international, and development education (CIDE) and examines their impact on national and regional educational policies. Multilateral organizations (such as UNESCO, UNICEF, and the World Bank), bilateral organizations, nongovernmental organizations, faith-based organizations, community-based organizations, and regional agencies (e.g., the inter-American development bank, the Asian development bank, and the European union) will be among the organizations and actors studied.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: African Studies, Global Studies, Latin American Studies, Russian & East European Studies

Anthropology

ANTH 2000 - RESEARCH AND THESIS MA DEGREE

Minimum Credits: 1

Maximum Credits: 9

This course involves directed research and writing oriented towards the completion of a master's thesis.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

ANTH 2441 - FIELD METHODS IN LINGUISTICS

Minimum Credits: 3

Maximum Credits: 4

This course is meant to simulate the experience of linguistic field work, and raise awareness about the effectiveness of specific interview techniques for acquiring linguistic data. The course will give instruction and experience in eliciting data from a speaker of a non (indo) European language. Students will undertake the investigation of the phonology, some aspect of grammar, and the ethnosemantic study of a taxonomically structured semantic field such as plants or animals. Students will make detailed elicitation plans in advance of their administration.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

ANTH 2490 - LINGUISTICS ANTHROPOLOGY CORE COURSE

Minimum Credits: 4

Maximum Credits: 4

This course approaches language as a practice through which social relations, cultural models, and consciousness are constituted. Specific topics include: approaches to signs and significance; linguistic relativity (relationships between habits of speech, thought, and action); analysis of conversation and interaction; relationships between meaning and intention; models of variation and change; linguistic dimensions of cultural stereotypes; and the means by which languages, styles, and other aspects of cultural patterning, can be mapped onto populations. Throughout the course we pay particular attention to how tools from linguistic and semiotic anthropology can be applied to the study of topics other than language ' as a framework for ethnography, for textual research, and for the study of material culture.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Global Studies

ANTH 2513 - SELECTED ARCHEOLOGICAL PROBLEM

Minimum Credits: 3

Maximum Credits: 3

Examines current topics and controversies in anthropological archaeology. Special problem areas vary from year to year.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Global Studies

ANTH 2516 - CHIEFDOMS

Minimum Credits: 3

Maximum Credits: 3

Chiefdoms are defined more by what they are not than by what they are: societies whose hierarchical organization makes them non-egalitarian, but that lack the bureaucratic institutions of the state. Seen as stepping stones in the evolution of states or as part of another evolutionary trajectory entirely, chiefdoms are the subject of debate, including just in what sense, or even whether, the word "chiefdom" has any utility. This seminar discusses how chiefdoms can be investigated and understood archeologically, using materials from all the Americas, Polynesia, Europe, and other areas.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Asian Studies, Global Studies, Latin American Studies

ANTH 2517 - ARCHEOLOGICAL METHOD AND THEORY

Minimum Credits: 3

Maximum Credits: 3

This course surveys contemporary method and theory in anthropological archeology. It begins with varieties of high level theoretical approaches to a study of prehistory, including cultural historical, cultural evolutionary, cultural ecological systems-oriented, Marxist and post-Procession Archaeologies. It covers several methodological problems; construction of research designs, uses of analogy, style, classification and site level or regional level spatial analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ANTH 2524 - ARCHEOLOGICAL DATA RECOVERY AND ANALYSIS 2

Minimum Credits: 4

Maximum Credits: 4

Advanced analysis of archeological data, primarily quantitative. This course carries on where ANTH 1534 leaves off. Topics include sampling, design of variable sets, advanced database management, computer graphics (plotting, contouring, fishnet surfaces), multivariate statistics (factor analysis, cluster analysis, multi-dimensional scaling), and analysis of spatial distributions (nearest neighbor, clustering, and graphical approaches).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ANTH 2531 - HOUSEHOLD ARCHAEOLOGY

Minimum Credits: 3

Maximum Credits: 3

This seminar will explore the role of the household as an important analytical unit in anthropological archaeology. Topics to be addressed include: archaeological definition of residential units, modeling the evolution of domestic life, analysis of spatial patterns at the household level, and proxemic and symbolic approaches to the prehistoric dwelling. The seminar will also consider the relationship between households and larger societal structures and the cross-cultural compositional and dynamic characteristics of households will be examined.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Global Studies, Latin American Studies

ANTH 2532 - ADVANCED TOPICS IN GIS: ANALYSIS OF REGIONS AND RESOURCES

Minimum Credits: 3

Maximum Credits: 3

A brief introduction to GIS techniques in the context of archaeological analysis. The focus will be on how to accomplish analytical tasks of proven utility in archaeology, using autocad map when a vector-based program is most useful and Idris when a raster-based is better. The course is designed to complement ant 2541: regional settlement patterns, although the GIS techniques dealt with are applicable to other scales of analysis as well.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ANTH 2533 - ANCIENT STATES IN THE NEW WORLD

Minimum Credits: 3

Maximum Credits: 3

Drawing on the fact that the ancient new world was a dazzling treasure house of non-Western political thought and organization, this course uses archaeology and ethnohistory to document and make comparative sense of the rich variety of political arrangements which existed among pre-Hispanic states in MesoAmerica and Andean South America. A special aim is to understand how Amer-Indian concepts about state craft and rulership mesh with anthropological and other theories about ancient states.

Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ANTH 2534 - ARCHEOLOGICAL DATA ANALYSIS 1

Minimum Credits: 4
Maximum Credits: 4

An introduction to quantitative data analysis in archeology, this course covers basic principles of statistics, including exploratory analysis of batches, sampling, significance, t tests, analysis of variance, regression, chi-square, and estimating universe means and proportions from samples. The approach is practical, concentrating on understanding these principles so as to put them to work effectively in analyzing archeological data. Much of the statistical work is done by computer.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ANTH 2536 - SPECIAL TOPICS IN COMPARATIVE ARCHEOLOGY PART 1

Minimum Credits: 1
Maximum Credits: 1

A research seminar in comparative archaeology led by a regular faculty member in anthropology and the visiting scholar in the center for comparative archaeology. The topic changes from year to year depending on the expertise of the visiting scholar. Meets about five times during the fall term, and is concluded during the spring term in ANTH 2537: special topics in comparative archaeology ii. In order to receive credit students must complete both parts of the seminar (I and II).

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ANTH 2537 - SPECIAL TOPICS IN COMPARATIVE ARCHEOLOGY PART 2

Minimum Credits: 2
Maximum Credits: 2

A research seminar in comparative archaeology led by a regular faculty member in anthropology and the visiting scholar in the center for comparative archaeology. The topic changes from year to year depending on the expertise of the visiting scholar. Meets about five times during the spring term, and is the conclusion of ANTH 2536: special topics in comparative archaeology i offered during the preceding fall term. In order to receive credit students must complete both parts of the seminar I and II).

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ANTH 2541 - REGIONAL SETTLEMENT PATTERNS

Minimum Credits: 3
Maximum Credits: 3

This seminar will take up both theoretical and methodological aspects of regional settlement pattern studies in archeology. Appropriate objectives for settlement patterns will be discussed. Advantages and disadvantages of different field and analytic methodologies in terms of their effectiveness in achieving clearly defined goals will be explored. This exploration will be pursued primarily through critical examination and reanalysis of data from primary reports of regional settlement patterns studies from different parts of the world.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Global Studies, Latin American Studies

ANTH 2550 - ETHNOARCHAEOLOGY

Minimum Credits: 3
Maximum Credits: 3

This course will focus on issues in ethnoarchaeology and archaeological implications. Some of these issues have to do with theory and the role of analogy in understanding the past. Others concern how we can use material remains to make inferences about social groups including kinship, organization, ethnicity, work groups, etc.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Global Studies

ANTH 2551 - PEOPLES IN CONTACT

Minimum Credits: 3

Maximum Credits: 3

This course will examine contact between native and European cultures in the Americas from an archaeological and historical perspective. Prehistoric patterns of interaction including exchange and communication networks will be considered. The impact of this contact on both cultures will also be considered.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Global Studies

ANTH 2553 - ARCHAEOLOGICAL CERAMICS

Minimum Credits: 3

Maximum Credits: 3

This course is designed to provide you with a broad introduction to archaeological ceramics. We will cover a number of topics during the course so that you will be conversant in the archaeological literature on pottery and will have a greater understanding of the types of research problems that are most readily investigated through the analysis of archaeological ceramics. You will also gain experience in handbuilding pottery vessels so you have an understanding of pottery from the perspective of the potter and will know how the limitations and possibilities within this medium affect both the manufacture and processes used in creating pottery. We also discuss a variety of archaeological analyses of pottery. Readings drawn from archaeological, ethnoarchaeological, and material culture literature are an important component of this course.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ANTH 2554 - HUMAN BEHAVIORAL ECOLOGY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ANTH 2555 - WORKSHOP IN PUBLISHING

Minimum Credits: 2

Maximum Credits: 2

This one-credit graduate course is intended as a workshop for refining papers for publication as journal articles or edited book chapters. The course is intended for relatively advanced graduate students who have a good idea at the outset of what they plan to publish and have the support of their advisor in this plan. We will go through the process of identifying suitable publication venues, revising drafts and figures for publication, and understanding what to expect from the peer-review process. Because the class involves substantial peer feedback, students are asked to commit to supporting their fellow students' revision process as well as devoting time to their own. The aim is for every student to submit a paper for publication by the end of the semester.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ANTH 2588 - ARCHEOLOGY CORE COURSE

Minimum Credits: 4

Maximum Credits: 4

A broad introduction to current archaeological thinking on cultural evolution, focusing on early hunters and gatherers, the rise of agriculture and settled village life, the growth of complex societies, and the development of cities. Examines the recent intellectual controversies surrounding these topics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ANTH 2608 - PRIMATE BIOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course is a survey of the major groups of living primates (including humans) and of the various hard and soft tissue, as well as physiological and biochemical, systems that distinguish the group as primates and further distinguish the diverse lot of primate subgroups.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ANTH 2612 - EVOLUTIONARY THEORY 1: A HISTORY OF ALTERNATIVE IDEAS 18TH CENTURY UNTIL THE SYNTHESIS

Minimum Credits: 3

Maximum Credits: 3

This course will be an in-depth survey of the historical development of evolutionary thought, with emphasis on the alternatives to theories that became incorporated into the grand evolutionary synthesis and those alternatives that have emerged since. Students will read and annotate original works in comparative anatomy, embryology, paleontology, genetics and lead class discussion based on this literature.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ANTH 2614 - HISTORY OF PALEOANTHROPOLOGY

Minimum Credits: 3

Maximum Credits: 3

In this course we will read primary literature that is relevant to the study of human evolution, both neo and paleobiologically. After a brief overview of the separate histories, and thus foci, of paleontology in general and human paleontology specifically, we will begin formal reading with Blumenbach's two major works, some Buffon, Linnaeus, and Lankester (and probably a few others), Huxley's essays of 1863, Darwin's descent these basically on the topic of "man's place in nature" and then delve into specific articles and monographs on the discovery, naming, and acceptance of human fossils. These readings will cover (but not necessarily be limited to) the debate between Schaffhausen and Fuhlrott, the naming by William, king of the first new hominid species (*Homo neanderthalensis*), the works of Eugene DuBois (*Homo erectus*) and Raymond Dart (*Australopithecus*) and reactions to them, the Leakeys' discoveries at Olduvai Gorge, and some of the more recent finds. We will also discuss *Ramapithecus* and its relevance to the still not satisfactorily answered question, "what is a homind?" The thrust of the course will be to tease apart fact from assumption as they were cobbled together in promoting one's favorite scenario on human evolution. Students will be expected to hand in annotated bibliographies based on the readings, and to take turns in leading discussion. Each student will also produce a term paper that will expand on a topic relevant to the course.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ANTH 2617 - PALEOPATHOLOGY

Minimum Credits: 3

Maximum Credits: 3

Paleopathology is the study of disease and its process among ancient peoples using primary evidence from Human Skeletal remains. Additional lines of inquiry draw on archaeological, ethnographical, clinical and documentary sources to aid in our interpretation. In this course you will learn how to recognize abnormal bone, differentiate between disease processes, describe abnormal bone changes, evaluate recording methods and investigate the epidemiological history of various disease processes. The impact of disease upon the individual and ancient societies will be considered throughout the course and in student research. The combined lecture, seminar and laboratory format provides a comprehensive foundation of skeletal pathology, experience with recording methods and an understanding of the impact of disease on the individual and their community.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ANTH 2619 - ADVANCED SKELETAL ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

This course provides the student with an in-depth understanding of the skeletal features used to develop the osteobiographic profile (e.g., Age, sex, stature, ancestry, handedness, etc.) Of an individual. This analysis is essential for forensic identification and forms the foundation for the reconstruction of ancient individuals and their life-ways. Each student will select some aspect of skeletal analysis and present an overview of the bone biology, the history of the analytical methods, the problems and advantages of each method, modifications that others have made to address these issues, and the current state of knowledge. In the past, some students have proposed new methods of analysis. This will be complemented by a lab exercise designed by the student that will provide data for interobserver analysis of various techniques. The results of this lab will be presented as posters which will be posted on CW at the end of the term. Prior osteological experience is required.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ANTH 2630 - PHYSICAL ANTHROPOLOGY RESEARCH

Minimum Credits: 3

Maximum Credits: 3

The student conducts independent research developed in consultation with, and carried out under the supervision of, a faculty member in biological anthropology.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

ANTH 2680 - BIOARCHAEOLOGY

Minimum Credits: 3

Maximum Credits: 3

The human skeleton provides the most direct and unchallenged evidence for an individual's past behavior as the skeleton is plastic in its response to stress, much the same as a society responds to social and environmental stress. While the artifacts, architecture and features recovered from an excavation leave a cultural imprint on the landscape, so too does culture and behavior leave an impression on the skeleton. We will assess how the individual experienced life and death through skeletal analysis, ethnography and the funerary context.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ANTH 2687 - CORE COURSE IN PHYSICAL ANTHROPOLOGY

Minimum Credits: 4

Maximum Credits: 4

This course presents an integrated view of the diverse topics that biological anthropology encompasses. Emphasis is placed on how evolutionary, genetic and developmental processes shape human biology.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ANTH 2715 - DIMENSIONS OF AGING: CULTURE AND HEALTH

Minimum Credits: 2

Maximum Credits: 2

Provides an overview of the aging experience from a cross cultural and a public health perspective. The ways in which people cope with and adapt to the aging process is the major theme.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: Asian Studies, Global Studies

ANTH 2720 - POETICS AND POLITICS OF ETHNOGRAPHY

Minimum Credits: 3

Maximum Credits: 3

The 1980s was described as "an experimental moment" in the human sciences and as a time of "crisis of representation" when anthropology has taken a literary, experimental, reflexive, modern, late-modern, postmodern, textualist turn. This seminar examines this experimental moment, its history and anthropological precursors, the critiques that have followed, and the suggestions for the future of ethnography and anthropological writing that have ensued. Readings include a number of recent experimental ethnographies as well as a sample of older "classics".

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ANTH 2724 - THE ANTHROPOLOGY OF SCIENCE: GLOBAL PERSPECTIVES

Minimum Credits: 3

Maximum Credits: 3

Science and technology are integral to contemporary societies. Understanding how science is produced and how it shapes daily life is a crucial challenge for anthropologists, who have studied the production of scientific knowledge in labs, hospitals, field sites, and elsewhere. While early studies of science as a cultural practice focused primarily on the U.S. and Europe, science and technology are produced and consumed globally. Through analyses of case studies of biotechnology, medicine, genetics, conservation, agriculture, energy, climate science, and computing around the world, this class will investigate the global dynamics of science and technology. Juxtaposing readings on different scientific fields from around the globe, we will look for recurring themes that connect these studies. What happens when science and technology travel, and how do new places emerge as centers of knowledge production? How are culture, identity, technology, and science linked?

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ANTH 2731 - MEDICAL ANTHROPOLOGY 2

Minimum Credits: 3

Maximum Credits: 3

This course deals with topics surveyed in medical anthropology 1, looking at them in more ethnographic depth and with greater attention to current research findings.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Global Studies

ANTH 2735 - ECONOMIC ANTHROPOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course focuses on major trends and debates in economic anthropology, with an emphasis on economic change and the impact of industrialization and capitalism on the "third world" peoples. Particular attention will be placed on economic theory in anthropology, the nature and "future" of peasants as an analytical category, markets and market places, "moral economy" approaches, agricultural intensification, development and underdevelopment, and anthropological approaches to political economy.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ANTH 2737 - ANTHROPOLOGY OF FOOD

Minimum Credits: 3

Maximum Credits: 3

This course surveys the general subject of culinary anthropology. Topics include food exchanges and the construction of social groups, food and social boundaries, food taboos, symbolism of food, folk conceptions of food, sacrifice and food in religious contexts, world standardization of food preferences. Thus, the focus is on social aspects of food, eating, and exchange.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ANTH 2741 - ANTHROPOLOGY OF LAW

Minimum Credits: 3

Maximum Credits: 3

This course will examine anthropological analyses of law and law-like phenomena in a number of different societies, concentrating on the development of theory in this field. Since this theory reflects larger theoretical developments in anthropology and in post-war social science, the study of the anthropology of law is a case study in the development of modern theoretical paradigms.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Russian & East European Studies

ANTH 2744 - GRANTS AND RESEARCH DESIGN

Minimum Credits: 3

Maximum Credits: 3

This seminar will focus on the formulation of individual research problems and research designs in preparation for thesis research. Course requirements center around the development of a research proposal which will include a research design, area and theoretical background, field techniques and procedures, methodology, data analysis, and significance of the research. Grantsmanship, including how to submit proposals to various agencies, will be explored.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ANTH 2750 - CONTEMPORARY ANTHROPOLOGICAL THEORY

Minimum Credits: 3

Maximum Credits: 3

This seminar surveys recent developments in anthropological theory, with emphasis on social and cultural anthropology. Topics covered vary with interests of students and the instructor. The course centers on the close reading of several contemporary texts.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: African Studies, Global Studies

ANTH 2753 - CONFLICT AND VIOLENCE

Minimum Credits: 3

Maximum Credits: 3

This course surveys a number of anthropological theories regarding conflict and violence, with critical attention to the question of biological versus cultural determinants. Ethnographic materials are drawn from the Pacific and elsewhere. The focus is largely on tribal societies, but not exclusively so, and factors influencing peace-making as well as war are considered.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ANTH 2763 - FIELD METHODS

Minimum Credits: 4

Maximum Credits: 4

Designed to acquaint students with basic ethnographic field work techniques. Topics addressed include taking and managing field notes on participant-observation and use of archival materials. There will also be some discussion of the relationship among research design, data collection, and data analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ANTH 2782 - SPECIAL TOPICS IN CULTURAL ANTH

Minimum Credits: 3

Maximum Credits: 3

This course will be on a topic in the area of specialization in cultural anthropology of a visiting scholar.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Asian Studies

ANTH 2789 - CULTURAL ANTHROPOLOGY CORE COURSE

Minimum Credits: 4

Maximum Credits: 4

This course is an introduction to the anthropological study of human culture and society. We will examine how different modes of description and explanation in contemporary cultural anthropology are applied to various domains (e.g., How different peoples feed themselves, mate and have children, cooperate and fight with one another, deal with the inevitability of death, etc.). By comparing the ways the human beings cope with the natural environment and each other, we will seek a better understanding of ourselves and what it is to be human.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Global Studies

ANTH 2902 - DIRECTED STUDY FOR MA STUDENTS

Minimum Credits: 1

Maximum Credits: 9

This course involves directly supervised research-related activities such as fieldwork or artifact analysis. Reading is not a major component of the work for this course.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

ANTH 2980 - READINGS IN SELECTED FIELDS

Minimum Credits: 1

Maximum Credits: 9

This course involves student preparation of a selected bibliography on a specialized topic, reading of the materials according to a prepared schedule, and discussions of the readings with the course instructor.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

ANTH 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 9

This course involves research-related activities that are indirectly supervised by the instructor, such as fieldwork or library research.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

ANTH 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1

Maximum Credits: 9

This course involves directed research and writing oriented towards the completion of a doctoral dissertation.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Artificial Intelgnc & Mgt

BAIM 3010 - INDEP STUDY ARTFCL INTELGNC/MGT

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad HSU Basis

BAIM 3099 - READINGS ARTFCL INTELLGNC & MGT

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

Astronomy

ASTRON 2000 - RESEARCH AND THESIS MS DEGREE

Minimum Credits: 1

Maximum Credits: 15

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

ASTRON 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

ASTRON 2998 - TEACHING OF ASTRONOMY-PRACTICUM

Minimum Credits: 1

Maximum Credits: 2

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

ASTRON 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1

Maximum Credits: 15

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

ASTRON 3101 - SPECIAL TOPICS

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ASTRON 3102 - SPECIAL TOPICS

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

ASTRON 3550 - STELLAR STRUCTURE

Minimum Credits: 3

Maximum Credits: 3

Stars are the most common astrophysical objects. They create most of the atomic elements and most of the observable optical light in the sky. This class provides an overview of the physics of stars and the interstellar medium. Topics will include hydrostatic equilibrium, nuclear processes, radiative transfer, metallicity and opacity, convection, stellar evolution, stellar explosions, properties of the interstellar medium, and energy feedback from stars.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ASTRON 3580 - GALACTIC AND EXTRAGALACTIC ASTRONOMY

Minimum Credits: 3

Maximum Credits: 3

Galaxies are the fundamental building blocks of the present universe. This class will give an overview of galaxies, their properties, and their formation and evolution with an emphasis on current research areas. Topics will include observational properties (morphology, masses, colors, concentrations), scaling relations, evolution with redshift, stellar populations, gas and dust, dynamics and dark matter, evolution and mergers, and active galaxies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ASTRON 3705 - ASTRONOMICAL TECHNIQUES

Minimum Credits: 3

Maximum Credits: 3

This class will expose students to the basics of astronomical data analysis, with an emphasis on statistical techniques and the development of practical programming skills. Topics may include the nature of random and systematic errors, fitting and likelihood techniques, hypothesis testing, astronomical instrumentation and data reduction, and the use of large survey data sets.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ASTRON 3785 - COSMOLOGY

Minimum Credits: 3

Maximum Credits: 3

This class will give an overview of the standard cosmological model and the wide range of observational tests. Topics include the expansion history of the universe, thermodynamic history, nucleosynthesis, recombination, inflation, perturbations and the microwave background, structure formation, evidence for dark matter and dark energy, and future probes of dark energy.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ASTRON 3902 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 15

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

ASTRON 3907 - DIRECTED RESEARCH

Minimum Credits: 1

Maximum Credits: 12

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Behavioral & Community Hlth Sci

BCHS 2135 - LEADERSHIP

Minimum Credits: 3

Maximum Credits: 3

This course examines theories about leadership and provides students with feedback on their own leadership styles. Leadership skills are defined and

applied. Teams, as one context for demonstrating leadership, are explored in depth and methods for recognizing and managing group dynamics are introduced. Concepts regarding organization leadership are introduced. The course combines theory with practical application. It is highly participative and students are expected to join in a wide range of exercises and simulations. The two major assignments require that the students work in teams with other students.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BCHS 2503 - PRACTICUM

Minimum Credits: 1

Maximum Credits: 3

Short term field placement relevant to the student's area of interest in an operating organization or agency.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad SN Basis

Course Attributes: Community Element - Building Understanding, Community Element -General Community Impact

BCHS 2504 - OVERVIEW OF HEALTH COMMUNICATION

Minimum Credits: 3

Maximum Credits: 3

Health communication is the art and technique of informing, influencing, and motivating individual, institutional and public audiences about important health issues. The scope of health communication includes disease prevention, health promotion, health care policy and the business of health care as well as enhancement of the quality of life and health of individuals in the community. This class will introduce the theories and research that underlie health communication. The course will examine health communication campaigns, planning health communication and developing a health communication campaign.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Behavioral & Community Hlth Sc (MPH, DPH)

Course Attributes: Community Element - Building Understanding, Community Element -General Community Impact

BCHS 2509 - SOCIAL AND BEHAVIORAL SCIENCES AND PUBLIC HEALTH

Minimum Credits: 3

Maximum Credits: 3

The core course provides an overview of the social and behavioral sciences and their importance in the inter-disciplinary field of public health. A primary emphasis is on the social-ecological model, its application to public health issues, and its use in the development of policies, strategies, interventions and programs. The course content will introduce students to several relevant social and behavioral theories as well as a range of community health assessment and planning models used by public health professionals in both domestic and international venues. Through a series of assigned readings, discussion exercises, group projects, quizzes and written assignments, students will enhance their knowledge and awareness of the role of social and behavioral sciences in public health and its relevance to their specific discipline. At the conclusion of the course students will be able to: identify the important social and behavioral determinants of health; describe the inter-relationships between the social, behavioral, bio-medical, physiological, and environmental factors related to individual and community health; identify the major health disparities related to social, behavioral and economic factors; describe the role of culture and socio-economic status in health behavior, access to services, and decision-making; and understand the importance of community partnerships and participatory approaches in the development, implementation, management and evaluation of community policies and programs.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BCHS 2511 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 3

Students with major interests in specialty areas participate in courses of individual study, research activities, or advanced readings with a specified faculty member.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

BCHS 2515 - WORKSITE HEALTH PROMOTION

Minimum Credits: 2

Maximum Credits: 2

This course covers the design and implementation of worksite health promotion programs. The course will examine both the benefits of worksite health promotion and the challenges of implementing a meaningful program. Students will review various planning models and plan theory-based incentive programs designed to promote health within the worksite setting.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BCHS 2516 - VIDEO FOR HEALTH PROMOTION

Minimum Credits: 3

Maximum Credits: 3

Video is an increasingly important media for the distribution of health promotion messages. The purpose of this class is to provide students with basic principles of script development and the video production process to be able to produce educational and persuasive short-form videos for health promotion. Students will develop, direct, and produce short-form health promotion videos for distribution on social media platforms.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BCHS 2520 - THEORIES OF HEALTH BEHAVIOR AND HEALTH EDUCATION

Minimum Credits: 1

Maximum Credits: 1

The course is designed as an introduction to the major theories that are the foundation for most health promotion and health education interventions. It will provide the student with exposure to the current theories that are being used in health behavior and health promotion educational interventions. Also it will provide students with a theoretical foundation for designing, implementing and evaluating health promotion and education programs.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Behavioral & Community Hlth Sc (MPH, DPH)

Course Attributes: Global Studies

BCHS 2521 - ESSAY

Minimum Credits: 1

Maximum Credits: 3

The essay requirement is designed to provide the student with an opportunity to integrate the major components of the public health learning experience. The student is expected to demonstrate verbal and technical proficiency in expository writing.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

BCHS 2522 - PUBLIC HEALTH PROGRAM PLANNING

Minimum Credits: 3

Maximum Credits: 3

Public health program planning is a multi-phase process that involves people with different perspectives and stakes, and a planning model is often

used to establish comprehensive thinking and oversight throughout the process while applying specific skills and techniques at certain phases. This course introduces such planning models and principles and discusses participatory program planning in multiple phases in lectures and class exercises.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Behavioral & Community Hlth Sc (MPH, DPH)

BCHS 2523 - PUBLIC HEALTH PROGRAM PLANNING AND PROPOSAL WRITING

Minimum Credits: 3

Maximum Credits: 3

This course is designed to expose students to critical health program planning, implementation and evaluation tools and strategies in a format that models actual program implementation. It is a required course for BCHS master's students and has been developed in response to requests from students for guidance in developing the skills necessary for the effective execution of public health interventions. This class complements other bchs coursework in that it gives the student the opportunity to apply theories and models learned in other classes. In particular, the socio-ecological theory heavily influences the content of this course. Through discussions, presentations, written assignments, and in-class activities, students will learn resources for, and gain practice in, the stages of program development, including budgets and use of logic models. Students will learn how to present their program proposals in both written and oral formats.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Behavioral & Community Hlth Sc (MPH, DPH, PHD)

BCHS 2524 - OVERVIEW OF HEALTH EQUITY

Minimum Credits: 3

Maximum Credits: 3

Achieving health equity and understanding health disparities involve a critical analysis of historical, political, economic, social, cultural, and environmental conditions that have produced an inequitable health status for vulnerable populations in the United States. Health disparities are an important focus on improving population health and one of healthy people 2020's overarching goal is 'to achieve health equity, eliminate disparities, and improve the health of all groups'. The purpose of this class is to introduce basic issues that underlie health disparities. This course will include an overview of current literature and foster discussions that will examine health disparities, explore social and environmental determinants of those disparities, critically review measurement issues, and determine public health's response to addressing these disparities and achieving health equity. Students should seek to critically reflect on their personal and professional roles in eliminating health disparities and achieving health equity.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BCHS 2525 - INTRODUCTION TO APPLIED RESEARCH

Minimum Credits: 3

Maximum Credits: 3

The goal of the course is to give students a basic understanding of social and behavioral sciences research principles, as well as how these methods are implemented in the field of public health. Relationship of applied research to program evaluation, the link of theory to research, and the translation of research information to applied public health programs and policies will be emphasized. Participatory research will be highlighted. Quantitative and qualitative strategies, research designs, data collection methods, participant selection, and data analysis will be covered.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Behavioral & Community Hlth Sc (MPH, DPH, PHD)

BCHS 2526 - HEALTH EQUITY RESEARCH: METHODS AND INTERVENTIONS

Minimum Credits: 3

Maximum Credits: 3

This course is one of the series of courses required for the certificate in health equity, and will examine the challenges in, and methods for, health inequities research and interventions. It is intended to both complement and expand upon the knowledge gained in other BCHS courses and/or professional exposure by focusing on a wide range of populations that experience health inequities. Inequities that we will explore include (but not be limited to) those evidenced by gender, ethnicity, disability, socioeconomic status, sexual orientation, and rural/urban living. Through discussions, presentations, written assignments, and in-class activities, students will gain exposure to methods and resources for research in health inequities. This will include ethics and research in diverse communities; barriers and facilitators to engaging diverse populations in health research; advisory boards and coalitions; data bases and research designs utilized in equities research, and the application of research findings to program development. Students will work both in interdisciplinary teams and individually to effectively present their work in written and oral presentations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BCHS 2528 - INTEGRATIVE SEMINAR IN HEALTH EQUITY

Minimum Credits: 1

Maximum Credits: 1

This one credit seminar serves as the integrative course for the health equity certificate. Students build upon and apply the knowledge and experiences gained from all of the previous certificate core and elective courses to specific public health problems while considering a health policy framework. The seminar is designed to expose students to the critical analysis of a health policy as it affects health equity, as well as provides an opportunity for students to network with a variety of academic and community leaders that can potentially further their knowledge and practical skills in this area.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

BCHS 2532 - DIMENSIONS OF AGING: CULTURE AND HEALTH

Minimum Credits: 2

Maximum Credits: 2

Provides an overview of the aging experience from a cross cultural and a public health perspective. The ways in which people cope with and adapt to the aging process is the major theme.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: Asian Studies, Global Studies

BCHS 2534 - CLINICAL ASPECTS OF DEMENTIA CARE

Minimum Credits: 2

Maximum Credits: 2

This course is designed as an independent study for students in the public health and aging program. Its focus is on the methods and technology for diagnosis and treatment of Alzheimer's Disease.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BCHS 2551 - SOCIAL NETWORKS & HEALTH

Minimum Credits: 1

Maximum Credits: 1

This course is an introduction to the theory, methods, and procedures of network analysis with emphasis on applications to health and social behavior. The goal of the course is to provide a working knowledge of concepts and methods used to describe and analyze social networks so that professionals and researchers can understand the results and implications of this body of research. The course also provides the training necessary for scholars to conduct network analysis in their own research and practice careers.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

BCHS 2554 - INTRODUCTION TO COMMUNITY HEALTH

Minimum Credits: 3

Maximum Credits: 3

This course uses strengths-based and social ecological approaches to prepare students for practicing public health with communities. Through in-class activities, discussions, community-based experiences and written assignments students will learn appropriate ways to engage communities and assist them in building their own capacity to identify and address health issues. Students will also learn techniques for conducting community health assessments using both primary and secondary data.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Behavioral & Community Hlth Sc (PHD, DPH, MPH)

Course Attributes: Community Element - Building Understanding

BCHS 2558 - HEALTH PROGRAM EVALUATION

Minimum Credits: 3

Maximum Credits: 3

Surveys the evaluation and policy research methods applied to health. Students learn to critically assess the adequacy of evaluations and how to plan and pilot test an evaluation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BCHS 2560 - INTRODUCTION TO POPULATION PROBLEMS

Minimum Credits: 3

Maximum Credits: 3

The impact of population growth, distribution, and change on social, economic, environmental, and health relationships is presented with a focus on the sociopolitical responses to population dynamics.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Attributes: Global Studies

BCHS 2562 - SEMINAR IN FAMILY PLANNING

Minimum Credits: 3

Maximum Credits: 3

Participants explore the history of contraception and the birth control movement. Issues related to contraceptive care and the broader concerns of women's health are discussed.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

BCHS 2563 - COMMUNITY HEALTH ASSESSMENT

Minimum Credits: 3

Maximum Credits: 3

Techniques for assessing and projecting selected community characteristics and population health status from the view point of community health programming. Covers both primary and secondary data such as demographic data, health-care utilization and survey data.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade
Course Attributes: Global Studies

BCHS 2572 - RISK COMMUNICATION

Minimum Credits: 3

Maximum Credits: 3

Course focuses on risk communication within the context of terrorism and natural disasters. The didactic and experiential course will include core principles of risk communication, examine special challenges of risk communication with diverse audiences and media, and prepare students to create risk and crisis communication campaigns.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BCHS 2575 - SEMINAR MATERNAL AND CHILD HEALTH

Minimum Credits: 3

Maximum Credits: 3

Seminar deals with current issues in society affecting the health of children and their families. For example, problems of adolescent pregnancy, child abuse and neglect, emotional abuse and sexual abuse; prevailing attitudes and responses; etiology and risk factors; and multidisciplinary preventive strategies.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

BCHS 2579 - INTRODUCTION TO PUBLIC HEALTH EMERGENCY PREPAREDNESS

Minimum Credits: 3

Maximum Credits: 3

Introduction to role of public health professionals in community emergency planning and response to all types of disasters. Covers theory and practice of incident command system, role of local, state and federal agencies, surveillance and information systems, risk communications, training and evaluation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BCHS 2592 - INTEGRATIVE SEMINAR PUBLIC HEALTH SOCIAL WORK

Minimum Credits: 1

Maximum Credits: 1

Provides the social worker an opportunity to integrate previous course content into a framework relevant to the practice of public health social work.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

BCHS 2598 - SOCIAL INEQUALITIES IN HEALTH

Minimum Credits: 3

Maximum Credits: 3

This course critically evaluates social science and epidemiological theory and research on social inequalities in health. A consistently important finding is the positive gradient between socioeconomic position and health. Is this gradient socially patterned? This question is examined by drawing on research from U.S., Other industrialized countries, and the third world. This course devotes special attention to conceptual and measurement issues, the social context of health, hierarchical linear modeling or multilevel analysis, and ecological and life course perspectives.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: BIOS 2011 or EPIDEM 2110

BCHS 2599 - PUBLIC HEALTH APPROACHES TO WOMEN'S HEALTH

Minimum Credits: 3

Maximum Credits: 3

Public health problems affecting women, i.e., Alcoholism, smoking, occupational health, reproductive health, aging and cancer, as well as health and social problems relating primarily to women are discussed. Etiology of health problems, prevention and treatment, high-risk groups, and controversies related to care are covered.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BCHS 2600 - HARM REDUCTION APPROACHES IN HEALTH AND PUBLIC HEALTH SETTINGS

Minimum Credits: 1.5

Maximum Credits: 1.5

The aims of this seven week course are to introduce students to harm reduction (HR) principles as a conceptual approach to care rather than simply as a set of strategies, like syringe exchange, and to challenge them to consider how HR-informed approaches to care may improve participant and provider outcomes. The approach to care builds on lessons learned from community and provider settings that have demonstrated success in engaging and caring for marginalized populations including those who use substances. However, this course extends the conversation about harm reduction to aspects of care that can promote health improvement among all patient and client populations, not just those who use drugs. Concepts that will be discussed include universal harm reduction and herd harm reduction. The course will incorporate a number of speakers who will address the application of HR in specific settings.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BCHS 2608 - INTRODUCTION TO COMMUNITY BASED PARTICIPATORY RESEARCH

Minimum Credits: 1

Maximum Credits: 1

This course is organized around themes central to the conceptualization and implementation of community-based participatory research (CBPR). The goal of this course is to familiarize students with CBPR. Students will become conversant in seminal CBPR literature. Discussion, interactive learning exercises, and examples of current research will be used to provide an understanding of CBPR and the associated strengths and limitations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Community Element - Building Understanding, Community Element -General Community Impact

BCHS 2609 - TRANSLATING RESEARCH FOR POLICY AND PRACTICE

Minimum Credits: 1

Maximum Credits: 1

This course provides an introduction to concepts and skills in knowledge translation (a coordinated, collaborative approach to ensure that research findings are utilized by key stakeholders) and to the role of research in changing policy and practice at local, regional, and national levels. This module will build on concepts in community-partnered research introduced in module a of this three-part sequence in community based participatory research. This skills-based module will introduce learners to theoretical concepts in knowledge translation (KT), dissemination and implementation science, and apply these concepts to practical exercises to translate research findings for relevance to other key stakeholders, including community partners, program developers, and policy makers. One session will be devoted specifically to skills building in legislative and media advocacy. The goal of this course is to familiarize learners with the critically important steps involved in translating research findings for relevance to stakeholders beyond academia. Discussion, interactive learning exercises, and examples of research dissemination and implementation science will be used to provide a foundation in kt as an aspect of community-partnered research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Community Element - Building Understanding, Community Element -General Community Impact

BCHS 2610 - CONCEPT MAPPING: A PARTICIPATORY RESEARCH METHOD

Minimum Credits: 1

Maximum Credits: 1

This course provides hand-on training in the participatory research method known as concept mapping (cm). Cm gives community members and other stakeholders a unique chance to have their own words communicate ideas and concepts. Research participants contribute directly in the processing of this information as it directly relates to their community and intervention needs. The goal of the course is to familiarize students with example applications of the research method and to provide training related to concept mapping data collection and analysis. Discussion, interactive learning exercises, and examples of current research will be used to provide an understanding of cm and the associated strengths and limitations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Community Element - Building Understanding, Community Element -General Community Impact

BCHS 2612 - PROJECT MANAGEMENT IN PUBLIC HEALTH

Minimum Credits: 2

Maximum Credits: 2

The purpose of the course is to prepare students to effectively manage a range of public health projects. The course is lecture/discussion/laboratory/application based. Project management software is used including Microsoft Project and Visio. Industry standard body of knowledge is the foundation of the course further illustrated with case studies and examples. There are no pre-requisite courses or software skills.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BCHS 2990 - SOCIAL DYNAMICS IN PUBLIC HEALTH

Minimum Credits: 1

Maximum Credits: 1

This course is an introduction to historic and current concepts about complex, dynamic systems in public health research and practice. We will discuss the rationale for adopting systems thinking - an approach to analyzing the impact of systems within their social, spatial, and temporal context - in behavioral and community health research and practice and illustrate how this approach is critical for the development of public health policy. The course will include didactic sessions, guest lectures, hands-on engagement with tools that allow us to represent dynamic social systems, as well as seminar-style discussions of studies that examine dynamic social systems in public health. (Note: BCHS 2520 is recommended.)

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Graduate Sch of Public Health

BCHS 2991 - MULTILEVEL ANALYSIS IN PUBLIC HEALTH

Minimum Credits: 1

Maximum Credits: 1

Multilevel analysis is an essential statistical tool in public health that can simultaneously investigate the effects of factors at multiple social ecological levels on individual-level outcomes. In this course, students will learn to identify scientific problems that necessitate the use of multilevel statistical modeling techniques and understand the essential theoretical underpinnings of multilevel analysis. Students will conduct multilevel statistical modeling procedures using Stata and interpret the statistical and practical meaning of fixed and random effect coefficients from the output of these models. Special emphasis will be placed on the strengths and limitations of multilevel analysis in investigating social and group-level determinants of health. BIOST 2041, PSYED 2018, or permission to enroll from the instructor required. Knowledge of linear regression, logistics regression or ANOVA strongly preferred.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BCHS 2992 - SYSTEMS THEORIES AND APPROACHES

Minimum Credits: 1

Maximum Credits: 1

Systems science approaches were developed to understand connections between a system's structure and its behavior over time. The use of such approaches within public health research and practice has grown tremendously over the past decade. Identifying and understanding the dynamic relationships between individuals and their social and physical environments can help us identify potential leverage points for intervention. This course provides an introduction to systems thinking and models in public health, explores the importance of associated theories and underscores the utility of systems science approaches within public health research and practice. We will highlight current systems science public health research and encourage students to think critically about the utility of systems theories and approaches within public health.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BCHS 2995 - GLOBAL PERSPECTIVES ON WOMEN'S HEALTH: EMPOWERMENT, GENDER EQUALITY, AND HEALTH

Minimum Credits: 2

Maximum Credits: 2

Limited educational opportunities, financial dependence, and gender bias and discrimination are intersecting factors that contribute to poor health status and well-being among women around the world. This course examines the relationship between such macro-level factors and women's health and explores promising interventions and policy changes aimed at promoting women's empowerment, gender equality, and improved and sustained health outcomes for women. Specific attention is given to examining the connection between women's health and educational and legal initiatives and microfinance programming. Illustrative case examples are drawn from instructor global experience conducted on related research in Thailand, India, and Peru and relevant readings. Key health issues discussed will include gender-based violence, reproductive and sexual health, and pregnancy outcomes. To emphasize key points, guest speakers from diverse fields, including women's studies, ethics, law, and economics will be invited to provide additional insights regarding the complexities associated with the topic and with effective and innovative intervention development.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

BCHS 2999 - MODELING COLLECTIVE BEHAVIOR

Minimum Credits: 3

Maximum Credits: 3

Students will learn how to create dynamic models of health behavior in social context. We will study social ecological models of individual and collective action emphasizing the collective properties such as cooperation and policy resistance that often emerge. Students will learn how to: apply these models to plan and evaluate health interventions and policy; use systems thinking to model health problems; use simple software to create agent models; interpret results and describe public health implications.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BCHS 3002 - HEALTH SURVEY METHODS

Minimum Credits: 3

Maximum Credits: 3

Introduces techniques for the collection of health data through survey methods.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BCHS 3003 - SEMINAR IN ADVANCED EVALUATION TECHNIQUES

Minimum Credits: 3

Maximum Credits: 3

Evaluates theory and methodology with emphasis upon human service organizations.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

BCHS 3004 - INTEGRATIVE RESEARCH SEMINAR: GRANT WRITING

Minimum Credits: 1

Maximum Credits: 1

Every graduate of a doctoral program needs to know how to write a successful grant application to fund their work. Whether you are a senior manager leading a public health program in the public or non-profit sectors or you are a researcher working in an academic setting, you will need funding to support your work! We begin this doctoral seminar by asking the question, "how do you write a grant proposal that will attract the attention of a funding agency and convince them that your application is significant and should be a priority for funding?" building on the ideas articulated in BCHS doctoral students' preliminary examination, we will focus on writing the specific aims and significance sections for an NIH grant proposal. The students' written work will be shared with and critiqued by other students and faculty participating in the seminar. Finally, we will review and critique examples of successful and unsuccessful grant applications "both program and research grants (especially research grants that the students will most likely be writing at the beginning of their academic careers" namely, ro-3s or r-21s).

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

Course Attributes: Global Studies

BCHS 3006 - INTEGRATIVE RESEARCH SEMINAR: WRITING FOR PUBLICATION

Minimum Credits: 1

Maximum Credits: 1

The Integrative Research Seminar: Writing for Publication focuses on the process of developing a manuscript for publication in a peer-reviewed journal. All doctoral students must develop the skills to enable them to write and publish the results of their work. The goal of this seminar is to provide students with the requisite knowledge and skills to develop a manuscript for submission to an appropriate journal for publication. As part of this process students will also learn about the peer review process and how reviewers rate manuscripts submitted for publication. It is expected that students in this seminar will work closely with their academic mentor(s) on the development of manuscripts throughout their doctoral program. And, this seminar will assist students in fulfilling the requirement to submit at least one first-authored manuscript-- ideally based on their dissertation research, before they graduate. The seminar content will be delivered via a series of faculty presentations and discussions. There are no prerequisites for this seminar.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Behavioral & Community Hlth Sc (PhD or DPH)

BCHS 3007 - ETHNOGRAPHIC AND QUALITATIVE METHODS

Minimum Credits: 3

Maximum Credits: 3

Students will be introduced to the basic principles of ethnographic research and their application to the evaluation of human service and health care programs. They will become familiar with research design in ethnographic studies; the process of fieldwork in urban settings; the methodology of participant observation and ethnographic interviewing; recording ethnographic data; ethnographic writing; and ethical questions surrounding ethnographic research.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

BCHS 3010 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 15
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

BCHS 3015 - COMMUNITY MAPPING AND INTRODUCTORY SPATIAL ANALYSIS

Minimum Credits: 3
Maximum Credits: 3

This course provides an introduction to the use of spatial data in public health. The two main goals are (1) to familiarize students with the use of geographic data in public health research and practice; and (2) to introduce basic spatial analytic skills applied to geographic and spatial data. Students will be taught how to use geographic information systems (GIS) to inform both community practice and research. They will learn how to create, manage, and analyze geographic data and gain hands-on experience applying these techniques to research questions. No previous knowledge of mapping or GIS is assumed. One lecture and one lab per week.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Global Studies

BCHS 3030 - MEASUREMENT IN THE SOCIAL AND BEHAVIORAL SCIENCES

Minimum Credits: 2
Maximum Credits: 2

The goal of this two-credit course is to provide you with fundamental skills to identify, use and create scales and indices for research and evaluation. The course will be primarily based on classical measurement theory, yet we will discuss item response theory as well. We will also cover good measurement processes, including establishing and evaluating validity and reliability. We will address communication of measurement principles and applications to lay and scientific audiences. Throughout the course, materials will highlight the influence that culture and socio-demographics have on measurement tools and their validity.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BCHS 3503 - PREVENTION SCIENCE: TRANSLATING KNOWLEDGE TO PRACTICE

Minimum Credits: 3
Maximum Credits: 3

The purpose of this course is to provide a solid grounding in basic concepts, theories, practical approaches and methods associated with prevention (defined here as both problem prevention and health promotion). The course will focus on behavioral and psycho-social areas including substance abuse, mental health, victimization, and sexually transmitted infections, including HIV.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Community Element - Building Understanding, Community Element -General Community Impact

BCHS 3504 - DOCTORAL SEMINAR ON HEALTH COMMUNICATIONS

Minimum Credits: 3
Maximum Credits: 3

This doctoral seminar provides an opportunity for in depth exploration of health communication topics with a particular emphasis on critical analysis of past and current health communication techniques and the application of current best practices in health communication. This class is required for DRPH students in BCHS and will allow students to explore health communication issues within their individual fields of interest.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Behavioral & Community Hlth Sc (PHD or DPH)

BCHS 3508 - ADVANCED METHODS IN COMMUNITY-BASED PARTICIPATORY RESEARCH AND PRACTICE IN PUBLIC HEALTH

Minimum Credits: 3

Maximum Credits: 3

This course is organized around themes central to the conceptualization and implementation of community-based participatory research and practice (CBPRP). The goal of this advanced course is to familiarize students with methods for conducting community-based participatory research and practice. Students will become conversant in seminal community-based participatory research and practice literature. Discussion, interactive learning exercises, and examples of current research will be used to provide an advanced understanding of the appropriate methods for studying complex community issues. In addition, the course will discuss strengths and limitations related to community-based participatory research and practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: BCHS 2559

BCHS 3555 - DOCTORAL SEMINAR IN BEHAVIORAL AND COMMUNITY HEALTH SCIENCES THEORIES AND MODELS

Minimum Credits: 3

Maximum Credits: 3

This course is a requirement for students in the doctoral program in the department of behavioral and community health sciences. The seminar is designed to stimulate critical thinking about specific public health issues from within the framework of various behavioral and community theories and models. The purpose of this doctoral seminar is to critically apply and evaluate specific conceptual models and theoretical frameworks to particular significant public health problems or issues. This requires that seminar participants acquire close working familiarity with various conceptual tools and substantive issues. One goal underlying the selection of the substantive issues has been to select those which challenge, provoke, confront, excite, and stimulate seminar participants about economic and political controversies in contemporary healthcare and public health. Similarly, the selection of issues and reading materials dealing with those issues, challenge taken-for granted assumptions with respect to health and illness, public health and medical care as well as health policies and health politics. A final objective of the seminar is to challenge participants to reassess their conception of the field of public health and their place in it. Is it a profession? A discipline? An applied social science? What are the implications/consequences of each?

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Behavioral & Community Hlth Sc (PHD or DPH)

BCHS 3703 - EXECUTIVE MANAGEMENT PRACTICUM

Minimum Credits: 1

Maximum Credits: 3

The purpose of the executive management practicum is to provide a structure for students in the DRPH program to gain experience in the application of the core set of competencies in high level practice settings. The association of schools of public health has identified seven competencies that students are expected to master during their doctoral study. Four of these are the focus of the practicum: advocacy, communication, leadership, and management. Practicum sites will be chosen based on the mission of the organization and the opportunity for the student to be able to exercise and refine their skills in the areas of management, leadership, communication and advocacy.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad SN Basis

BCHS 3707 - APPLIED MULTIPLE REGRESSION ANALYSIS AND CAUSAL MODELING FOR THE BEHAVIORAL AND COMMUNITY HEALTH SCI

Minimum Credits: 3

Maximum Credits: 3

This course was designed to teach advanced graduate students how to use applied multivariate regression analysis to design, propose, and test complex research questions using a causal modeling framework. The course will include a brief review of simple linear regression, and quickly move to advanced multiple regression analysis topics including multiple predictor regression, stepwise regression approaches, the analysis of longitudinal

data with regression, and examining mediators, moderators and confounding variables and their relationship to the independent and dependent variables of interest. The course will also include several other brief seminars on regression diagnostics, dichotomous predictors and outcome variables, power analysis, and an introduction to other multivariate analysis frameworks including structural equation modeling and longitudinal growth modeling. Students will be required to bring their own multivariate data set and research questions to use for class assignments, preferably data directly related to their dissertation project.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Behavioral & Community Hlth Sc (DPH or PhD)

BCHS 3888 - PREPARATION FOR COMPREHENSIVE EXAMINATION

Minimum Credits: 1

Maximum Credits: 3

This course is designed to be an independent study for BCHS doctoral students in order for them to be able to read and prepare for their comprehensive exam. The purpose of the BCHS comprehensive examination is to "to assess the student's mastery of the general field of doctoral study, the student's acquisition of both depth and breadth in the area of specialization within the general field, and the ability to use the research methods of the discipline".

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

Bioengineering

BIOENG 2001 - MATHEMATICAL METHODS IN BIOENGINEERING 1

Minimum Credits: 3

Maximum Credits: 3

All you don't want to miss in mathematics will be covered in this first course of bioengineering graduate students. Solving systems of linear equations and ordinary differential equations will be covered with engineering examples and assignments. Finite difference methods for boundary value problems, Laplace equation, Poisson equation, parabolic partial differential equations, and hyperbolic differential equations will be discussed along with project assignments. Fourier series will be introduced as well.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2005 - RADIOFREQUENCY MEDICAL DEVICES AND APPLICATIONS OF ELECTROMAGNETICS IN MEDICINE

Minimum Credits: 3

Maximum Credits: 3

The course will cover topics related to applied electromagnetics in medicine. Topics such as Maxwell equations, wave equations, transmission lines, electromagnetic theorems, introduction to antennas, and introduction to computational electromagnetics will be presented. The class will include analyses of several RF devices used in medical applications such as MRI, biological sensors, RF ablation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Graduate School of Engineering

BIOENG 2016 - FUNDAMENTAL PRINCIPLES OF BIODEGRADABLE

Minimum Credits: 3

Maximum Credits: 3

Biodegradable metals have emerged as a new class of materials with significant potential for myriad biological applications, in particular, the

craniofacial, orthopedics and cardiovascular areas. The latter has already witnessed clinical trials with few patients already being implanted with a biodegradable metallic stent. This course is designed to introduce the principles and various fundamental concepts of this novel class of metallic alloys. These include fundamental principles of metal alloy physics and theory, important concepts of phase diagrams, physical metallurgy concepts, metallic glass theory, processing fundamentals, biocompatibility, and toxicity issues. The effect of microstructure on biocompatibility and corrosion will also be discussed. The course objective is to introduce the student to this new family of bio-functional metals and their biodegradable properties. In doing so, the student will be familiar with these materials and their useful applications. The students are expected to have had courses in thermodynamics and physiology. Introduction to materials science and engineering would be preferred but is not a prerequisite.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Graduate School of Engineering

BIOENG 2023 - BIOENGINEERING SEMINAR SERIES

Minimum Credits: 1

Maximum Credits: 1

Selected, bioengineering-related topics are presented in a one hour lecture format by members of the bioengineering community of both the university of Pittsburgh and other institutions.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2024 - BIOENGINEERING SEM FOR PROF MS

Minimum Credits: 0

Maximum Credits: 0

One hour lecture format by members of the bioengineering community of both the university of Pittsburgh and other institutions.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

BIOENG 2040 - TRANSPORT PHENOMENA FOR BIOMEDICAL AND CHEMICAL ENGINEERS

Minimum Credits: 4

Maximum Credits: 4

Biomedical and chemical engineering graduate students require a similar comprehensive understanding of the underlying principles of heat transfer, chemical species transfer, and momentum transfer or fluid mechanics. This graduate course provides a unified treatment to heat, mass, and momentum transfer at the graduate level. The first part of the course covers the constitutive relations that describe the diffusive flux of material properties, including thermal energy, chemical species concentration, and momentum. Conservation principles and boundary conditions are covered for these material properties and numerous example paradigm problems of steady-state unidirectional (1-D) transport in biomedical and chemical engineering applications are reviewed. The second part of the course covers more advanced concepts including non-Newtonian rheology, unsteady state and 2-D transport, convective transport processes, turbulence, and creeping flow. The focus throughout is on extensive problem-solving and computer simulation using Comsol multi-physics using both biomedical and chemical engineering examples.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BIOENG 2045 - COMPUTATIONAL CASE STUDIES IN BIOMEDICAL ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

Bioengineering 2045 computational case studies in Biomedical Engineering this is an interdisciplinary course that will combine: basic sciences such as electromagnetics and thermodynamics applied sciences such as numerical methods and simulations biomedical research and applications such as magnetic resonance imaging, hypothermia, heat transfer in biological bodies, and cardiac action potential, and mathematical concepts such as optimizations, linear and nonlinear equations. This course will be based on solving computational biomedical engineering problems using

simulations. Some of the numerical topics will include: numerical solutions of matrices, finite element and finite-difference methods. These topics will be described with emphasis on their use in solving these problems. The course will cover setting up the mathematical description of the models and solving these problems using advanced computer codes and the supercomputer center at Pittsburgh. There will be 1d, 2d, and 3d modeling projects.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2055 - BIOMEDICAL FLUIDS MECHANICS

Minimum Credits: 3

Maximum Credits: 3

Biomedical Fluid Mechanics is an upper-level undergraduate / graduate course designed to study how momentum (i.e. fluid flow) principles arise and are applied in the biological, physiological, and medical sciences. The course is not exhaustive but focuses instead on several specific systems in which 1) the application of fluid mechanics enhances understanding of the underlying biomedical process; and/or 2) the biomedical process itself teaches an important and sometimes novel fluid mechanical principal. The principal means of analyzing biofluid mechanics in this course will be through the application of differential mass and momentum balances. These principles will be applied only after the student has gained a qualitative understanding of the biomedical process and they will take the student to a quantitative understanding. The course will primarily study principles of fluid mechanics in the cardiovascular system, respiratory system, and in several medical devices in which fluid mechanics plays an important role in relevant design principles. Students will have the opportunity to select topics relative to fluid mechanics that may be relevant to their research projects.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BIOENG 2061 - ERGONOMICS & OCCUPATIONAL BIOMECHANICS

Minimum Credits: 3

Maximum Credits: 3

Fundamentals of ergonomics as applied to the industrial workplace. Specific topics include: occupational biomechanics, anthropometry, work physiology, cumulative trauma disorders and slip and fall prevention applied to the organization and physical design of the workstation, effects of hand tool design on workers, and analysis of manual material handling jobs.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2067 - MUSCULOSKELETAL BIOMECHANICS

Minimum Credits: 3

Maximum Credits: 3

Course work will include the structure, function, and mechanics of the musculoskeletal system. Specific topics will include the kinematics and control of human movement and the mechanics of the musculoskeletal connective tissues, such as ligament, tendon, bone, cartilage, and muscle. Special emphasis will be placed on the relationship between function and material properties of these tissues. A research paper will be required as a term project.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Bioengineering(PHD, MBE)

BIOENG 2095 - GRADUATE PROJECTS

Minimum Credits: 1

Maximum Credits: 6

Individual study program under guidance of faculty member.

Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

BIOENG 2150 - MEDICAL PRODUCT IDEATION

Minimum Credits: 3

Maximum Credits: 3

A didactic class that explores the principles and use of "ethnography" as a tool to observe and document clinical activity in order to draft a clear statement of a clinical problem in need of solution and methods for concept generation to identify potential solutions. Students will be able to describe and use ethnographical techniques in identifying workplace problems and be able to describe and use concept generation methods to develop potential solutions. Topics covered: ethnography in the workplace; group brainstorming; brain-writing; affinitization; morphological analysis; basic human factors design.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2151 - MEDICAL PRODUCT DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

A didactic course that uses principles of system engineering, the stage-gate process for medical product development and engineering and business analysis principles to evaluate the commercial potential proposed medical devices to further develop feasible solutions to a clinical problem identified in BIOENG 2150. Students will demonstrate use of systems engineering techniques to prioritize a set of feasible device and/or system solutions and ability to use intellectual property (IP) tools to determine suitability for further development. Students will demonstrate use of course principles in development of a commercialization plan for a proposed medical product. Design controls required by FDA and international bodies; systems engineering methodologies; intellectual property (IP) and IP search tools; brief market analysis; size by region, growth, competition, barriers to entry, sustainable advantage; reimbursement issues for proposed medical device/system; basic financial analysis ' students will construct spreadsheets typically presented to senior business management. This will include estimates of costs, margins, break-even analysis, NPV, hurdle rates, ROI, IRR; codes, standards, and regulatory processes (FDA, IEC & ISO, UL, ministry of health (Japan), NRC, BRH, notified bodies, obtaining broad indications for use); safety, reliability, product liability considerations, manufacturability considerations (DFM ' design for manufacture, workflows)

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: BIOENG 2150; PROG: Swanson School of Engineering

BIOENG 2154 - WORKSHOP IN DESIGN FOR MANUFACTURABILITY

Minimum Credits: 1

Maximum Credits: 1

Design for Manufacturability (DFM) provides a systematic methodology that can be used to analyze product design for improvements in assembly and manufacturing. Students will use DFM to redesign current products for changes in manufacture that lead to reduction in production cost and improved operability/ customer satisfaction. Students will employ modern software tools that accurately model parts for specific manufacturing operations, model part costs, simplify products, find specific avenues to reduce manufacturing and assembly costs, benchmark products, and quantify improvements. Course Objectives : Students will gain hands-on experience incorporating the DFM concepts in a project. Upon completing the course, the students should be able to describe the utility of DFM in product development and early manufacturing design, be able to quantitatively evaluate the impact of design choices on manufacturing cost, and be able to use modern quality control concepts and approaches.

Academic Career: Graduate

Course Component: Workshop

Grade Component: Grad SN Basis

BIOENG 2162 - MEDICAL PRODUCT PROTOTYPING 3

Minimum Credits: 2

Maximum Credits: 2

Student teams, under the mentorship of participating PMIC faculty (SSOE, SHS, business, law), will use the resources of the SWANSON innovation center to create a prototype of the most promising device/system from BIOENG 2161 for preclinical and clinical evaluation. Student teams will produce a medical device/product prototype and complete documentation set suitable for technology transfer. Can take up to 3 times.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2165 - MEDICAL PRODUCT ENTREPRENEURSHIP

Minimum Credits: 3

Maximum Credits: 3

Medical product ideation, prototyping, and development are cornerstones for identifying unmet clinical needs and navigating the complexities of the development process. But how does one translate new medical products into the marketplace? Entrepreneurship is a discipline with established tools and methods that must be properly harnessed in order to translate medical products into a startup or an incumbent company (big or small.) After the completion of this course students will be able to understand and differentiate between 'right sized' entrepreneurial methodologies for both startups and existing companies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2166 - MANAGING MEDICAL PRODUCT RESEARCH AND DEVELOPMENT

Minimum Credits: 4

Maximum Credits: 4

This course will provide the student a theoretical and practical knowledge of professional project management for medical product development in industry. Through lectures, workshops, and industry seminars, students will acquire skills in the following areas: 'project engineering, project management, and innovation management. 'Managing product portfolios. Strategic planning and product planning. 'Creating and managing effective project teams. 'Stage gate process and lean methodology. 'Concurrent engineering. 'Project management tools, including: 'systems engineering 'work breakdown structures' budgeting' resource allocation and scheduling 'monitoring and control of product development students will be introduced to project management tools developed by PDMA (product development and management association) and the PMI (project management institute). The course will be taught by industry professionals with long experience in the medical products industry.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BIOENG 2170 - CLINICAL BIOENGINEERING

Minimum Credits: 3

Maximum Credits: 3

This graduate level course focuses on the early stages of the innovation process; strategic analysis of complex clinical problem solving through the needs finding, concept generation and refinement. Students, under the mentorship of participating CMI faculty (SSOE, SHS, business, law), interview and observe clinical personnel at the University of Pittsburgh school of medicine performing clinical work in order to rigorously define and document clinical needs in the environment of use. Using principles articulated in BIOENG 2150 (medical product ideation), the students produce a document that clearly defines and communicates one or more clinical problems and prioritized feasible solution paths.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: BIOENG 2150; PROG: Swanson School of Engineering

BIOENG 2171 - MEDICAL PRODUCT PROTOTYPING

Minimum Credits: 3

Maximum Credits: 3

This graduate level course focuses on the later stages of the innovation process; prototyping, market analysis, strategic planning, intellectual property protection, and business planning. Students, under the mentorship of participating CMI faculty (SSOE, SHS, business, law), will apply the principles and techniques from BIOENG 2151 (medical product development) and prioritize clinical needs identified in BIOENG 2170 (clinical bioengineering) and, using the resources of the Swanson Innovation Center, create a prototype for pre-clinical and clinical evaluation. Students will use basic principles of intellectual property (IP) for engineers and publicly available search tools to determine patentability, freedom to operate, and patent strength. Students will then produce a medical device/product prototype and complete documentation set suitable for technology transfer.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: BIOENG 2170; PROG: Swanson School of Engineering

BIOENG 2175 - HUMAN FACTORS ENGINEERING IN MEDICAL DEVICES

Minimum Credits: 3

Maximum Credits: 3

Human Factors Engineering (HFE) is the application of knowledge about human behavior, abilities and limitations to the design and evaluation of products and systems. HFE draws upon a number of disciplines, such as biomechanics, anthropometry, design, physiology and psychology to improve performance, reduce human error and enhance safety. The application of HFE to medical devices is critical to their effective and safe use. This is recognized by industry and regulatory agencies. In fact, all medical devices that are used by patients or clinicians are required to have a human factors evaluation in order to be approved by the Food and Drug Administration (FDA). This course focuses on the application of HFE in design, development and evaluation of medical devices. The educational goals are: a) to learn the fundamentals of HFE relevant to medical devices, and b) to understand the HFE process in medical device design and evaluation according to the Food and Drug Administration (FDA). The course will include didactics and hands-on experience.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BIOENG 2186 - NEURAL ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

Neural engineering is an emerging discipline that seeks first, to understand brain function using computational and engineering principles; second, to improve health through nervous system interventions; and third, to discover principles of biological information processing that can improve computing technologies. Students will learn the principles of neuroscience and the computational tools needed for original research in neural engineering. They will develop the ability to critically evaluate scientific evidence. They will design novel experiments and approaches in neuroscience and neural engineering.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2230 - CARDIO ORGAN REPLACEMENT

Minimum Credits: 3

Maximum Credits: 3

A one semester course in which three organ replacement systems will be discussed - vascular prostheses, artificial hearts/ventricular assist devices, and extracorporeal/ intravenous oxygenators.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2241 - SOCTL, POL & ETHCL ISS BIOTEC 1

Minimum Credits: 3

Maximum Credits: 3

This course teaches students the conceptual tools needed to identify, articulate and resolve practical, everyday, ethical dilemmas inherent in the diverse field of bioengineering. A learning environment where practical ethics can best be understood is fostered. This includes the use of case-based instruction, small group discussion and out of class practical ethics activities including a department- sponsored "field trip" to observe an FDA Panel Meeting in DC. Guest speakers discuss current cases and issues in bioethics. These speakers include: BIOENG post docs as well as faculty with experience in industry, academic research, applied ethics and the FDA. The capstone project requires students, working in groups, to author an ethics case study based on their research and analyze it using methods taught in the course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2242 - SOCTL, POL & ETHCL ISS BIOTEC 2

Minimum Credits: 3

Maximum Credits: 3

This second semester course continues the topics as introduced in biotechnology 1.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2250 - CARDIO CLINICAL INTERNSHIPS

Minimum Credits: 1

Maximum Credits: 6

Professional application training in cardiovascular medicine and surgery. Students will spend three months each in bioengineering practice training programs within cardiology, cardiothoracic surgery, and vascular surgery.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2265 - BIOMEDICAL FLUID MECHANICS

Minimum Credits: 3

Maximum Credits: 3

Biomedical Fluid Mechanics is an upper-level undergraduate / graduate course designed to study how momentum (i.e. fluid flow) principles arise and are applied in the biological, physiological, and medical sciences. The course is not exhaustive but focuses instead on several specific systems in which 1) the application of fluid mechanics enhances understanding of the underlying biomedical process; and/or 2) the biomedical process itself teaches an important and sometimes novel fluid mechanical principal. The principal means of analyzing biofluid mechanics in this course will be through the application of differential mass and momentum balances. These principles will be applied only after the student has gained a qualitative understanding of the biomedical process and they will take the student to a quantitative understanding. The course will primarily study principles of fluid mechanics in the cardiovascular system, respiratory system, and in several medical devices in which fluid mechanics plays an important role in relevant design principles. Students will have the opportunity to select topics relative to fluid mechanics that may be relevant to their research projects.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BIOENG 2330 - BIOMEDICAL IMAGING

Minimum Credits: 3

Maximum Credits: 3

Biomedical imaging introduces the major imaging modalities (x-ray, cat-scan, MRI, ultrasound) used in clinical medicine and biomedical research, as

well as the fundamentals of images, from a signals and systems standpoint.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2333 - FUNDAMENTALS OF FINITE ELEMENT METHODS

Minimum Credits: 3

Maximum Credits: 3

Introduction to the finite element method and its application to various problems of elastic elements and structures. Both physical and variational approaches are used.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2340 - INTRODUCTION TO MEDICAL IMAGING AND IMAGE ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

Introduction to Medical Imaging and Image Analysis presents the physics of image formation as well as methods for tomographic image reconstruction for major medical imaging modalities, including X-ray Computed Tomography (CT) and Magnetic Resonance Imaging (MRI). Also introduced are fundamentals of digital image processing, with particular emphasis on medical applications, including basic techniques to enhance image quality, image de-noising, methods for extracting, classifying, and tracking features of and objects in images, etc. Students will learn how to implement these techniques in MATLAB (The MathWorks Inc., Natick, MA) to solve practical image processing problems. MATLAB exercises will demonstrate to students how filtering operations applied in the image domain or the Fourier domain affect medical images. In addition to these fundamentals, more advanced algorithmic approaches for image segmentation and image as well as point-cloud registration techniques will also be reviewed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BIOENG 2351 - COMPUTER APPLICATIONS IN BIOENGINEERING

Minimum Credits: 3

Maximum Credits: 3

This course is designed to teach you c++ programming in the context of real-world tasks that you will likely encounter in future academic or industrial work. In these applications, project management, working with different compilers and operating systems, and learning to effectively use source code that was written by other developers is no less important than programming theory. In this course we will cover the fundamentals of c++, object oriented design, programming with graphical user interfaces, and a basic 3d graphics. By the end of this class, you will know how to effectively use c++ to solve real-world computing problems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Bioengineering (MBE, PHD)

BIOENG 2370 - COMPUTATIONAL SIMULATION IN MEDICAL DEVICE DESIGN

Minimum Credits: 3

Maximum Credits: 3

Computational simulation is increasingly utilized as a method to assess the performance of medical devices. The course provides students with a hands on learning experience on how to use computational simulation in the modeling and design of medical devices. The course details the important steps in computational simulations from preprocessing to solution to post-processing and data presentation. Commercially available software programs are introduced and used to simulate a variety of physical phenomena (solid, fluid, transport) pertinent to medical device design. Upon completing the course, the student should be able to simulate the solid, fluid, and transport phenomena that are useful in medical device design.

Particular attention will be placed on avoiding common mistakes in the preprocessing and interpretation of computational results. Topics covered: geometry creation; discretization; appropriate assignment of material properties; solver management; error mitigation and debugging; post-processing and data presentation; data interpretation; introduction to design optimization.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BIOENG 2383 - BIOMEDICAL OPTICAL MICROSCOPY

Minimum Credits: 3

Maximum Credits: 3

This course is designed to teach the basic principles and applications of optical microscopy and imaging techniques commonly used in biomedical research. The enormous growth of optical microscopy has become an essential tool to investigate biological processes, diagnose diseases and quantitatively measure the biological system at unprecedented cellular and molecular level. It has become increasingly important for biomedical researchers to learn the proper use of optical microscopy, understand the advantages and limitations of each type of optical microscopy and how to apply them for specific biomedical applications. In this course, we will cover the physical principles involved in basic light, basic and advanced optical microscopy techniques. Strong emphasis will be given to biomedical applications for each type of optical microscopy. At the end of the course, a student will have a thorough understanding of basic principles of optical imaging and optical microscopy, learn how to apply optical microscopy to address biological questions and perform basic quantitative image analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2385 - ENGINEERING MEDICAL DEVICES FOR QUANTITATIVE IMAGE ANALYSIS AND VISUALIZATION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BIOENG 2411 - MATHEMATICAL METHODS IN CHEMICAL ENGINEERING 1

Minimum Credits: 3

Maximum Credits: 3

Application of mathematical techniques to chemical engineering problems requiring the solution of ordinary differential equations and partial differential equations. Series solutions, transform solutions, vector calculus, and quadrature are covered.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2505 - MULTI MODAL BIOMEDICAL IMAGING TECHNOLOGIES: FUNCTIONAL, MOLECULAR AND HYBRID IMAGING TECHNIQUES

Minimum Credits: 3

Maximum Credits: 3

In this course some newly evolving multi-modal imaging techniques and analysis methods in biomedical applications will be introduced. The course will briefly cover the fundamental physics, core signal processing, image reconstruction of a variety of current standalone imaging modalities such as X-Ray, computer tomography (CT), magnetic resonance imaging (MRI), nuclear imaging (PET, SPECT), optical imaging (fluorescence, optical diffuse tomography, bioluminescence), and ultrasound. Subsequently, the concept, fundamental physics, and image analysis of some exemplary multi-modal imaging techniques and systems will be introduced. Their applications in Biomedicine in different scales from organ to cellular and molecular level, and from structural to functional imaging will be discussed. The course will also briefly address the issues related to image-based diagnosis, intervention and therapy.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

BIOENG 2515 - CARDIO SYSTEM DYNAMICS & MODELING

Minimum Credits: 3

Maximum Credits: 3

The mechanical behavior of the cardiovascular system will be explored in a quantitative manner. The goal is to understand the behavior of each component in isolation and the interactions among various components. Mathematical modeling will be used with an emphasis on model development, validation, and application. The function of the intact organ will be correlated with underlying structural and cellular processes, both for normal and pathological states. Student projects will contribute to the existing library of cardio vascular models.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2520 - MOL CELL BIOLOGY & BIOPHYSC 1

Minimum Credits: 6

Maximum Credits: 6

Topics covered in this course are bio-macromolecules, protein purification and microscopic techniques, genetics (chromatin organization, DNA replication, recombination, transcription, translation and control of gene expression), molecular perturbation, membrane biophysics and bioenergetics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Bioengineering (MBE or PhD)

BIOENG 2525 - APPLIED BIOSTATISTICS

Minimum Credits: 3

Maximum Credits: 3

This course is designed to provide an understanding of basic statistics through application. Descriptive and inferential statistics, encompassing both parametric and non-parametric methods will be taught.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2540 - NEURAL BIOMATERIALS AND TISSUE ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

This course is designed to introduce students to an advanced understanding of biomaterials and tissue engineering specialized in neural applications. It will review biomaterials used for neural prosthesis, drug delivery devices, and tissue engineering scaffold. The student will gain a fundamental understanding of the biocompatibility issues relevant to a variety of neural implantable devices and the current strategies to solve these issues. Topics will include basic material science, neural tissue biocompatibility with implant, BBB and CNS drug delivery, tissue engineering and regenerative medicine for PNS, tissue engineering and regenerative medicine for CNS, neural electrode/tissue interface (including both simulating and recording electrodes, both peripheral and cortical neural interface). The student should have some exposure to biomaterials and tissue engineering before taking this course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2580 - BIOMD APPLC SIGNAL PROCESSING

Minimum Credits: 3

Maximum Credits: 3

The goal of this course is to provide students with experience in applying signal processing techniques to medical and biological data. The nature of biological signals and noise, including appropriate physiological background information, will be presented. Digital filtering, spectral analysis, and automated interpretation of signals will be discussed, with examples drawn from current problems in clinical medicine and research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2601 - PRINCIPLES AND PROPERTIES OF COMPLEX ENGINEERED MATERIALS

Minimum Credits: 3

Maximum Credits: 3

Complex engineered materials are a new class of systems comprising a variety of inorganic materials. This course is designed to introduce the principles and various functional properties exhibited by inorganic materials at the Nano, Micro and Meso scales. Since inorganic materials comprising metallic and non-metallic systems are a very complicated class of materials that display myriad properties, this course is outlined to discuss the most important properties. Thus, the course will mainly cover optical, electrical, thermal and electrochemical properties of both crystalline and amorphous inorganic complex engineered materials. In each category, the principles underlining each property will be discussed followed by the material class, behavior and applications. The effect of microstructure on each of the properties will also be discussed. The course objective is to introduce the student to these complex engineered materials family and their properties. In doing so, the student should be able to identify a material for a particular application

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2610 - INTRODUCTION TO MEDICAL CORROSION AND MICRODEVICES

Minimum Credits: 3

Maximum Credits: 3

This is an elective course for the engineering research center consisted of North Carolina A&T State University, University of Cincinnati, and University of Pittsburgh to help provide new technologies to study biodegradable metallic implant science. This course will cover the following topics: 1) microfabrication of silicon, glass, polymer devices, 2) microfluidics and electro kinetics, 3) biosensors, 4) actuators and drug delivery, 5) lab on a chip and micro total analysis systems (-tas), 6) genomics and proteomics related chip, 7) corrosion science, and 8) corrosion sensing devices and measurement systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2615 - INTRODUCTION TO NEURAL ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BIOENG 2620 - INTRODUCTION TO TISSUE ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

The purpose of this course is to introduce students to tissue engineering. Tissue engineering is defined as the development and manipulation of

laboratory-grown molecules, cells, tissues, or organs to replace and/or support the function of injured body parts. Tissue engineering is highly interdisciplinary and therefore crosses numerous engineering and medical specialties. Upon completing this course, the graduate and undergraduate students should: understand the basic principles behind human cell and tissue biology and cell. Be familiar with the general types of biomaterials used in tissue engineering. Understand techniques utilized to design, fabricate, and functionally assess tissue engineering systems. Apply the combined knowledge of tissue organization and tissue engineering strategies to design a unique, reasonable tissue engineering solution. This five part course covers cell and tissue biology, biomaterials, drug delivery, engineering methods and design, and clinical implementation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2630 - METHODS IN IMAGE ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

Current research topics in biomedical image analysis will be explored with an emphasis on applying geometry and statistics to image segmentation, registration, and visualization. The goal is for computers to recognize and measure anatomical structures automatically in 2d, 3d, and 4d from prior knowledge and image features. Student projects will use (and contribute to) the national library of medicine visible human toolkit, a new C++/OpenGL Library of proven and experimental methods being developed by a consortium of research institutions including our own.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BIOENG 2632 - BIOMECHANICS 3: BIODYNAMICS OF MOVEMENT

Minimum Credits: 3

Maximum Credits: 3

Biodynamics, the area of focus in biomechanics 3, is the study of large-scale movements in biologic systems. As such, the course focuses on the analysis of human movement, which is used in clinical and research settings to understand how various pathologies impact movement and how interventions can be implemented to aid those affected by movement disorders. We cover the fundamentals of biomechanics of human movement using mechanical modeling techniques. The major focus is kinematic analyses in three dimensions using matrix techniques. Some fundamentals of kinetics are covered as well, 2D and 3D inverse dynamics. Upon completing the course, the student should be able to describe basic methods of kinematic/kinetic analysis used in multi-link systems and be able to implement the methods in the analysis of human movement. Students should also be able to apply the methods to study common human movements, e.g. gait analyses, eye movement analyses, etc. Finally, students should be able to use the computer programming language, matlab, to perform computations on kinematic data.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2633 - BIOMECHANICS 4: BIOMECHANICS OF ORGANS, TISSUES, AND CELLS

Minimum Credits: 3

Maximum Credits: 3

This is the second part of a two semester advanced graduate course that uses the application of bio solid mechanics to describe the mechanical behavior living structures. The course will be separated into the following: 1) fundamental concepts: a. Kinematics, stress, strain b. Balance principles, objectivity c. Hyperelastic materials 2) biological applications a. Mechanical properties of specific tissues, (e.g. Tendon, muscle, heart, vascular) b. Growth and remodeling using mixture theories c. Approaches used to model cells (e.g. Blood cells, myofibroblasts)

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2635 - TRIBOLOGY: THE STUDY OF ADHESION, FRICTION, LUBRICATION AND WEAR

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOENG 2650 - LEARNING & CONTROL OF MOVEMENT

Minimum Credits: 3
Maximum Credits: 3

The course will blend robotics, probability, and neuroscience to better understand the human motor system, particularly motor learning and control of movement. While motor control will be discussed as a feedback control problem, these theories will be compared during the entire course to what we know about the motor system. We will begin by studying muscle activation and forces, muscle sensory organs, spinal control structures, and inertial dynamics of a multi-joint limb. This will give us a sense of the machinery that the nervous system must control in order to generate coordinated movements. Probability foundations will be used as a framework to model how the nervous system updates estimates of limb position and sensory feedback during movements. Finally we will consider how disease can inform us about principles of movement control and motor learning. The course material and associated homework will require the students to use matlab to simulate control of biomechanical systems. This will allow students to appreciate the value of models to generate hypothesis and possible explain biological behaviors.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Bioengineering (MBE or PhD)

BIOENG 2675 - FINITE ELASTICITY OF SOFT TISSUES

Minimum Credits: 3
Maximum Credits: 3

This team-taught course is designed as the second course in graduate biomechanics that applies and builds on the concepts of finite elasticity to study the constitutive response of various soft tissues. Course topics will include kinematics of large deformation, concepts of stress, thermodynamic principles, and development of constitutive relationships for hyperelastic materials. Isotropy, transverse isotropy, incompressibility, viscoelasticity as well as isotropic damage will be discussed. Specific application areas will include the mechanics of three general types of primary load-bearing soft tissues: vascular, orthopedic, and reproductive.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BIOENG 2080; PROG: Swanson School of Engineering (PENGR)

BIOENG 2704 - FUNDMS REHAB ENGR AND TECHN 1

Minimum Credits: 3
Maximum Credits: 3

Introduction to fundamental principles and practices related to multiple areas of assertive technology. The technology area include: seating and wheelchair mobility, augmentative communication, environmental control, computer access, transportation safety, prosthetics, worksite ergonomic and man/machine modeling. In addition, common terminology, disability, ethics and models of service delivery related to assistive technology are discussed.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

BIOENG 2705 - PRACT REHAB ENGR & ASSISTV TECHN

Minimum Credits: 3
Maximum Credits: 3

The purpose of this course is to develop the clinical skills needed to apply at and resolutions to help persons with disabilities achieve their goals in the areas of productivity, education, employment, communication, and environmental access. Students will match knowledge of at products gained in

BIOENG 2704 to the needs of individuals. This will be taught using a model for assessing the individual, the context, the technology-user interface and an interdisciplinary team approach.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2708 - INDIV & SOCIAL EXPRN DISABILITY

Minimum Credits: 3

Maximum Credits: 3

Course investigates psychological and sociological issues of viewing disability not as solely located within the individual but instead as the outcome of interaction between the impaired individual and society. Course focuses on the experience of being disabled, emphasis on both adjustment to disability and relationship to community foundations of stigmatization and discrimination toward people with disabilities and their pervasive and effect throughout all do mains of life will be examined.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2724 - ASSISTIVE TECHN FUNDING & POLICY

Minimum Credits: 3

Maximum Credits: 3

Students to develop knowledge and skill in the process and strategies necessary to acquire assistive technology devices and services for people with disabilities. Course content will focus on the process of gathering information, assessment procedures, documentation, and funding sources.

Advocacy and procedures for due process will also be reviewed for situations when funding sources are limited.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2725 - DESIGN FOR INJURY PREVENTION

Minimum Credits: 3

Maximum Credits: 3

This course provides instruction for how to design a workplace to prevent occupational injuries. The course will primarily focus on preventing the three types of injuries, the injury mechanism, risk factors, tools for quantifying risk and engineering solutions will be covered. Upon completion of a course, students will be expected to develop custom engineering design solutions to prevent occupational injuries. Students will complete a project where they will design a solution to eliminate or reduce an existing hazard.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2731 - MOLECULAR MECHANISMS OF TISSUE GROWTH AND DIFFERENTIATION

Minimum Credits: 3

Maximum Credits: 3

The course covers the anatomy, embryology, histology, function, and growth regulation (growth factors, receptors, and signaling pathways) of various differentiated tissues (central nervous system, lung, liver, pancreas, urinary and reproductive systems, breast, endocrine system, skin, bone, skeletal muscle, bone marrow). Multidisciplinary lectures are given by the members of the departments of pathology, cell biology and physiology, medicine, and surgery who have ongoing research in these areas.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2750 - EXPERIMENTAL DESIGN AND ANALYSES

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BIOENG 2751 - EXPERIMENT AND DESIGN ANALYSIS 2

Minimum Credits: 3

Maximum Credits: 3

The analysis of observations and measurements is a key component to determine the outcome of an experiment and typically provide the basis for interpretation of results. This course will allow students to learn about different approaches to analyze experiments, as well as provide a solid foundation of statistical analysis. The limitations of these approaches will be discussed and development of critical thinking by the student is encouraged.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BIOENG 2800 - NEUROTECHNOLOGY: CONCEPTS, PATIENTS, AND DEVICES

Minimum Credits: 3

Maximum Credits: 3

This survey course will introduce students to biomedical devices that interface with the nervous system. Course instructors and guest lecturers will discuss fundamental neurostimulation and recording concepts, patients who may benefit from these devices, and both existing and in-development technologies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2810 - BIOMATERIALS & BIOCOMPATIBILITY

Minimum Credits: 3

Maximum Credits: 3

Chemical and physical properties of Orthopaedic and Cardio Vascular Biomaterials, wear and corrosion of implant materials; fracture healing, inflammatory response; fixation and loosening of permanent implants; protein absorption; coagulation cascade, bacterial adhesion.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2820 - SYNTHETIC BIOLOGY-ENGINEERING LIVING SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

An introduction to the engineering of biological systems with synthetic biology tools. Emphasis on synthetic biological networks and biological control. Design and analysis of computational and experimental tools in synthetic biology including microfluidic systems. Applications of synthetic biology in biomedical, chemical, and environmental engineering problems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2900 - GRADUATE FELLOWSHIPS AND PROPOSAL-WRITING WORKSHOP

Minimum Credits: 1

Maximum Credits: 1

This workshop will provide information and guidance to students interested in competing for external fellowships to support their graduate research, as well as instruction on proposal writing in general. The workshop will consist of structured class time and outside-the-class mentoring teams to work with students on the preparation of a fellowship application.

Academic Career: Graduate

Course Component: Workshop

Grade Component: Grad SN Basis

Course Requirements: PROG: Swanson School of Engineering

BIOENG 2999 - M.S. THESIS

Minimum Credits: 1

Maximum Credits: 12

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

BIOENG 3003 - TEACHING PRACTICUM

Minimum Credits: 1

Maximum Credits: 1

Teaching practicum.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

Course Requirements: PROG: Swanson School of Engineering

BIOENG 3020 - DESIGN AND SYNTHESIS OF BIOMEDICAL MATERIALS

Minimum Credits: 3

Maximum Credits: 3

This advanced biomaterials course targets graduate students already familiar with general concepts in biomaterials and organic chemistry, and want to learn more on how to design and modify or synthesize new biomaterial for specific biomedical applications. The course will be student driven using a guided literature search and question-and-answer format with minimal lecturing. The students are expected to be actively engaged in discussions and presentations. There will be 3-4 design modules, at the end of which a presentation and a paper will be submitted to summarize the rationale of the design and propose a feasible material synthesis route. The grade will be based on performance of these assignments. The class will meet twice a week for a 90 minute session.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

BIOENG 3095 - GRADUATE PROJECTS

Minimum Credits: 1

Maximum Credits: 6

Individual study program under guidance of faculty member.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

BIOENG 3333 - ADVANCED FINITE ELEMENT METHODS

Minimum Credits: 3

Maximum Credits: 3

This second course in the finite element method focuses on the challenges and solution strategies for nonlinear boundary value problems in mechanics. Topics include nonlinear heat transfer as well as geometric and material nonlinearity in solid mechanics. In addition, an overview is presented of various transient analysis techniques (i.e., time integration) within the finite element method.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

BIOENG 3602 - TMJ REGENERATION AND MECHANICS

Minimum Credits: 3

Maximum Credits: 3

The primary educational goal of this course is to instruct students in the anatomy and physiology of the temporomandibular joint (TMJ), which serve as gold standards for tissue regeneration approaches. Students will be exposed to current diagnosis and treatments of temporomandibular joint diseases, and TMJ occlusion. Major emphasis will be given to understanding biomechanics of musculoskeletal systems and mechanical testing of tissues, in order to apply this knowledge to enhance the function of the TMJ through the design of better therapies. Furthermore, students will also be instructed in tissue engineering efforts to regenerate the tissues of the temporomandibular joint, such as the TMJ disc and mandibular condyle.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BIOENG 3735 - EXTRACELLULAR MATRIX IN TISSUE BIOLOGY AND BIOENGINEERING

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BIOENG 3760 - RES SEM: REGENERATIVE MEDICINE

Minimum Credits: 1

Maximum Credits: 1

Research seminar in regenerative medicine is geared towards providing updates information on topics in the field of regenerative medicine, tissue engineering and stem cell applications. Through biweekly seminars, the students will be acquainted to the recent advances in the ever-growing field of regenerative medicine. Experienced faculty will deliver lectures in this seminar series.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Swanson School of Engineering

BIOENG 3944 - COMPOSITION, STRUCTURE, AND FUNCTION OF MINERALIZED TISSUES

Minimum Credits: 3

Maximum Credits: 3

Mineralized tissues such as bones, dentin, and enamel are exceptional materials with their properties uniquely optimized to the function. These functional properties are determined by the tissue structure and composition. The aim of this course is to examine how the composition and structural organization of the mineralized tissues affects their functional properties in norm and disease.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

BIOENG 3997 - RESEARCH, PHD

Minimum Credits: 1

Maximum Credits: 15

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

BIOENG 3999 - PH.D. DISSERTATION

Minimum Credits: 1

Maximum Credits: 15

Ph.D. Dissertation.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Bioethics

BIOETH 2001 - ETHICS AND AGING

Minimum Credits: 3

Maximum Credits: 3

This course offers an overview of ethical issues in aging. Early sessions will explore the ethical implications of stereotypes and myths regarding aging. Turning to the context of health care, students will identify and analyze moral dilemmas that arise in the long-term and end-of-life care of older adults. Concepts and topics to be critically examined include: autonomy, dependency, elder abuse, and just resource allocation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BIOETH 2604 - CLINICAL PRACTICUM 1

Minimum Credits: 3

Maximum Credits: 3

Placements in different clinical settings to observe clinical ethics and medical sociology discussions.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

BIOETH 2606 - CLINICAL PRACTICUM 2

Minimum Credits: 3

Maximum Credits: 3

Intensive observation experience in one clinical setting.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

BIOETH 2658 - PHILOSOPHY OF MEDICINE

Minimum Credits: 3

Maximum Credits: 3

Issues in philosophy of medicine, with reference to American health care, including concepts of health and disease, normativity, causation, error, clinical diagnosis, prevention, and epidemiological risk.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

BIOETH 2661 - THEORETICAL FOUNDATIONS

Minimum Credits: 3

Maximum Credits: 3

Survey of contemporary ethical thought with reference to its historical bases, intended to prepare students to read and think critically and creatively about the literature in applied ethics, especially bioethics and health policy.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

BIOETH 2664 - BIOETHICS

Minimum Credits: 3

Maximum Credits: 3

Survey of major topics and methods in bioethics, including informed consent, treatment refusal, transplantation, resource allocation, genetics, and public health.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

BIOETH 2667 - BIOPOWER: BIOPOLITICAL READINGS OF THE BODY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

BIOETH 2668 - SUSTAINABILITY IN LATIN AMERICA

Minimum Credits: 3

Maximum Credits: 3

Latin America hosts some of the most biologically diverse and productive ecosystems on Earth, yet economic and social development are frequently at odds with efforts to conserve and use these ecosystems sustainably. This upper-level seminar focuses on the issues surrounding environmental sustainability in Latin America from a holistic, interdisciplinary perspective. The course will start with a general introduction to the three legs of sustainability and sustainable development theory, as well as the ecology and evolution of Neotropical biodiversity. We will use published primary literature to explore the particular complexities of Latin American sustainable development, and analyze case studies of moments through history in which environmental issues were either championed or de-emphasized. The course will feature several guest lectures, optional seminars for extra credit, and discussions of current sustainability news. Students will be responsible for a final research project and presentation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

BIOETH 2698 - SPECIAL TOPICS IN BIOETHICS

Minimum Credits: 3

Maximum Credits: 3

Seminar on particular topics in bioethics; topics vary from term to term.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

BIOETH 2902 - DIRECTED READING IN BIOETHICS

Minimum Credits: 1

Maximum Credits: 3

Students discuss with instructor set readings in bioethics. Topics and readings may vary.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

BIOETH 2904 - MA THESIS IN BIOETHICS

Minimum Credits: 1

Maximum Credits: 6

Research under the supervision of the advisor which culminates in the master's thesis.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

BIOETH 2905 - MA THESIS PROSPECTUS IN BIOETHICS

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad HSU Basis

BIOETH 2906 - MA THESIS RESEARCH IN BIOETHICS

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad HSU Basis

BIOETH 2907 - MA THESIS DEFENSE IN BIOETHICS

Minimum Credits: 1

Maximum Credits: 3

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad HSU Basis

BIOETH 2990 - INDEPENDENT STUDY IN BIOETHICS

Minimum Credits: 1

Maximum Credits: 3

Students pursue a course of independent study under the supervision of a faculty member.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

Biomedical Informatics

BIOINF 2011 - FOUNDATIONS OF CLINICAL AND PUBLIC HEALTH INFORMATICS

Minimum Credits: 3

Maximum Credits: 3

A survey of fundamental concepts and activities on information technology applied to health care. Topics include computer-based medical records, knowledge-based systems, tele health, decision theory, and decision support, human-computer interfaces, system integration, the digital library, and educational applications. Department-specific applications such as pathology, radiology, psychiatry and intensive care are also discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BIOINF 2014 - BIOMEDICAL INFORMATICS PROJECT COURSE

Minimum Credits: 3

Maximum Credits: 3

The course consists of three main parts. In the first part of the course the projects are conceived. In the middle part, the projects are defined and designed. In the final part, the projects are carried out, analyzed, and reported. In all three phases, students will first have classroom discussions among themselves and the instructor about their ideas for that phase of the project. Next, they will work outside of the classroom on that project phase and write a report. Finally, they will orally present the main ideas of their report to the class. The instructor will provide written and oral feedback on each stage of the project, as it occurs.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BIOINF 2016 - FOUNDATIONS OF TRANSLATIONAL INFORMATICS

Minimum Credits: 3

Maximum Credits: 3

The field of translational bioinformatics emerged because of the recent advances in biotechnology with which several new types of patient and disease specific data are being created for large subpopulations. Computer science methods are being rapidly adapted to process and analyze this data, with the goal of drawing biologically and medically-relevant inferences. By analyzing these different types of data individually or integratively, it is now feasible to attempt deciphering biological root cause of a disease (at least the 'why' of the disease if not 'how'), to identify biomarkers, and to design personalized medicine.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BIOINF 2017 - CLINICAL RESEARCH INFORMATICS

Minimum Credits: 3

Maximum Credits: 3

This course is an introduction to the emerging field of clinical research informatics (CRI). It involves informatics solutions in support of scientists who conduct clinical research, as well as those who translate evidence in biological, clinical, and epidemiological studies. CRI endeavors to improve clinical research information systems, recruitment of participants to clinical trials, mining of electronic health records for comparative effectiveness research, scientific collaboration, data sharing, re-analysis of extant data, patient registries, results databases, optimization of research workflows, semantic harmonization, and more.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BIOINF 2018 - INTRODUCTION TO R PROGRAMMING FOR SCIENTIFIC RESEARCH

Minimum Credits: 3

Maximum Credits: 3

Science is increasingly inter-disciplinary, and programming has become a valuable skill in many investigations. This course is designed to empower you with the ability to solve scientific problems through writing computer programs. Emphasis is placed on using the R language to solve biology problems.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOINF 2032 - BIOMEDICAL INFORMATICS JOURNAL CLUB

Minimum Credits: 1
Maximum Credits: 1

This course meets once each week for one hour. The research being presented will be taken from recent journal papers.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

BIOINF 2051 - FOUNDATIONS OF BIOINFORMATICS

Minimum Credits: 3
Maximum Credits: 3

Provides an introduction to selected topics of bioinformatics also known as computational biology. In this course, the difficult computational problems involving different types of biological information are identified using case studies from current literature. Emphasis is on genomic aspects of computational biology with some overview of proteomics and structural aspects. The course is structured as a seminar course intending to draw students into participating in discussions related to both problems and existing solutions.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOINF 2070 - FOUNDATIONS OF BIOMEDICAL INFORMATICS 1

Minimum Credits: 3
Maximum Credits: 3

This course serves as an introduction to core methods and topics in biomedical informatics using the context of the Learning Health System (LHS). A LHS combines data and information managements, discovery, and application of discoveries to clinical and population health. Discussion of the challenges associated with the construction of a LHS will be used to contextualize and motivate content to be covered in the course (people, data and knowledge, and evaluation).

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOINF 2101 - PROBABILISTIC METHODS

Minimum Credits: 3
Maximum Credits: 3

This seminar provides an introduction to computational approaches for probabilistic modeling and inference. A particular focus is placed on Bayesian networks. Although other probabilistic models also will be studied. Medical applications are emphasized; however, the principles are general and no medical knowledge is needed to take the course. The course does not require knowledge of a computer programming language. Understanding basic probability theory is helpful.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOINF 2103 - DESIGN AND ANALYSIS OF BIOMARKER STUDIES

Minimum Credits: 2
Maximum Credits: 2

The objective of this course is to identify, describe, and apply the statistical and epidemiological knowledge, tools, and perspectives necessary for effectively designing, analyzing, and interpreting biomarker studies (which may include diagnostic and medical tests, prognostic markers for prediction of future disease outcomes, and/or predictive markers for treatment response). The course will also focus on writing a funding proposal; students will develop a 3-4 page concept proposal as the class project.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: BIOINF 2118

BIOINF 2110 - CONCP SOFTWR PROJ ENGR HLTH CARE

Minimum Credits: 3

Maximum Credits: 3

This course examines how health care organizations implement both clinical and financial information systems. The course will study the implementation process and how to integrate systems to create the computerized patient record (CPR). Students will have the opportunity to learn about the industry-wide implementation data standards and how to manage them.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOINF 2117 - APPLIED CLINICAL INFORMATICS

Minimum Credits: 3

Maximum Credits: 3

This course is designed to provide an overview of the field of applied medical informatics. Students will learn about the myriad issues that arise when deploying information technology into clinical environments. Practical, real world solutions to the challenges of hit will be addressed by experts involved in the day-to-day operations of these types of systems.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOINF 2118 - STATISTICAL FOUNDATIONS OF BIOMEDICAL INFORMATICS

Minimum Credits: 3

Maximum Credits: 3

This is an introductory probability and statistics course intended primarily for biomedical informatics students. The first part of the course covers probability, including basic probability, random variables, univariate and multivariate distributions, transformations, expectation, numerical integration, and approximations. The second part of the course covers statistics, including study design, classical parametric inference, hypothesis testing, Bayesian inference, non-parametric methods, classification, ANNOVA, and regression. We will use r for statistical computing and applications. Examples and applications will focus on biomedical informatics and related discipline.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

BIOINF 2119 - PROBABILISTIC METHODS IN ARTIFICIAL INTELLIGENCE

Minimum Credits: 3

Maximum Credits: 3

This course is designed for students who do not necessarily have a background in computer science and want to learn and apply methods in artificial intelligence to problems in biomedicine. The course will introduce and provide the foundations artificial intelligence methods in search, probabilistic knowledge representation and reasoning, and machine learning with applications to biomedical informatics.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOINF 2120 - SYMBOLIC METHODS IN ARTIFICIAL INTELLIGENCE

Minimum Credits: 3

Maximum Credits: 3

This course is designed for students who do not necessarily have a background in computer science and want to learn and apply methods in artificial

intelligence to problems in biomedicine. The course will introduce and provide the foundations of artificial intelligence methods in logical knowledge representation and reasoning, biomedical ontologies and terminologies and information retrieval. Prerequisites for this course include introductory mathematics and programming.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BIOINF 2012 and 2015

BIOINF 2121 - HUMAN-COMPUTER INTERACTION AND EVALUATION METHODS

Minimum Credits: 3

Maximum Credits: 3

This course is designed to provide informatics students with the knowledge necessary to take an applied role in the design, implementation and evaluation of healthcare information systems. In this course, students will apply principles of usability and evaluation theory to informatics projects. Topics include: critical success factors, test plan development and user interface design.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BIOINF 2122 - CRITL REFLCTN BIOMD INFORMTCS

Minimum Credits: 3

Maximum Credits: 3

This course will showcase presentations from DBMI researchers and invited speakers from across campus and beyond. Session will be videotaped and presented as weekly one-hour recording. The on-site Q/A session afterwards will be substituted by a facilitated asynchronous online discussion in blackboard. Special emphasis will be put on peer- and self-assessment of the contributions to the online discussion which will promote higher-level thinking among the students.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad Letter Grade

BIOINF 2123 - TERMINOLOGY AND CODING

Minimum Credits: 3

Maximum Credits: 3

This course will cover standardized terminologies (including ontologies) and classification systems with an emphasis on how they relate to the information infrastructure that supports health care delivery and biomedical research. Consideration will be given to both theoretical and practical issues in terminologies and classification systems as well as demonstration of the application of these methods within biomedical informatics systems. A variety of vocabularies, terminologies, standards, and classification systems will be studied including: SNOMED, MESH, ICD, H17, the foundational model of anatomy and the gene ontology. Later in the course, we will explore the relationship of terminologies, information models, messages, and document and record structures. Selected advanced topics such as semantic interoperability will also be addressed. Online students will engage in authentic learning assignments ranging from the creation of concept maps to the participation in asynchronous panel discussions which will assign students to teams with opposing viewpoints.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BIOINF 2124 - PRINCIPLES OF GLOBAL HEALTH INFORMATICS

Minimum Credits: 3

Maximum Credits: 3

This course explores challenges and opportunities in developing and supporting health information systems in developing-world settings by examining differences, and ways to both integrate and sustain systems in an appropriate way in low-resource settings. The course will review the current "state-of-the-art" in this field by looking at examples of systems currently deployed in the developing world, and explore opportunities for advancing this work through a series of case studies and hands-on exercises based on real-world scenarios.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

BIOINF 2125 - INFORMATICS AND INDUSTRY

Minimum Credits: 1

Maximum Credits: 1

The focus of the class is to provide an opportunity for students to interact with leading industry representatives and to learn techniques/tools that would enable them to market their skills in non-academic environments. We will invite speakers from various local, regional, national, and international industry relationships that we have established.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

BIOINF 2129 - INTERNSHIP IN GLOBAL HEALTH INFORMATICS

Minimum Credits: 3

Maximum Credits: 3

The internship in global health informatics will be expanded to accommodate 5 students from the US. Students will travel to Malawi to study global health informatics in low-resource settings alongside Malawian health and technology professionals. Students will have an opportunity to propose, design and develop a product or intervention relevant to solving a particular problem the group has identified.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

BIOINF 2131 - PRACTICUM IN ADV BIOMEDICAL IT

Minimum Credits: 1

Maximum Credits: 6

This course is designed for people who want a practical experience in working with advanced information technology in the center for biomedical informatics.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

BIOINF 2132 - SPECIAL TOPIC SEMINAR IN MEDICAL INFORMATICS

Minimum Credits: 1

Maximum Credits: 3

This course is designed for faculty to offer small groups of students a study course on a topic of mutual interest and concern in the faculty member's area of expertise.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

BIOINF 2133 - PRACTICUM IN ADVANCED INFECTIOUS DISEASE AND PUBLIC HEALTH SURVEILLANCE (BIOSURVEILLANCE) TECHNOLOGY

Minimum Credits: 1

Maximum Credits: 6

This course is designed for people who want a practical experience in working with advanced bio surveillance technology in the real time outbreak and disease surveillance (rods) laboratory.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

BIOINF 2134 - PUBLICATION AND PRESENTATION IN BIOMEDICAL INFORMATICS

Minimum Credits: 3

Maximum Credits: 3

This course provides a practical overview of how to write a research manuscript and how to give a scientific talk. It is usually taken after completing the project course (BIOINF 2014). Students taking this course must have a completed research project that can be used to complete the course exercises. Each week, we will target a specific section of the manuscript or scientific talk. Didactic sessions describing common problems and approaches will alternate with student presentation and peer critique. The course also covers the details of the publication process. At the end of the course, a special presentation workshop gives students the opportunity to improve their talks using videotaping and debriefing methods. By the end of the course, students will have completed a research paper and a finalized colloquium presentation.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

BIOINF 2204 - INT HLTH INFORMTCS TEC DENTY

Minimum Credits: 3

Maximum Credits: 3

An introduction to health information technology (HIT) for dentists, dental team members and others involved in dentistry with three objectives: (1) understand how hit can support the activities and processes of clinical dental care; (2) select and evaluate hit applications; and (3) plan, administer and manage hit implementations. Course covers topics such as dental care workflow and analysis; electronic dental records; dental data and their representation; controlled vocabularies and terminologies; human computer interaction; information design; computer-based decision support; strategic planning; requirements analysis; evaluating technology; managing human resources for it; planning and implementing hit; basics of hardware and software; and privacy, confidentiality and security of patient information.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad Letter Grade

BIOINF 2480 - MASTERS THESIS RESEARCH/PROJECT

Minimum Credits: 1

Maximum Credits: 6

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

BIOINF 2990 - MASTERS INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 14

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

BIOINF 2993 - MASTERS DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

BIOINF 2994 - MASTERS DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

BIOINF 3800 - CENTER FOR CAUSAL DISCOVERY

Minimum Credits: 1
Maximum Credits: 3
Academic Career: GRAD
Course Component: Internship
Grade Component: Grad SN Basis

BIOINF 3990 - DOCTORAL INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 14
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

BIOINF 3995 - DOCTORAL DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

BIOINF 3996 - DOCTORAL DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

BIOINF 3997 - DOCTORAL DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

BIOINF 3998 - DOCTORAL TEACHING PRACTICUM

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

BIOINF 3999 - DOCTORAL DISSERTATION RESEARCH

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

Biological Sciences

BIOSC 2000 - RESEARCH AND THESIS MS DEGREE

Minimum Credits: 1
Maximum Credits: 15

Students working on their early research requirement may (but are not required to) register for BIOSC 2000. A grade of Incomplete is automatically given for this course until the Comprehensive exam is passed.

Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Biological Sciences (PHD)

BIOSC 2025 - RESEARCH ROTATION 1

Minimum Credits: 1
Maximum Credits: 6

Students in the graduate programs in the department of biological sciences perform research rotations in the first year. These rotations supplement classroom-based educational opportunities and provide settings for students to interact with faculty, who may serve on their dissertation committees or be their advisor, and to meet the members of different labs. Students present their results at the end of each research rotation as a brief talk. Students in the MCDB Program do three rotations, those in the EE Program do 2 or 3. Each rotation is worth a single credit.

Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

BIOSC 2026 - RESEARCH ROTATION 2

Minimum Credits: 1
Maximum Credits: 6

Students in the graduate programs in the department of biological sciences perform research rotations in the first year. These rotations supplement classroom-based educational opportunities and provide settings for students to interact with faculty, who may serve on their dissertation committees or be their advisor, and to meet the members of different labs. Students present their results at the end of each research rotation as a brief talk.

Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

BIOSC 2027 - RESEARCH ROTATION 3

Minimum Credits: 1
Maximum Credits: 6

Students in the graduate programs in the department of biological sciences perform research rotations in the first year. These rotations supplement classroom-based educational opportunities and provide settings for students to interact with faculty, who may serve on their dissertation committees or be their advisor, and to meet the members of different labs. Students present their results at the end of each research rotation as a brief talk.

Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

BIOSC 2040 - SEMINAR IN MCDB

Minimum Credits: 2

Maximum Credits: 2

Papers to be selected from current periodicals in the biological sciences for presentation. Emphasis will be placed on a critical evaluation of experimental procedures, data, and the interpretation of data. A writing component is also included.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

BIOSC 2050 - STUDENT RESEARCH SEMINAR

Minimum Credits: 1

Maximum Credits: 1

In this course, students present their research to faculty, students and postdocs.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

Course Requirements: PLAN: Biological Sciences (PHD)

BIOSC 2055 - SCIENCE COMMUNICATION: PREDOCTORAL FELLOWSHIPS & GRANTS

Minimum Credits: 1

Maximum Credits: 1

The goals of this course are to inform students about the tools and background needed to prepare for seminar and poster presentations and submit pre-doctoral fellowships and grants.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BIOSC 2056 - SCIENCE COMMUNICATION: SEMINAR & POSTER PRESENTATIONS

Minimum Credits: 1

Maximum Credits: 1

The goals of this course are to prepare students for oral and written presentation of their work. Topics will include seminar preparation, maintaining linear train of thought, balancing data with context, data presentation as a reinforcement tool, preparing for 15-, 30- and 45-minute talks, preparing for broad and narrow scientific audiences, speaking with the general public, preparation of useful abstracts, assembly of effective posters, effective presentation of posters, tips and tricks for fielding questions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BIOSC 2057 - SCIENCE COMMUNICATION: PAPERS

Minimum Credits: 1

Maximum Credits: 1

This course covers the process of writing scientific papers, including primary data papers, review articles, and general opinion pieces. Topics include strategies for data organization, figure preparation, targeting the introduction for the audience, logic flow in the results, and focusing the discussion.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BIOSC 2058 - ETHICAL PRACTICES IN SCIENTIFIC RESEARCH

Minimum Credits: 1

Maximum Credits: 1

This course familiarizes students with areas of ethical concern in scientific research, including data integrity, intellectual property, plagiarism, collaboration and cooperation, data sharing, treatment of animal and human subjects, and responsibilities to the general public.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOSC 2075 - MOLECULAR EVOLUTION

Minimum Credits: 3

Maximum Credits: 3

Sequencing technology is continually progressing, and genome sequences from different species and populations continue to become available in increasing numbers. Such data allows questions about molecular evolution to be addressed in new and exciting ways. This course introduces students to the evolutionary analysis of DNA and amino acid sequences. Lectures on theory will be accompanied by practical instruction in the use of contemporary computational methods and software. Topics include: population genetics of selection and mutation, models of sequence evolution, phylogenetic models, analysis of multiple sequence alignments for rates and patterns of divergence, inference of natural selection, and co-evolution between proteins. Emphasis is placed on quantitative modeling and the biological principles underlying observed patterns of molecular evolution. Interested students should have a basic grasp of molecular biology and calculus.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BIOSC 2090 - ADVANCED DEVELOPMENTAL BIOLOGY

Minimum Credits: 2

Maximum Credits: 2

This course will examine selected topics in developmental biology at an advanced level. Topics may include pattern formation in insects, cell lineage analysis, cell-cell interactions and the specification of cell fates, cell adhesion molecules, genetic approaches to mammalian embryo genesis and the extracellular matrix in development. Emphasis will be placed on the critical reading of papers and classroom discussion.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BIOSC 2100 - CELLULAR STRUCTURE AND MORPHOLOGY

Minimum Credits: 2

Maximum Credits: 2

This course will explore biological processes within eukaryotic cells. Topics include: mechanotransduction/biomechanics; cellular interactions; polarity; cytoskeletal dynamics; cell-matrix interactions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Biological Sciences (PHD)

BIOSC 2105 - CELL SIGNALING

Minimum Credits: 2

Maximum Credits: 2

This course will examine the pathways used to transmit information within and between cells. Topics include: receptors with enzymatic activity; RTK and map kinase; protein scaffolds; BMP-, WNT- and SHH-pathways; g-protein coupled receptors; calcium and camp-dependent signaling; excitation and ion channels; mechanisms of cell death.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BIOSC 2110 - MICROBIAL DIVERSITY

Minimum Credits: 2

Maximum Credits: 2

This course will survey important genetic, genomic, physiological, cell biological and developmental processes that distinguish viral, prokaryotic and unicellular eukaryotic organisms. Topics include: bacteriophages, plants and animal viruses; bacterial intracellular pathogens, parasites and symbionts of plants and animals; eukaryotic pathogens.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

BIOSC 2121 - BIOSTATISTICS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BIOSC 2130 - GENETICS OF MODEL ORGANISMS

Minimum Credits: 2

Maximum Credits: 2

This course will compare genetic approaches in a variety of model systems. Topics include: genetics screens and selections; linkage mapping; genetic manipulation in haploid and diploid model systems; epigenetics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BIOSC 2140 - GENOMICS

Minimum Credits: 2

Maximum Credits: 2

Advances in molecular biology have enabled the collection of a great deal of sequence data. Genomic studies seek to understand the organization of, and information embedded within, entire genomes. Students will learn a variety of techniques in structural genomics (finding information within genomes), functional genomics (describing gene function and interaction), comparative genomics (assessing how that information changes) and metagenomics (assessing the gene content of multiorganism communities) directed at using genome sequence data to address questions of interest.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BIOSC 2145 - PROTEIN LIFE HISTORY

Minimum Credits: 2

Maximum Credits: 2

This course will focus on the fate of proteins within cells. Topics include: protein synthesis; building blocks of protein structure; domains and protein folding; mechanisms of protein sorting; protein trafficking; directional transport and secretion; exo- and endocytosis; autophagy, ER targeting.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BIOSC 2147 - PROTEIN STRUCTURE AND FUNCTION

Minimum Credits: 2

Maximum Credits: 2

This course will focus on the biophysical and biochemical characterization of proteins. Topics include: methods for determining protein structure; protein folding; molecular dynamics and modeling protein movement; linking structure and function; protein-DNA interactions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BIOSC 2150 - NUCLEIC ACIDS

Minimum Credits: 2

Maximum Credits: 2

BIOSC 2150 focuses on the molecular biology of DNA and RNA, and how biological information is stored, replicated, recombined, and processed. Topics to be discussed include: DNA replication and its regulation; DNA segregation; homologous, illegitimate and site-specific recombination; DNA repair; structural and functional roles of RNA in the activity and regulation of telomerase; small nuclear RNAs and the spliceosome; processing of ribosomal and transfer RNAs; regulation by micro RNAs and long non-coding RNAs. There will be an emphasis on the primary literature.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BIOSC 2155 - GENE EXPRESSION

Minimum Credits: 2

Maximum Credits: 2

This course will examine the regulation of gene expression from a variety of standpoints. Topics to be discussed include: transcriptional mechanisms and regulation in prokaryotes and eukaryotes; mRNA splicing; RNA processing; RNAi; chromatin.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BIOSC 2200 - TEACHING BIOLOGICAL SCIENCES

Minimum Credits: 1

Maximum Credits: 3

Teaching biology is a complex and multi-faceted challenge. It requires the integration of deep disciplinary knowledge with a functional understanding of learning theory and the development of practical skills for working with students. Teaching biological sciences is designed to help you explore multiple strategies for effective teaching and learning and refine your own understanding of biology through efforts to become a better science communicator. The course has both seminar and project based components. You are encouraged to coordinate your work in this course with existing teaching opportunities but this is not required.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

BIOSC 2320 - POPULATION BIOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course focuses on ecological and evolutionary processes at the population level. We will learn how to represent ecological and evolutionary dynamics using increasingly realistic mathematical models. We will first explore population ecology including models of single populations, meta-populations, and interactions between species. We then shift to population and evolutionary genetics studying how the mechanisms of evolution interact with each other. Finally, we will study the explicit interaction between ecological and evolutionary processes that can occur over short timescales.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BIOSC 2350 - EVOLUTION

Minimum Credits: 3

Maximum Credits: 3

This course is an introduction to biological evolution. The first half of the course will address the history of evolutionary theory, inheritance and variation, population genetics, natural selection, speciation, and adaptation. The second part will cover evolutionary history, with an emphasis on the fossil record, phylogenetics, and the origin of evolutionary novelties, including molecular characters. Emphasis throughout will be placed on how the history of life is studied in the context of scientific methodology.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Biological Sciences (PHD)

BIOSC 2351 - ADVANCED EVOLUTION

Minimum Credits: 2

Maximum Credits: 2

This course explores factors that influence inheritance. Topics include: gene-by-environment interactions; polymorphism and polyphenism; sexual dimorphism; causes and consequences of individual variation; extended phenotypes; nutrition and the phenotype; fitness landscapes; mutation and novelty; trait mapping onto phylogenies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BIOSC 2355 - SPECIES INTERACTIONS

Minimum Credits: 2

Maximum Credits: 2

This course examines the interactions between species in a variety of contexts. Topics include: coevolution, mutualism & parasitism; plant-herbivore coevolution; cospeciation; hybridization and signaling of species identity; predation, predator-avoidance and aposematism; predator-prey interactions; foraging ecology; competition; tri-trophic level interactions; herbivory; context-, condition- and trait-dependent species interactions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BIOSC 2361 - ADVANCED ECOLOGY

Minimum Credits: 2

Maximum Credits: 2

This course examines the relationship between organisms and their environment. Topics include: colonization strategies; succession; biogeography; climate change; trait-mediated assemblages; spatial models; trophic cascades.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BIOSC 2370 - EVOLUTIONARY GENETICS

Minimum Credits: 2

Maximum Credits: 2

This course will cover a wide variety of traits and model organisms in which genetic and developmental studies of evolution have been performed. Topics and concepts will include phylogenetics, population genetics, the evolution of novelty, host-pathogen interactions, and multicellularity. The course will consist of lectures, journal article discussions, and essays relevant to the lecture topic.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BIOSC 2435 - ENVIRONMENTAL PHYSIOLOGY OF ANIMALS

Minimum Credits: 3

Maximum Credits: 3

This course in ecophysiology is a physiology course taught from an ecological and evolutionary perspective. The organismal, ecological, and evolutionary significance of physiological function will be emphasized along with molecular and cellular mechanisms.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BIOSC 2450 - BIOLOGICAL SCIENCES SEMINAR

Minimum Credits: 2

Maximum Credits: 2

Papers to be selected from current periodicals in the biological sciences for presentation. Emphasis will be placed on a critical evaluation of experimental procedures, data, and the interpretation of data.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Biological Sciences (PHD)

BIOSC 2500 - CURRENT TOPICS IN ECOLOGY

Minimum Credits: 1

Maximum Credits: 3

This course will cover population ecology, community ecology, and ecosystem ecology. A strong undergraduate background in ecology will be assumed. Some lectures will be included, but most emphasis will be placed on reading and discussing papers from the primary literature, including papers of both historical and current interests.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

BIOSC 2540 - SEMINAR IN ECOLOGY AND EVOLUTION

Minimum Credits: 2

Maximum Credits: 2

Students will participate in the critical review of the current literature relating to a topic in ecology. Specific topic is to be selected later.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Global Studies

BIOSC 2545 - THE MATHEMATICS OF BIOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course uses examples from across biology to illustrate how simple mathematical models can increase our understanding of biological systems. We will focus on several foundational modeling approaches, including systems of difference equations, matrix models, probability, and statistical data analysis. Students will discover how these approaches are used, their strengths and limitations, and how they could be extended to more complex problems. Students should be prepared to use both spreadsheet programs and scripts, written in a language such as Python or R, to explore these models.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BIOSC 2570 - ENVIRONMENTAL SCIENCE TEACHER'S WORKSHOP

Minimum Credits: 1

Maximum Credits: 3

Teachers spend five days at Pymatuning Laboratory of Ecology exploring the relationship between land use, water quality and aquatic community structure. Lectures, field work, data analysis, interpretation of results. Includes development of modules for classroom use.

Academic Career: Graduate

Course Component: Practicum
Grade Component: Grad SN Basis

BIOSC 2810 - MACROMOLECULAR STRUCTURE AND FUNCTION

Minimum Credits: 3

Maximum Credits: 3

Course is concerned primarily with the structure and functions of proteins and nucleic acids. These are large polymers where structure and function are determined by the sequence of monomeric units. Topics will include the physical and chemical properties of the monomer units (amino acids/nucleotides); the determination of the linear sequence of these units; the size, shape and general properties of the biopolymers in aqueous systems; and the relation between structure and function, particularly in transport (hemoglobin) and in catalysis (enzymes).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BIOSC 2840 - REGULATION OF MEMBRANE TRAFFIC

Minimum Credits: 2

Maximum Credits: 2

Course analyzes membrane/protein traffic along both the biosynthetic and endocytic pathways. Emphasis placed on how this traffic is regulated. Topics include the role of G proteins (both heterotrimeric and small), coat proteins (coatamer 1 and 2 and adaptors), signal transduction cascades (pkc, pka, ip3, etc), and snare complexes in protein trafficking.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BIOSC 2940 - MOLECULAR BIOLOGY

Minimum Credits: 3

Maximum Credits: 3

Course will examine the molecular basis of life processes, with a primary emphasis on genes (what they are, what they do, how they determine the properties of an organism). Topics covered will include replication of DNA, transcription of DNA into mRNA, and translation of RNA into protein. Much of the course will be concerned with how these processes are regulated in response to changes in the environment, and how this regulation relates to the observed properties and behavior of the organism.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BIOSC 2950 - SEMINAR JOURNAL CLUB

Minimum Credits: 1

Maximum Credits: 1

Research papers will be discussed prior to departmental seminar.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

BIOSC 2960 - DEPARTMENTAL SEMINAR

Minimum Credits: 1

Maximum Credits: 1

Students will attend lectures on selected topics of current research in the biological sciences. The lecturers will primarily be invited scientists from outside the university, with a few lectures by faculty from within the department or other departments in the university.

Academic Career: Graduate

Course Component: Workshop

Grade Component: Grad SN Basis

Course Requirements: PLAN: Biological Sciences (PHD)

BIOSC 2970 - TEACHING OF BIOLOGICAL SCIENCES

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad SN Basis

Course Requirements: PLAN: Biological Sciences (PHD)

BIOSC 2972 - TEACHING MINOR BIOLOGICAL SCIENCES

Minimum Credits: 1

Maximum Credits: 4

Graduate students in the department of biological sciences have the option of completing the requirements for a teaching minor, to be awarded concomitant with receipt of their advanced degree from this department.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Biological Sciences (PHD)

BIOSC 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

Course Requirements: PLAN: Biological Sciences (PHD)

BIOSC 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1

Maximum Credits: 15

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: Biological Sciences (PHD)

BIOSC 3001 - PREPARATION FOR THE STEM CLASSROOM

Minimum Credits: 1

Maximum Credits: 1

This seminar series is designed for Ph.D. students and post-doctorate fellows interested in pursuing an academic career and wish to gain didactic knowledge and skills related to teaching in a science, technology, engineering and mathematics (stem) classroom. Experienced faculty provide topics and discussion based seminars.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

BIOSC 3002 - ADVANCED LEARNING THROUGH EVIDENCE-BASED STEM TEACHING

Minimum Credits: 1

Maximum Credits: 1

Designed for graduate students and postdocs preparing for academic careers in the stem disciplines, this course provides an introduction to the scholarship of teaching and learning (SOLT). This is the second course in a series; however, the former course (3001) is not a required prerequisite. The course will utilize material presented in a massive open online course (MOOC) available through coursera.org and sponsored by the center for the integration of research, teaching and learning (CIRTL). Participants will learn about effective teaching strategies and the research that supports them in addition to learning how to collect, analyze, and act upon their own evidence of student teaching. Topics include but are not limited to: 1. Learning through diversity, 2. Cooperative learning/peer instruction, 3. Inquiry-based labs, 4. Problem-based learning, 5. Flipped classroom pedagogy. Further, participants will learn the process for developing a teaching as research plan as well as the role of human subjects consent for classroom based research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

BIOSC 3902 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Biological Sciences (PHD)

Biomedical Sciences

MSBMS 2010 - BIOCHEMISTRY AND PHYSIOLOGY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Biomedical Sciences (BIOSCI-MS)

MSBMS 2020 - COMPREHENSIVE ANALYSIS OF DISEASE

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Biomedical Sciences (BIOSCI-MS)

MSBMS 2021 - COMPREHENSIVE ANALYSIS OF DISEASE 2

Minimum Credits: 2

Maximum Credits: 2

This course is designed to give the students the opportunity to integrate all the knowledge accumulated during the program in a comprehensive study of disease states. Small groups of students will work collaboratively to develop an in-depth analysis of a specific disease, from the diagnosis to the pathogenesis, the molecular and cellular basis and treatment options currently available. Students will also identify and analyze the gaps in knowledge and critical needs to be filled. Each group of students will work in a web-based platform to develop an knowledge-based teaching/research study. Class activities will include presentations by each group of students and critical discussions of the current topics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Biomedical Sciences (BIOSCI-MS)

MSBMS 2030 - HISTOLOGY AND CELL FUNCTION IN HEALTH AND DISEASE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Biomedical Sciences (BIOSCI-MS)

MSBMS 2040 - METHOD AND LOGIC IN BIOMEDICINE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Biomedical Sciences (BIOSCI-MS)

MSBMS 2050 - HUMAN ANATOMY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Biomedical Sciences (BIOSCI-MS)

MSBMS 2060 - FOUNDATIONS OF SUCCESSFUL BIOMEDICAL CAREER PLANNING AND DEVELOPMENT

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Biomedical Sciences (BIOSCI-MS)

MSBMS 2061 - FOUNDATIONS OF SUCCESSFUL BIOMEDICAL CAREER PLANNING AND DEVELOPMENT II

Minimum Credits: 1

Maximum Credits: 1

The course provides foundational training in career planning and professional development. Key skills that students build are: Increasing your capacity for self-directed career development; Fostering life-long career management habits; Maximizing your scholarly training success; Shaping positive career outcomes. Students will engage in experiential learning, small-group discussions, and peer mentoring. These different approaches enable individually relevant and self-constructed understandings of career development, consistent with expectations of independence in scholarly activities. Areas for discussion include: self-assessments, exploration of different career options, how to set goals, career adaptability, and other topics identified by students. A final self-authoring paper will be required.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad SN Basis

Course Requirements: PLAN: Biomedical Sciences (BIOSCI-MS)

MSBMS 2062 - PROFESSIONALISM AND NON-COGNITIVE DEVELOPMENT 1

Minimum Credits: 1

Maximum Credits: 1

The course provides foundational training in professionalism and non-cognitive development: students will engage in experiential learning, small-group discussions, peer mentoring, and journaling. Students will explore a wide range of topics such as burnout prevention, health disparities, and narrative interviewing. Non-cognitive skills will also be developed such as emotional intelligence through journaling. This course is required for the "BMP-Scope" experiential program.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Biomedical Sciences (BIOSCI-MS)

MSBMS 2063 - PROFESSIONALISM AND NON-COGNITIVE AND DEVELOPMENT PART 2

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MSBMS 2074 - EXPERIENTIAL LEARNING

Minimum Credits: 1

Maximum Credits: 10

The bmp offers experiential learning activities in the areas of community service, patient volunteering, laboratory research and clinical shadowing. For this course, the bmp student and instructor plan onsite experiential learning activities designed to provide goal oriented outcomes for the student. Students are expected to take initiative to find suitable matches and schedule several experiential sessions. Available opportunities are posted on the bmp website and matches are made each term to optimize the experiential benefit for all bmp students. Students are responsible for documenting all experiential dates and hours, along with what was learned in each activity. Students are also responsible for ensuring all activities are approved by the instructor. Students will also provide a five page maximum reflect on the experiences at the end of the term and a laboratory report for any research conducted, both of which are graded. Students are also required to ensure they complete the appropriate onsite requirements for the number of credits they are registered for.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

Course Requirements: PLAN: Biomedical Sciences (BIOSCI-MS)

MSBMS 2075 - INDEPENDENT STUDY TOPIC EXPLORATION

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad Letter Grade

MSBMS 2080 - CELL BIOLOGY PATHWAYS IN TREATMENT OF DISEASE

Minimum Credits: 2

Maximum Credits: 2

This course will explore how basic cell biology and genetic investigations have revealed the theoretical underpinnings of, and revolutionized approaches to the understanding of, the basis of selected diseases and uncover tractable approaches to treatments or cures. A set of major cell pathways will be used to illustrate how new drug targets can be identified and can lead to dramatic advances in medical treatments. The course blends traditional lectures with self-directed student activities to prepare the students for interactive lecture discussions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Biomedical Sciences (BIOSCI-MS)

MSBMS 2090 - CELL SIGNALING AND PHARMACOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course examines the principles of drug action. The course covers the basic principles of pharmacodynamics and pharmacokinetics. Particular emphasis is placed on the concept that the rational use of drugs is based on the understanding of the interactions, signaling mechanisms, and functional outcomes at the modular and cellular level.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Biomedical Sciences (BIOSCI-MS)

MSBMS 2101 - BIOMEDICAL MASTERS PROGRAM PROFESSIONAL COMMUNICATION REFLECTION

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

MSBMS 2110 - ORGAN SYSTEMS PHYSIOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course discusses the integrative physiology of all of the major organ systems, including the cardiovascular system, respiratory system, renal system, gastrointestinal system, and reproductive system. The systems will be considered in the context of the function of the body as a whole, and how they respond during challenges (e.g. exercise) and pathological states. Current research related to the functioning of these systems will be emphasized throughout the course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Biostatistics

BIOST 2000 - TEACHING PRACTICUM

Minimum Credits: 3

Maximum Credits: 3

This course will provide doctoral students with an opportunity to obtain teaching experience. This course is intended for doctoral students during their dissertation stage. Teaching experience will enhance the professional growth of students. Students will further develop oral and written communication skills and an art for explaining material, which is an integral part of a biostatistician's career.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BIOST 2011 - PRINCIPLES OF STATISTICAL REASONING

Minimum Credits: 3

Maximum Credits: 3

Acquaints students with the concepts of statistical reasoning as applied to the study of public health problems. Students learn the general principles of statistical analysis and acquire the ability to utilize a statistical software package (Minitab) as a tool to facilitate the processing, editing, storing, displaying, analysis and interpretation of health research related data.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: Graduate School of Public Health; PLAN: Excluded Plans = Biostatistics(DPH, PHD, MPH, MS, MSH)

Course Attributes: Global Studies

BIOST 2014 - INTRODUCTION TO BIOSTATISTICS FOR BIMEDICAL SCIENTIST

Minimum Credits: 3

Maximum Credits: 3

Introduction to statistical theory and data analysis for bench scientists, with emphasis on the use of the R software package applied to laboratory and clinical data. Introductory statistical concepts are integrated with data preparation and analysis practice. Topics include: data management; graphics; probability concepts; probability distributions; one- and two-sample statistical tests; linear and generalized linear models; analysis of survival data; assessment of model quality.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BIOST 2016 - SAMPLING DESIGN AND ANALYSIS

Minimum Credits: 2

Maximum Credits: 2

This is an applied statistical methods course designed to provide students with a working knowledge of introductory and intermediate-level sample designs and associated methods of statistical analysis along with a basic understanding of the theoretical underpinnings. Emphasis is placed on sampling human populations in large communities. Students will also learn statistical software used in survey data analysis, including sample selection and survey procedures in the STATA software package. Lecture topics include: simple probability samples, stratified sampling, ratio and regression estimation, cluster sampling, sampling with unequal probabilities, variance estimation and weighting in complex surveys, two-phase sampling, estimating population size and estimation of rare populations and small areas. The course will consist of one weekly 2-hour lecture and one class devoted to student presentations related to a term project assigned at midterm.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BIOST 2011 or 2039 or 2041; PROG: Graduate Sch of Public Health (PPBHL)

BIOST 2021 - SPECIAL STUDIES

Minimum Credits: 1

Maximum Credits: 15

Qualified students may undertake advanced work or research with the approval and under the guidance of a member of the staff.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

BIOST 2025 - BIOSTATISTICS SEMINAR

Minimum Credits: 1

Maximum Credits: 1

Biometry seminars introduce the students to current health problems involving the application and development of biostatistics methods and theory.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad SN Basis

BIOST 2039 - BIOSTATISTICAL METHODS

Minimum Credits: 3

Maximum Credits: 3

This course is an introductory biostatistics methods course for biostatistics graduate students, other quantitative public health students, and health career professionals who will make use of statistical methods in research projects, interpreting literature and possibly develop new biostatistical methods in the future. This class is intended for students needing a more research-oriented approach than that provided in BIOST 2011 and an approach with a greater emphasis on mathematical foundation than provided in BIOST 2041. Students in BIOST 2039 are expected to have a working knowledge of calculus, including multivariable differentiation and integration. Topics covered in this course include exploratory and descriptive analyses, probability, estimation and hypothesis testing. One and two sample problems will be considered for both continuous and discrete variables. ANOVA, regression, correlation and nonparametric methods will be discussed. R will be used extensively for data analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: BIOST-MS, PHD

BIOST 2040 - ELEMENTS OF STOCHASTIC PROCESSES

Minimum Credits: 3

Maximum Credits: 3

Covers generating functions and convolutions of random variables, the poison and compound poison distributions, branching processes, random walk, and the gambler's ruin problem, Markov chains, and simple birth and death processes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: BIOST 2043

BIOST 2041 - INTRODUCTION TO STATISTICAL METHODS

Minimum Credits: 3

Maximum Credits: 3

Discusses techniques for the application of statistical theory to actual data. Topics include probability theory, estimation of parameters, and tests of hypothesis for both the discrete and continuous case.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

BIOST 2042 - INTRODUCTION TO STATISTICAL METHODS 2

Minimum Credits: 3

Maximum Credits: 3

More techniques are given for the application of statistics to actual data with emphasis on distribution-free and multivariate methods. Interpretation of results and concepts will be stressed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BIOST 2041

BIOST 2043 - INTRODUCTION TO STATISTICAL THEORY 1

Minimum Credits: 3

Maximum Credits: 3

Covers joint, marginal, and conditional probabilities; distributions of random variables and functions of random variables; expectations of random variables and moment generating functions; law of large numbers; central limit theorem.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

BIOST 2044 - INTRODUCTION TO STATISTICAL THEORY 2

Minimum Credits: 3

Maximum Credits: 3

Covers elements of statistical inference; sampling distributions of estimators; Rao-Cramer's Inequality; problems of testing statistical hypotheses; Neyman-Pearson lemma; likelihood ratio tests.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BIOST 2043

BIOST 2046 - ANALYSIS OF COHORT STUDIES

Minimum Credits: 3

Maximum Credits: 3

This introductory applied course in statistical modeling focuses on maximum likelihood and related regression methods for the analysis of cohort data. Topics include generalized linear models, generalized estimating equations, and generalized linear mixed models. The course emphasizes logistic and poisson regression, and discrete survival models with time-dependent covariates. Students analyze several cohort data sets, assess the adequacy of their models, and interpret their results.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: BIOST 2042 and 2049

BIOST 2049 - APPLIED REGRESSION ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

This is an introductory course in statistical modelling intended for Masters or PhD students in biostatistics or other disciplines who have already had basic training in statistical methods. The course focuses on all types of regression methods with the following learning objectives: To fit and interpret linear regression models with multiple continuous and/or categorical predictors. To fit and interpret generalized linear models (GLMs) with emphasis on logistic and Poisson regression. To justify and apply standard modelling procedures using data, including model interpretation and assessment of model adequacy. To analyze data sets taken from the fields of medicine and public health. To develop oral and written communication skills through the description of analytic strategies and the summarization and interpretation of results.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BIOST 2039 or BIOST 2041

BIOST 2050 - LONGITUDINAL AND CLUSTERED DATA ANALYSIS

Minimum Credits: 2

Maximum Credits: 2

This introductory course in statistical modeling is intended for MS students in biostatistics and PhD students in biostatistics or epidemiology in their second year of graduate work. This course may be thought of as the third methods course in Biostatistics following BIOST 2041/2039 and BIOST 2049. The course focuses on regression methods for the analysis of longitudinal or more generally clustered data with emphasis on generalized estimating equation. The course objectives are to introduce generalized estimating equations (GEEs), mixed models, and generalized linear mixed models from an applied perspective to analyze longitudinal and clustered data, to understand the justification and applicability of standard procedures to standard problems, including model interpretation and assessment of model adequacy.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: BIOST 2049; PROG: Graduate Sch of Public Health

BIOST 2051 - STATISTICAL ESTIMATION THEORY

Minimum Credits: 3

Maximum Credits: 3

Fisher's information; Rao-Cramer Inequality and Sufficient Statistics; Bhattacharyya Bounds; Rao-Blackwell Theorem; Methods of Moments; the Method of Maximum Likelihood; Newton-Raphson Method and Rao's Scoring for Parameters; estimation of several parameters; order statistics and life testing problems; estimation with censored data and survival analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BIOST 2039 and 2044; PLAN: Biostatistics (PHD)

BIOST 2052 - MULTIVARIATE ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

Multivariate normal distribution, estimation of the mean vector and covariance matrix, distributions and uses of simple, partial and multiple correlation coefficients, generalized T2 statistic, distribution of the sample generalized variance, Multivariate Analysis of Variance and the Multivariate Behrens-Fisher problem. Multivariate methods applied to repeated measures analysis, factor analysis, and discriminant analysis. Beginning of the course emphasizes theory; later, applications and computational methods emphasized. Lectures are of current and classical literature.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: BIOST 2044

BIOST 2054 - SURVIVAL ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

Introduces the student to the design considerations and statistical analysis of clinical trials. Covers the theoretical aspects of various models in reliability theory and the proportional hazards model, as well as the more applied problems of interpreting specific data sets and designing large-scale trials.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BIOST 2039 and 2044

BIOST 2055 - INTRODUCTORY HIGH-THROUGHPUT GENOMIC DATA ANALYSIS 1: DATA MINING AND APPLICATIONS

Minimum Credits: 3

Maximum Credits: 3

This course is a graduate level introduction and overview of modern high-throughput genomic data analysis. It is designed for graduate students in biostatistics and human genetics who are interested in the technology and elementary data mining of high-throughput genomic data (including but not limited to classical expression arrays, various array-based applications, next-generation sequencing and proteomics). The course is also helpful for biology students with basic quantitative training (e.g. two elementary statistics courses and R programming) who have interests in understanding the intuition and logic underlying the data analysis methods. R is the major language used in the course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: BIOST 2039; PLAN: Biostatistics (MS or PHD)

BIOST 2056 - INTRODUCTION TO DIAGNOSTIC TEST EVALUATION AND ROC ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

The course offers an introduction to concepts and approaches for statistical assessment of diagnostic systems and ROC analysis. The covered material includes different measures of diagnostic accuracy, aspects of the design of accuracy studies, statistical estimation and hypothesis testing, sample size calculation and some advanced topics. General prerequisites include knowledge of basic statistical concepts and approaches related to

estimation and hypothesis testing; some knowledge of regression modeling and SAS is desirable.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: BIOST 2039 and 2044; PLAN: Biostatistics (PHD,MS)

BIOST 2058 - SCIENTIFIC COMMUNICATION SKILLS

Minimum Credits: 2

Maximum Credits: 2

This course is meant to help students develop oral, visual and written scientific communication skills and to familiarize students with research resources. Students may use their own research topic, including work on a thesis or dissertation, or help will be provided in selecting one.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BIOST 2059 - CONSTRAINED STATISTICAL INFERENCE WITH APPLICATIONS

Minimum Credits: 2

Maximum Credits: 2

This is an applied biostatistics course for biostatistics graduate students, other quantitative public health students, and health career professionals who will make use of statistical methods in research projects and possibly develop new biostatistical methods in the future. While this course is intended to be an application oriented course motivated by real scientific problems, it will rely on some statistical theory. Students are expected to have basic understanding of statistical theory at the level of BIOST 2044 (Introduction to Statistical Theory 2) and have applied analysis skills at the level of BIOST 2049 (Applied Regression Analysis). Additionally, students are expected to have working knowledge of the programming language R. Topics covered in this course include: (a) Brief review of some important concepts from BIOST 2043, BIOST 2044 and BIOST 2049, such as parametric and nonparametric estimation and testing of hypotheses, linear fixed and mixed effects models, best linear unbiased predictor (BLUP) and generalized linear models. (b) Some real world motivating examples of various types of constraints on parameter spaces. Reasons for constrained inference. (c) Estimation of parameters and testing of hypotheses under inequality constraints in a variety of settings - challenges and solutions. Various estimation and testing procedures such as Pool Adjacent Violators Algorithm (PAVA), Restricted Maximum Likelihood Estimation (RMLE), Isotonic Regression, Likelihood Ratio Test (LRT), Williams' test, Dunnett's test, Jonckheere-Terpstra test. Substantial reduction in samples sizes and gain in power when using constrained inference based methods in comparison to standard methods. (e) Resampling methods for constrained inference, why they fail for confidence intervals but are suitable for some testing problems. (f) Nonparametric problems - various notions of orderings of random variables, univariate and multivariate analysis. (g) Applications in clinical trials, toxicology, high dimensional gene expression studies, microbiome, cell-cycle and circadian clock.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: BIOST 2044 and BIOST 2049

BIOST 2061 - LIKELIHOOD THEORY AND APPLICATION

Minimum Credits: 2

Maximum Credits: 2

The purpose of this course is to introduce the student to modern likelihood theory and its applications. The course will cover maximum likelihood theory, profile likelihood theory, pseudo likelihood theory and generalized estimating equations. The course is taught at a doctoral level and much of the theory is illustrated through applications.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BIOST 2044

BIOST 2062 - CLINICAL TRIALS: METHODS AND PRACTICE

Minimum Credits: 3

Maximum Credits: 3

The course lectures integrate web-based material covering fundamental concepts in the design and conduct of modern clinical trials. Topics include: experimental designs, interim monitoring, analysis methods for comparative clinical trials, ethical, organizational, and practical considerations of design, case studies, and international guidelines for publication of trials in major journals, and meta-analyses.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BIOST 2039 and 2093; PLAN: Biostatistics (MS,MPH, or PHD)

BIOST 2063 - BAYESIAN DATA SCIENCE

Minimum Credits: 3

Maximum Credits: 3

This is a course in Bayesian methods for applied statistics and data science whose broad goal is to provide students with the skills needed to be able to select, conduct, report and interpret appropriate Bayesian analyses for a wide variety of applied problems. General topics covered include Bayesian concepts of statistical inference, Markov chain Monte Carlo and other computational methods, linear, hierarchical and generalized linear models, model selection and diagnostics, and Bayesian learning. The course explores the use of the popular and free software packages R, JAGS and Stan for conducting Bayesian analyses.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: (BIOST 2039 or 2041) and BIOST 2049

BIOST 2065 - ANALYSIS OF INCOMPLETE DATA

Minimum Credits: 3

Maximum Credits: 3

This course will present missing-data problems in statistics and discuss naive methods such as complete-case analysis, available-case analysis and imputation; standard likelihood-based methods, theory and application of multiple imputation, data augmentation, Gibbs sampler, and some recently developed methodologies in the missing-data literature and related fields.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: BIOST 2049 and 2051 and 2061

BIOST 2066 - APPLIED SURVIVAL ANALYSIS: METHODS AND PRACTICE

Minimum Credits: 2

Maximum Credits: 2

This course covers fundamental concepts and methods important for analysis of datasets where the outcome is the time to an event of interest, such as death, disease occurrence or disease progression. Topics include: basic methods for summarizing and presenting time-to-event data in tabular form and graphically as life tables, non-parametric statistical techniques for testing hypotheses comparing life tables for two or more groups; approaches to fitting the semi-parametric Cox proportional hazard model and other commonly used parametric models that incorporate study co-variables, methods for assessing goodness-of-fit of the models, and sample size considerations. In addition to didactic lectures, there are group projects that involve analysis of datasets and presentation of analytic reports in the classroom.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: BIOST 2049; PLAN: Biostatistics (PHD,MS)

BIOST 2077 - SPECIAL TOPICS

Minimum Credits: 3

Maximum Credits: 3

Introduces the student to specialized topics in biostatistics that are not covered in the formal curriculum.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Biostatistics(PHD, MPH, MS)

BIOST 2078 - STATISTICAL LEARNING IN HIGH-DIMENSIONAL DATA WITH OMICS APPLICATIONS

Minimum Credits: 2

Maximum Credits: 2

This 2-credit course is a graduate level course to introduce theories and algorithms for statistical analysis of high-throughput genomic data. Emphases will be given to high-dimensional data analysis and theories behind the commonly used methods. This course is designed for graduate students who already have sufficient statistical background, have basic knowledge of various high-throughput genomic experiments (e.g. already finished BIOST 2055 or MSCBIO 2070) and wish to learn advanced statistical theories for bioinformatics and genomics research. Students are expected to have programming experiences in R (e.g. BIOST 2094) or in other low-level languages such as C, C++, Java and Fortran. The course will meet four hours per week for half a semester.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: BIOST 2039 and 2043; PLAN: Biostatistics (MS, PHD)

BIOST 2079 - INTRODUCTORY STATISTICAL LEARNING FOR HEALTH SCIENCES

Minimum Credits: 2

Maximum Credits: 2

This 2-credit course is a graduate level course to introduce basic concept and methods for statistical learning with emphasis on modern health science applications. The syllabus includes linear regression with regularization, supervised machine learning, unsupervised clustering, dimension reduction and other special topics (e.g. Bayesian network and hidden Markov model). Target audience will be second year Biostatistics master students or early PhD students with interests in statistical learning techniques for health science data. Through homework problem sets, computer labs and a final project, students train with hands-on materials to implement methods and interpret results in real applications.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: BIOST 2039 and 2043 and 2049; PLAN: Biostatistics(MS or PHD); Students are expected to have programming experiences in R or in some low-level languages such as C, C++, Java and Fortran.

BIOST 2081 - MATHEMATICAL METHODS FOR STATISTICS

Minimum Credits: 3

Maximum Credits: 3

Differentiation and integration of functions of several variables. Infinite sequences and series. Fundamentals of matrix algebra. Class examples and homework problems will emphasize applications to probability and statistics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Biostatistics (PHD, MS, MPH)

BIOST 2083 - LINEAR MODELS

Minimum Credits: 3

Maximum Credits: 3

Acquaints students with linear model techniques for analyzing both balanced and unbalanced data. The topics covered include generalized inverses, orthogonal contrasts with unbalanced data, and analysis of covariance. Analysis with computer packaged programs is discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BIOST 2044

BIOST 2086 - APPLIED MIXED MODELS ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

Mixed model analysis provides a new approach to modeling which allows one to relax the usual independence assumptions and take into account complicated data structures. This course will consider all types of mixed models into a general framework and consider the practical implications of their use. Topics will include; normal mixed models, generalized mixed models, and mixed models for categorical data, repeated measures data analysis and cross-over trials with mixed models. Software for fitting mixed models will be discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: BIOST 2083

BIOST 2087 - BIOSTATISTICS CONSULTING PRACTICUM

Minimum Credits: 1

Maximum Credits: 1

Provides advanced students (second-year masters and doctoral) with exposure and practical experience in consulting on the bio statistical aspects of research problems arising in the biomedical or other allied fields. Students initially under the supervision of a faculty member participate in discussions with investigators leading to the design and/or analysis of a current research problem.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

BIOST 2093 - SAS FOR DATA MANAGEMENT AND ANALYSIS

Minimum Credits: 2

Maximum Credits: 2

The goal of this course is to provide students with an understanding of the SAS program environment as well as the skills needed to use SAS as a tool to conduct research, prepare data, and perform analyses. Upon completion of the course the student will have an understanding of SAS at the intermediate level. The course covers the utility of SAS as a data management, data manipulation, and data analysis tool. The focus will not be statistical analysis, but rather how to use SAS as a programming tool. Emphasis will be placed on program code writing. Concepts will be illustrated with numerous examples from basic descriptive analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Requirements: PREQ: BIOST 2039; PROG: Graduate Sch of Public Health

BIOST 2094 - ADVANCED R COMPUTING

Minimum Credits: 2

Maximum Credits: 2

An advanced statistical computing course using R designed for graduate level biostatistics students with programming experience in R or other low-level languages such as C, C++, Java, and/or Fortran. Experience in SAS and/or Stata does not qualify. The course will cover topics, including but not limited to, R in modeling and optimization, advanced R graphics, functional programming, object-oriented field guide, efficient computing in R, GUI for R-shiny, embedding C/C++, R package/documentation, Julia, Github etc. The course will also include real life application for students to practice the programming techniques learned in class.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: BIOST 2039 and 2043; PLAN: Biostatistics

BIOST 2096 - NUMERICAL METHODS BIOSTATISTICS

Minimum Credits: 3

Maximum Credits: 3

The purpose is to familiarize students with a broader range of numerical methods which are useful in bio statistical research. Selected computational techniques used in statistical research will be covered. Background will be provided to facilitate understanding of a few numerical algorithms widely

used in statistics. The following are covered: recurrence relations, power series and asymptotic expansions, generating pseudo-random deviates, basic simultaneously methodology, solutions of nonlinear equations, newton's method, vector and matrix norms, linear regression and matrix inversion.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: BIOST 2044 and 2049

BIOST 2098 - AGENT BASED MODELING

Minimum Credits: 3

Maximum Credits: 3

An introduction to agent-based models (ABMS) as a technique for understanding how the dynamics of biological, social and other complex systems arise from the characteristics and behaviors of the agents making up these systems. Examples will emphasize the applications of abms in public health, including infectious disease transmission and control measures; health behaviors such as vaccine refusal, drug and tobacco use, exercise and obesity; community violence and health disparities, but students will have the flexibility to develop projects based on their own areas of interest.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLANS: Biostatistics (MS; MPH; PHD)

BIOST 2099 - CAPSTONE

Minimum Credits: 2

Maximum Credits: 2

The capstone course is a heavily directed and mentored statistical data analysis project course leading to an ETD formatted thesis and formal oral presentation of the work. This course will be an intense data analysis and writing course with the goal of producing an ETD formatted thesis document containing rigorous analytic methods, appropriately summarized analysis results with logical, statistically and scientifically valid conclusions. The Capstone course will ensure that the written thesis milestone demonstrates the student's competency in biostatistics (and area of concentration if applicable) as well as oral and written communication skills in general.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Biostatistics (MS); Required to have passed MS comprehensive exam.

BIOST 3010 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1

Maximum Credits: 15

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

BIOST 3023 - GEOGRAPHIC INFORMATION SYSTEM AND SPATIAL DATA ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

Covers the use of Gis and Spatial Data Analysis Techniques in Empirical Public Health Research. Basic descriptive and analytical functions of Gis are introduced along with spatial and geographic concepts. The interrelationship between Gis and spatial data analysis will be demonstrated through the use of specialized Gis and spatial data analysis software with a particular emphasis on the study of spatial patterns and spatial autocorrelation in public health research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: Global Studies

Business Accounting

BACC 2060 - INDEPENDENT STUDY IN ACCOUNTING

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BACC 2100 - MACC INTERNSHIP

Minimum Credits: 1

Maximum Credits: 3

To enroll for an IFC through the MACC program, you must be a MACC student and work for a minimum of 10 hours a week for 10 weeks during the semester you intend to take the internship for credit. You may receive up to six internship credits, but only three per semester, and no more than three credits for an experience. The grade for these credits will be pass/fail (satisfactory/unsatisfactory). The deadline to apply for an internship for credit is the date the add/drop period ends for that given semester. All internship offers must be approved by the MACC office prior to enrollment for that experience. Performance appraisals must be submitted to your faculty advisor and to career services and your employer must complete a midpoint and final performance appraisal.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad HSU Basis

BACC 2251 - FORENSIC ACCOUNTING

Minimum Credits: 3

Maximum Credits: 3

"Fraud is extremely costly to our society, and the costs seem to be growing. The AICPA recently called forensic accounting one of the seven hot, new, "sizzling" career areas in accounting. It is estimated that there will be a shortage of between 25,000 and 50,000 professionals working in this area in the next few years in the U.S., So there are many opportunities for students knowledgeable in fraud to work in various federal agencies (e.g. FBI), major corporations, and professional service firms. The objectives of the forensics course are to familiarize students with several forms of fraud and the methods that fraud examiners use to prevent and detect it. Students will develop expertise in detecting financial statement fraud from the external auditor perspective, and learn how to use technology to detect fraud. They will acquire a basic understanding of how interviews are conducted in order to detect deception. The class will also provide a historical view of financial statement fraud. The tools used in the class will include interviewing, document examination, and public records searches, which will be helpful to students wanting to become consultants, auditors, tax professionals, managers, etc. The class, of course, includes an ethics component. It will help students to understand the common ethical dilemmas that they might encounter in the business world, and will help prepare them to resist pressure to commit fraud."

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BACC 2252 - CORPORATE TAX ACCOUNTING AND PLANNING

Minimum Credits: 3

Maximum Credits: 3

The objective of this course is to help students understand how important features of the internal revenue code influence decisions regarding how to organize and structure business operations and select the most appropriate form of doing business. The course begins with a comparison of the issues surrounding the choice of taxable business entity, comparing the regular corporation (c corporation), the small business corporation (s corporation), the partnership, and the sole proprietorship. After this, the course focuses primarily on the c corporation and the s corporation and the underlying principles that determine their respective tax bases and resulting tax obligations. Tax planning is an integral part of the course. Income shifting, tax deductions, tax credits, and income exclusions are discussed in detail. The course uses case studies (including some reflecting an international tax perspective) and tax return preparation to help students to apply the theory and detail of the tax code. Course materials are updated as tax laws change.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BACC 2253 - INTERNATIONAL ACCOUNTING

Minimum Credits: 2

Maximum Credits: 2

This course will explore the rapid movement toward a set of internationally consistent financial reporting methods in the global marketplace. The financial accounting standards board (FSAB) and the international accounting standards board (IASB) have formally agreed to harmonize reporting standards over time. In addition, the securities and exchange commission (sec) is currently considering a proposed time-line for the adoption of international financial reporting standards (IFRS) in the US. The course will examine the substantive differences between us generally accepted accounting principles (us GAAP) and IFRS, which have already been adopted by many other countries. The course will also provide a framework for understanding the theory and application of IFRS versus us GAAP and explore some of the ethical issues inherent in international business reporting.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BACC 2254 - ADVANCED FINANCIAL ACCOUNTING

Minimum Credits: 3

Maximum Credits: 3

This course covers topics that are of particular interest to financial report preparers and auditors. Special emphasis is placed on accounting for business combinations and consolidated financial reporting. Other topics include international accounting, accounting for partnerships, and accounting by fiduciaries.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Accounting (MS)

BACC 2255 - INTERNAL CONTROLS AND ACCOUNTING DISCLOSURES FOR DERIVATIVES

Minimum Credits: 1.5

Maximum Credits: 1.5

This accounting elective will focus on derivative instruments and their impact on accounting and internal controls. The course will cover various topics tied to derivative instruments including the benefits, hedging, the risks, cash flow implications, internal controls, accounting & reporting requirements, taxation, and regulations. The course will analyze various incidents where internal controls were compromised and the implications. Upon successful completion of this course, the student will have the knowledge and background required to account for, audit, and monitor the use of derivative products. This course will also help those students who plan on sitting for the CPA examination.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BUSACC 1238

BACC 2256 - STRATEGIC COST MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

This course deals with strategic implications of alternative methods of product cost measurement. The discussions will primarily be case-based and will include cost measurement issues in both conventional and modern manufacturing environments.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Accounting (MS)

BACC 2258 - STRATEGIC COST MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

The quality, timeliness and credibility of the cost information used in corporate decision-making can have a significant impact on value creation. This is because cost information is important not only in strategy formulation and in the development and implementation of action plans that link strategies to value creation, but also because such data serve as measures of financial performance for products, processes, organizational sub-units and managers. In particular, product and service cost estimates have a major influence on corporate strategic decisions such as pricing, resource allocation, product development, supply chain design and customer focused management. In addition, product costs are informative signals of operational efficiency. Therefore, they constitute financial measures of the success of management actions such as continuous improvement and business process reengineering. Over-aggregate or obsolete cost systems can have a significant adverse impact on cost reduction in particular and overall corporate strategy and competitiveness in general. The objective of this course is to develop an integrated approach to analyzing these issues. In particular, we will study (a) how product cost measurement affects strategy and resource allocation decisions; (b) how to be sophisticated users of cost feedback and how to understand the strategic distortions that are induced by flaws in cost system design; (c) the strategic role of value-driver information and the relationship between process improvement and cost reduction; (d) the use of budgetary control systems and financial measures in performance evaluation and management and (e) incentive conflicts in organizations and their mitigation through appropriate mechanisms.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Katz Grad School of Business students only.

BACC 2401 - FINANCIAL ACCOUNTING

Minimum Credits: 3

Maximum Credits: 3

The major objective of this course is to help students understand the basic structure and substance of a firm's reports from a user's point of view. This includes what is (and what is not) included in the reports, how and when events affect the statements, and what can be inferred from these reports about the firm's past activities, present position and the future prospects.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BACC 2402 - FINANCIAL ACCOUNTING IN HEALTHCARE ORGANIZATIONS

Minimum Credits: 3

Maximum Credits: 3

The major objective of this course is to help students understand the basic structure and substance of a firm's reports from a user's point of view.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BACC 2466 - RISK MANAGEMENT AND COMPLIANCE ISSUES FACING INTERNATIONAL ORGANIZATIONS

Minimum Credits: 2

Maximum Credits: 2

This course will be valuable to MBA and mac students interested in working for global businesses, regardless of their desired career paths. As business organizations continue to seek growth in markets outside the United States and Western Europe, they will face increasingly complex and difficult challenges, including compliance with U.S. And foreign criminal and civil laws in places that are corrupt. Compliance with the U.S. Foreign corrupt practices act, which forbids businesses from providing certain benefits to government officials, is essential for global organizations, as penalties are severe. And to succeed in their careers, auditors will need to understand that businesses in certain geographic areas maintain multiple sets of books and hide bribery and tax fraud schemes. Strategic planners and supply-chain professionals will face cross-border risks, including demands by government customs and tax inspectors for bribe payments. Energy executives will confront violence, corruption and supply-chain problems in many oil and gas-producing areas. Sales professionals will confront demands for kickbacks. The course will cover these issues, and will provide students with the knowledge and compliance tools necessary to advance their professional careers in a global economy.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BACC 2510 - INTERMEDIATE FINANCIAL REPORTING AND ANALYSIS 1

Minimum Credits: 2

Maximum Credits: 2

This financial accounting elective is designed for accounting and finance majors who plan to be financial analysts or heavy users of financial reports. Topics covered include accounting procedures for recording and presenting financial information, asset valuations, revenue recognition and financial statement footnote disclosures.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BACC 2401; PROG: Joseph M. Katz Grad Sch Bus

BACC 2511 - INTERMEDIATE FINANCIAL REPORTING AND ANALYSIS 2

Minimum Credits: 2

Maximum Credits: 2

A continuation of BACC 2510 and includes topics such as accounting and reporting for contingencies, liabilities, leases, pensions and earnings per share.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BACC 2510; PROG: Joseph M. Katz Grad Sch Bus

BACC 2523 - ACCOUNTING DATA ANALYTICS

Minimum Credits: 3

Maximum Credits: 3

Accounting data analytics exposes macc students to the role of big data in accounting and the information technology tools and techniques used by accountants and auditors to produce more timely and accurate reports. Topics include advanced excel, data modeling, statistical sampling and cluster analysis, business intelligence, and xbrl generation and analysis. The course will cover data analytics covering four major themes: financial reporting, performance evaluation, audit analytics, and tax. Each theme will include hands-on instruction using commercial and open source software and requires students to complete a related data analysis project. Accounting data analytics is different from other database and information systems courses in that it will show students how to use specific tools to complete projects and develop an analytical mindset with a specific focus on accounting and auditing processes. This is primarily a project-based course. The students will complete three projects, showing their mastery of the tools, decisions, and the steps they followed to reach their conclusions. The final exam would be used to evaluate general understanding of the concepts discussed throughout the semester. There is potential for additional ebl components including field trips if we can work out logistics. I'm currently developing relationships with the accounting firms to bring in local experts and to work on real-world cases.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BACC 2524 - INTERNAL AUDIT: RISK & ADVISORY

Minimum Credits: 2

Maximum Credits: 2

Students are introduced to generally accepted auditing standards (GAAS). Internal control is studied in detail with emphasis on how to test for its effectiveness. Audit objectives, planning and sampling techniques are developed as a basis for the audit opinion.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BACC 2525 - FINANCIAL STATEMENT ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

Financial statement analysis focuses on the evaluation of publicly traded company financial statements and related note disclosures as well as the correlation of this historic financial performance to the company's stock prices. This course will assist students' development of a systematic approach to analyzing reported financial data and understanding the underlying risks and possible inconsistencies among comparative companies. Requirements of the course include interim exams and written and oral presentations of analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Accounting (MS)

BACC 2528 - MANAGERIAL ACCOUNTING

Minimum Credits: 2

Maximum Credits: 2

Students learn how the costs of products and services are determined in cost accounting systems and how this data is used in managerial decisions and in planning and control of business operations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BACC 2401; PROG: Katz Graduate School of Business

BACC 2533 - ACCELERATED INTERMEDIATE FINANCIAL REPORTING

Minimum Credits: 3

Maximum Credits: 3

Accelerated intermediate financial reporting fulfills the prerequisites of intermediate financial reporting 1 and intermediate financial reporting 2 for students who are entering the MACC program. This course studies the preparation, communication, interpretation and analysis of financial data with emphasis on the information needs of users of financial information prepared under us GAAP. General topics covered in this course include revenue recognition, inventory accounting, long term assets and impairment, investments, current liabilities and contingencies, long term liabilities, capital and retained earnings, leases, pensions and postretirement benefits, income taxes, and preparation of the statement of cash flows. Students are expected to have an accounting background. This course is designed to sit on top of an existing foundation in accounting and will assume students already have taken several financial accounting courses or knowledge obtained through work experience. It is expected that students are fluent with accrual accounting and the accounting cycle and that they have already studied some of the topics in the course in depth. The course will move quickly.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BACC 2534 - CONTROLLERSHIP

Minimum Credits: 2

Maximum Credits: 2

This accounting elective is designed for MAcc students seeking a role in corporate accounting and controls. The course will cover the changing role of the controller and the major functions managed by the controller of a typical company. Topics covered include: role of the controller, general accounting, cash management, accounts receivable, accounts payable, payroll, financial planning and budgeting, management reporting and designing well-controlled financial processes and systems. The content will focus not only on the processes managed by the controller, but also the optimization of these processes, policies and procedures and leadership issues. The use of experts from the accounting community will be used as a complement to the theoretical materials presented to illustrate the practical applications and challenges of controllership. Because the course is practical in nature, an experience-based learning group project will be a large part of the curriculum and learning experience offered to students.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BACC 2537 - TAXES AND MANAGEMENT DECISIONS

Minimum Credits: 2

Maximum Credits: 2

Designed as an introduction to business taxation for majors in areas such as finance or financial planning. Focuses on how managers and analysts can recognize tax problems, consequences and opportunities associated with common business events.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BACC 2401; PROG: Katz Graduate School of Business

BACC 2540 - INTERNATIONAL TAXATION

Minimum Credits: 3

Maximum Credits: 3

This course is an introduction to the U.S. law of international taxation. It is designed to provide those entering the global marketplace with a basic understanding of how international transactions are taxed. The course will focus on: (1) fundamentals of international taxation, (2) U.S. activities of foreign taxpayers, and (3) foreign activities of U.S. taxpayers.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BACC 2559; PROG: Katz Graduate School of Business

BACC 2541 - SEC REPORTING AND DISCLOSURE

Minimum Credits: 3

Maximum Credits: 3

This accounting elective is designed for MACC students as a capstone course in financial accounting. The course covers the rules for financial disclosures under the U.S. Securities and Exchange Commission and is meant to expose students to the financial reporting processes followed by public companies. The fundamentals of the following processes will be covered: earnings releases; quarterly reporting; annual reporting; proxy statements; comment letters and company responses; benefit plan reporting; working with the division of corporation finance and working the division of enforcement. Hot topics in SEC reporting and advanced disclosure topics, such as special areas of revenue recognition, management's discussion and analysis, asset retirement obligations, leasing, corporate restructurings, business acquisitions/spin offs, forward looking statements and disclosures about market risk will be covered.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BACC 2254 and BUSACC 1238; PROG: Katz Graduate School of Business

BACC 2542 - ACCOUNTING AND FINANCE LAW

Minimum Credits: 3

Maximum Credits: 3

This course is designed to provide MACC and MBA candidates with advanced legal information that is necessary for effectuating management level responsibilities in the contemporary business environment. This course will enhance a business student's knowledge of the law (past that of the three credit business law elective course that is offered) in a manner that strategically is consistent with the content of the CPA exam.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BSEO 2315 or 2528; PROG: Joseph M. Katz Grad Sch Bus

BACC 2543 - TAX POLICY 1

Minimum Credits: 2

Maximum Credits: 2

Our nation was born from a revolution over taxation without representation. Nearly 250 years later, the debate over tax policy continues to dominate

political debates and presidential campaigns. Why the tax system attracts all this attention is no mystery. It is the aspect of government that directly affects more people than any other. This course will explore the history of tax policy in the United States, the tax legislative process in Congress, how our tax policies influence people's decisions and behavior, international tax considerations, and ideas for future tax reform. Students will discuss what factors are important in designing a good tax system and survey the social justices and injustices that arise from how the government raises its revenue. Upon completion of this course, students should be able to think critically about our tax system and form opinions grounded in facts and policy. This course is for any student that wants to become a more educated citizen (and voter!) With respect to our nation's ongoing debate over tax reform.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BACC 2559; PROG: Joseph M. Katz Grad Sch Bus

BACC 2544 - TAX POLICY 2

Minimum Credits: 2

Maximum Credits: 2

This course will build upon tax policy I by taking a more in-depth look at our federal tax system. Students will also be introduced to international tax policies and provisions. Students will continue to discuss what factors are important in designing a good tax system and survey the social justices and injustices that arise from how the government raises its revenue. Upon completion of this course, students should be able to think critically about our tax system and form opinions grounded in facts and policy.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BACC 2549 - STRATEGIC COST ANALYSIS

Minimum Credits: 2

Maximum Credits: 2

This course deals with strategic implications of alternative methods of product cost measurement. The discussions will primarily be case-based and will cover cost measurement issues in both conventional and modern manufacturing environments.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BACC 2401 and 2528; PROG: Katz Graduate School of Business

BACC 2557 - ACCOUNTING RESEARCH AND WRITING

Minimum Credits: 2

Maximum Credits: 2

This course focuses on improving students' writing, deductive reasoning, and problem-solving skills as they conduct research to make a recommendation on the accounting treatment for transactions for which no direct or clear guidance currently exists. Weekly writing assignments are evaluated on both content and the quality of the writing.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BACC 2401; PROG: Joseph M. Katz Grad Sch Bus

BACC 2558 - NON-PROFIT AND GOVERNMENTAL ACCOUNTING

Minimum Credits: 3

Maximum Credits: 3

This course focuses on financial reporting and disclosure for not-for-profit and governmental entities based on the standards and principles promulgated by the financial accounting standards board (FASB) and the governmental accounting standards board (GSAB). Students will learn how such entities prepare their financial reports and how to interpret and use such information. The course covers financial reporting for not-for-profit entities, balancing the focus on internal operations with fiduciary responsibility. In addition, the course examines the objectives of financial reporting for governmental units and the preparation and use of the financial statements for such entities. A sample of specific entities will be reviewed to

illustrate the preparation and use of their financial statements. In addition, accounting software for governmental transactions will be introduced.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BACC 2559 - INDIVIDUAL TAX ACCOUNTING AND PLANNING

Minimum Credits: 3

Maximum Credits: 3

This course focuses on individual tax return preparation and planning. Students will learn how to calculate the taxes associated with a variety of personal, investment, property, and sole-proprietorship transactions. Concepts will be reinforced through the preparation of actual tax returns that reflect different combinations of such transactions. Students will develop tax planning skills by considering how various transactions can be restructured to minimize the current or future tax liability.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Katz Grad School of Business students only.

BACC 2801 - FINANCIAL ACCOUNTING

Minimum Credits: 3

Maximum Credits: 3

The major objective of this course is to help students understand the basic structure and substance of a firm's reports from a user's point of view. This includes what is (and what is not) included in the reports, how and when events affect the statements and what can be inferred from these reports about the firm's past activities, present position and the future prospects.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BACC 2802 - FINANCIAL ACCOUNTING IN HEALTHCARE ORGANIZATIONS

Minimum Credits: 3

Maximum Credits: 3

The major objective of this course is to help students understand the basic structure and substance of a firm's reports from a user's point of view.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BACC 2901 - ACCOUNTING AND CONTROL FOR HEALTH CARE ORGANIZATIONS

Minimum Credits: 3

Maximum Credits: 3

In this course you will develop an understanding of the various roles that accounting information plays in healthcare organizations. We will begin by analyzing the needs of managers, healthcare professionals, healthcare consumers and other parties for financial information concerning a healthcare organization's financial position, current financial performance and cash generating ability. You will learn how standard financial statements (balance sheet, income statement, and statement of cash flows) address these needs, and the strengths and weaknesses of the statements in supplying this information. Financial statement analysis concepts and techniques will be introduced as cost-effective tools that enable healthcare decision makers to draw appropriate inferences from published financial statements. We will also study key issues that arise in accounting for a healthcare organization's operations, investing and financing decisions. The final part of the course will analyze specific uses of accounting information in support of organizational decisions. We will study how accounting systems measure the cost and profitability of healthcare services, the effect of volume on profitability, and the proper use of accounting cost information in supporting decisions such as whether to invest in new equipment and whether or not to expand existing services.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BACC 3001 - INTRODUCTION TO ACCOUNTING RESEARCH

Minimum Credits: 3

Maximum Credits: 3

This seminar is designed to provide new accounting doctoral students with an overview of accounting research. The course will discuss the variety of topics and methods addressed by accounting scholars, and will seek to provide insight into the characteristics that distinguish the highest quality research. Analytical research methods and topics, as well as applications in managerial accounting, will receive particular emphasis in the first half of the course. In the second half, we will read and analyze representative accounting research employing capital markets, archival managerial and experimental methods.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: Katz Grad School of Business students only.

BACC 3005 - ACCOUNTING THEORY

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

BACC 3010 - INDEPENDENT STUDY IN ACCOUNTING

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad HSU Basis

BACC 3014 - EXPERIMENTAL RESEARCH IN ACCOUNTING

Minimum Credits: 3

Maximum Credits: 3

The course covers recent experimental studies that apply behavioral decision theory, psychology, and economics to address a variety of accounting research questions. The course focuses most heavily on recent work. The goals of this course are to (1) familiarize students with recent experimental research in accounting, (2) help students develop the skills necessary to critically evaluate such research, and (3) generate ideas for future experimental research topics.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: Katz Grad School of Business students only.

BACC 3017 - ACCOUNTING WORKSHOP

Minimum Credits: 3

Maximum Credits: 3

Presentation of research papers in various aspects of accounting and related areas by faculty and distinguished visitors. The student is expected to attend the workshop, participate in discussions, and present a workshop paper.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: Katz Grad School of Business students only.

BACC 3021 - ARCHIVAL RESEARCH IN MANAGERIAL ACCOUNTING

Minimum Credits: 2

Maximum Credits: 2

This seminar will focus on studying management control and performance measurement issues largely from an economics perspective using archival methods. Topics discussed will include, but not be limited to, analysis and economic impact of cost systems, use of financial measures for performance evaluation and compensation, impact of incentive systems on organizational performance, non-financial measures and balanced scorecard. The course materials will consist of papers in accounting. Course requirements include active class participation, presentations/discussions/summary reports of papers, replication of earlier studies (where data are available), and a final examination.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

BACC 3024 - ECONOMIC MODELS OF INCENTIVES AND CONTROLS

Minimum Credits: 2

Maximum Credits: 2

This seminar provides students with an introduction to incentive problems in firms and markets and how contractual arrangements serve to mitigate these problems. Students are introduced to the classic papers in agency research and current working papers spanning economics, accounting and corporate finance.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

BACC 3025 - CAPITAL MARKETS RESEARCH IN ACCOUNTING

Minimum Credits: 3

Maximum Credits: 3

This course provides students with a solid understanding of capital market research in accounting and empirical research training. The class will cover topics such as the relation between stock prices and earnings, stock market anomalies, and analyst and management forecasts. Students will also replicate some classic finance and accounting papers in order to provide them with some hands-on experience working with compustat, crsp, ibes, and sdc data using sas statistical programming. The class will help students to better evaluate research in workshops, develop new ideas and do empirical tests.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BACC 3026 - EMPIRICAL ARCHIVAL RESEARCH IN ACCOUNTING

Minimum Credits: 3

Maximum Credits: 3

This doctoral seminar will explore empirical archival research in accounting.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

BACC 3028 - ARCHIVAL RESEARCH IN AUDITING

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

BACC 3050 - CRITICAL THINKING IN ACCOUNTING

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

BACC 3052 - CRITICAL THINKING IN ACCOUNTING II

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

BACC 3053 - CRITICAL THINKING IN ACCOUNTING 3

Minimum Credits: 1.5

Maximum Credits: 1.5

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

BACC 3099 - READINGS IN ACCOUNTING

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

Business Administration

BUSADM 3001 - BEHAVIORAL RESEARCH METHODS

Minimum Credits: 3

Maximum Credits: 3

The primary objective of this course is to familiarize you with and develop an appreciation for business research methodology. Research skills will be an important determinant of your success as an academic. The course will introduce you to a variety of research approaches, allow you to develop an understanding to effectively use these approaches in your own research, and prepare you to evaluate research done by others. The course will also provide you with an introduction to causal modeling techniques (lisrel, pls). By the end of the course you should develop a sound appreciation of the research process and a range of research approaches that can be applied to management problems. In addition, you should have an appreciation for what constitutes "good" research so that you can constructively critique and make use of research done by others.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BUSADM 3006 - MULTIVARIATE ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

Examines the theory of and applications for multivariate statistical methods of analysis including, but not limited to, multiple regression, multiple

discriminant analysis, and factor analysis. Emphasis on the use and limitations of these tools and upon the meaning and interpretation of results. Students are expected to gain first-hand experience with several techniques by applying canned computer programs to appropriate data sets and by discussing appropriateness of applications in published literature.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: Katz Grad School of Business students only.

BUSADM 3013 - WORK AND ORGANIZATIONS

Minimum Credits: 3

Maximum Credits: 3

This seminar is intended for Ph.D. students who wish to develop an understanding of the theoretical underpinnings of research on the management of knowledge and work in organizations. It reviews the major theoretical perspectives, but places a particular emphasis on the current empirical literature related to human resource management. Because of the multi-disciplinary nature of this research space, readings draw on a broad range of material including studies from sociology, organization theory, strategy, economics, and policy. These are used to develop an integrative understanding of the underpinnings of work and employment-related research published in top tier management journals.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

BUSADM 3021 - BEHAVIORAL SCIENCE RESEARCH PRACTICUM

Minimum Credits: 3

Maximum Credits: 3

The primary objective of this course is to provide a hands-on experience in the development, design and execution of rigorous behavioral science research. Students will be asked to design and execute a theory-based research project. We will explore a variety of different methodological approaches and discuss the fit between students' specific research questions and different techniques. Our goal is two-fold: (1) to help students develop a sophisticated understanding for what constitutes rigorous research within the field; and (2) to coach students through the research process in order to create a high-quality empirical paper for publication.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BUSADM 3030 - MANAGING THE TRIPLE BOTTOM LINE

Minimum Credits: 3

Maximum Credits: 3

Issues such as climate change and global warming, human rights, and health and sanitation for all have garnered significant attention in recent years. Leading businesses realize that it is no longer enough to maximize profits and cater to shareholders but as well critical to integrate the wellbeing of the planet and its people into their business models. Such a transformation to managing the triple bottom line of people, planet and profit requires us to look at business and its operations through a new lens. This doctoral seminar will focus on theories, concepts and methodologies that we can use to understand the role of the firm in 21st century society and develop strategies for long run sustainability. The course will be interdisciplinary, drawing on literatures in strategy, marketing, organizational behavior, operations, and finance as well as methods spanning lab experiments to structural equation models to understand the conditions under which creating social and environmental value can drive business value. The course will feature academic guest speakers from the aforementioned disciplines of business to highlight the interdisciplinary nature of sustainability research.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

BUSADM 3050 - METHODS FOR BEHAVIORAL BUSINESS RESEARCH

Minimum Credits: 2

Maximum Credits: 2

Experienced behavioral business researchers usually fall into a pattern that emphasizes a subset of diverse methods and approaches. But both new

and experienced researchers must depend on a vast literature that makes use of a diverse set of methods, many of which are outside of their expertise. Therefore, drawing from a limited set of approaches would disadvantage any researcher who desires to understand, the literature of his or her chosen field. Another by-product of following only a limited set of approaches is a likely narrowed understanding of trade-offs necessary in any choice of research method. Because no single method can answer all questions, it is important to make good decisions about those trade-offs. This course provides a "hands on" survey of research methods, covering phases from developing research ideas, theorizing, collecting data, identifying what to measure, and determining how it should be measured. A rolling writing assignment throughout the course will provide opportunities for feedback at each step of the way. As a result of this course, you should be a better consumer, critic, and provider of research results in your field.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

BUSADM 3199 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Business Economics

BECN 2019 - ECONOMICS FOR INTERNATIONAL BUSINESS

Minimum Credits: 3

Maximum Credits: 3

Investigates key aspects of the international economics environment. The first half introduces the international monetary system. Reviews the balance of payments, foreign exchange rate systems, adjustment mechanism, the foreign exchange market, and international money and capital markets. In the second half, topics include theories of international trade and investment restrictions on trade, commercial policies of the United States.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BECN 2401; PROG: Katz Graduate School of Business

Course Attributes: Russian & East European Studies

BECN 2060 - INDEPENT STUDY IN MANAGERIAL ECONOMICS

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BECN 2401 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISION: FIRMS AND MARKETS

Minimum Credits: 3

Maximum Credits: 3

This course develops an understanding of how market-based economic systems reconciles the separate needs of consumers and producers, and provides an economic framework for managerial decisions. Topics include: pricing, output, and quality decisions; the impact of productivity improvements on costs; quality-cost tradeoffs; transactions costs as a determinant of the boundaries of the firm; market imperfection and the role of regulation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BECN 2509 - GLOBAL MACROECONOMICS 1

Minimum Credits: 2

Maximum Credits: 2

This elective course focuses on the forces which drive or determine overall national/global economic activity. The course is organized around the progressive development of an "open economy" macroeconomic model which is capable of handling a number of key policy and other variables.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BECN 2510 - GLOBAL MACROECONOMICS 2

Minimum Credits: 2

Maximum Credits: 2

This follow-up course continues the focus on the forces which drive or determine overall national/global economic activity. This course expands the "open economy" macroeconomics framework developed in BECN 2509."

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: CREQ: BECN 2509; PROG: Katz Graduate School of Business

Course Attributes: Global Studies

BECN 3010 - INDEPENDENT STUDY IN ECONOMICS

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad HSU Basis

BECN 3099 - READINGS IN MANAGERIAL ECONOMICS

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

Business Finance

BFIN 2015 - SHORT-TERM FINANCING

Minimum Credits: 2

Maximum Credits: 2

Focuses on short-term financial management. Major topics include cash management, investment in money market instruments, banking regulations, liquidity policy, financial statement forecasting and simulation credit policy and credit management, and working capital management.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BFIN 2006 or BFIN 2410; PROG: Katz Graduate School of Business

BFIN 2030 - VALUATION 1

Minimum Credits: 2

Maximum Credits: 2

This course provides students with the skills and framework for measuring and managing the value of companies. The course begins by describing how firms create value and then develops the tools required to measure value. Students are required to demonstrate their facility with the techniques.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BFIN 2006 or BFIN 2410; PROG: Katz Graduate School of Business

BFIN 2031 - CREATING VALUE THROUGH RESTRUCTURING

Minimum Credits: 2

Maximum Credits: 2

Building on concepts developed in valuation (BFIN 2030), this course examines how and why different types of corporate restructuring affect firm value. The course uses both case studies and readings from the applied corporate finance literature.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BFIN 2030; PROG: Katz Graduate School of Business

BFIN 2036 - CORPORATE FINANCE

Minimum Credits: 3

Maximum Credits: 3

This course is an introduction to corporate financial management. The course builds on BFIN 2006 (introduction to financial management) to provide students with the conceptual framework and analytical tools necessary to appreciate, understand, and analyze the problems facing corporate financial managers. The course consists of four main parts. The first part develops the tools necessary to conduct the analysis of corporate finance problems. These tools include the analysis of data reported on financial statements, building pro-forma financial statements, the basics of put and call options, and an introduction to corporate valuation techniques. The second part of the course examines how managers set the two primary corporate financial policies: capital structure and payout policy (e.g. Dividends and share repurchases), and the process of restructuring in financial distress and bankruptcy. The third part of the course analyzes the process of issuing securities in the capital markets, including the role of the investment banker. Finally, the fourth part explores several aspects of mergers and acquisitions, including the motives for these transactions, the structure of the deal, and the role of private equity firms.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BFIN 2006 or BFIN 2410; PROG: Joseph M. Katz Grad Sch Bus (PKATZ)

BFIN 2039 - INVESTMENT MANAGEMENT/CAPITAL MARKETS

Minimum Credits: 3

Maximum Credits: 3

Focuses on security analysis, portfolio analysis, and the fundamentals of investment theory. Topics include bond and stock valuation, determination of interest rates, effects of inflation and taxes on security values.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BFIN 2006 or BFIN 2410 ; PROG: Katz Graduate School of Business

BFIN 2042 - ACQUISITION OF PRIVATELY HELD COMPANIES

Minimum Credits: 2

Maximum Credits: 2

The course will provide an introduction to the acquisition of privately held companies along with strategies for value creation in the acquired business. The course, which is exclusively taught using the case method, takes lessons taught in the valuation courses extending these concepts to the valuation of privately held business, the structuring of the acquisition balance sheet and the execution of the acquisition process. While a discussion

of secured financing alternatives will be included, the application of junior capital, both mezzanine debt and equity will be the focus of the course. A risk analysis of the target will be performed and an investment thesis intended to illustrate value creation techniques will be central to each class discussion. Upon completion, students will be better prepared how to assess both operational and financial forms of risk, develop techniques intended to reduce both forms of risk, and consider value creation strategies in marketing, operations, finance and management. Each case will involve a real company acquired over the years by PNC equity partner along with actual selling memorandum, diligence prepared by PNC principals, market research firms, accounting firms and law firms employed by PNC as part of their diligence process.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BFIN 2006 or BFIN 2410; PROG: Joseph M. Katz Grad Sch Bus (PKATZ)

BFIN 2043 - INTERNATIONAL FINANCIAL MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

Conceptual foundation of international financial management. Begins with a review of foreign exchange markets followed by the asset decision. Analyzes capital budgeting decisions of multinationals and taxation of international transactions. Discusses risk management in a global environment, international sources of financing, analysis of the nature of foreign, money and capital markets; and analysis of international banking.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BFIN 2006 or BFIN 2410; PROG: Katz Graduate School of Business

BFIN 2051 - INTRODUCTION TO DERIVATIVES

Minimum Credits: 2

Maximum Credits: 2

Organization of markets for put-and-call options on stocks, commodities, indices, and foreign exchange. Specific topics include arbitrage and hedging relationships, the valuation of options, and the implications of trading strategies in options.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BFIN 2006 or BFIN 2410; PROG: Katz Graduate School of Business

BFIN 2056 - DERIVATIVES: APPLICATIONS TO VALUATION

Minimum Credits: 2

Maximum Credits: 2

This course uses the techniques developed in "introduction to derivatives" and applies it to real option valuation, the valuation of dot coms and other start-ups, risk management and innovative security design to reduce cost of capital.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BFIN 2006 or BFIN 2410; CREQ: BFIN 2051; PROG: Katz Graduate School of Business

BFIN 2060 - INDEPENDENT STUDY IN FINANCE

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BFIN 2061 - INDEPENDENT STUDY IN FINANCE 2

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BFIN 2062 - INDEPENDENT STUDY IN FINANCE 3

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BFIN 2066 - FINANCE PROJECT COURSE

Minimum Credits: 2
Maximum Credits: 2
Brief description: project will focus is on valuation of potential acquisitions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BFIN 2068 - MARKETS AND TRADING

Minimum Credits: 2
Maximum Credits: 2
This course is designed to give participants a broad understanding of the operations of various financial markets with special focus on liquidity, market structure and trading. With this objective in mind, the course will concentrate on the operations of exchanges, trading systems and broker-dealer intermediaries. Participants will be exposed to a range of issues regarding the formulation of trading decisions and market structure design and regulation. Simulation software will be used to provide hands-on experience with making tactical trading decisions in different market structure environments.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: BFIN 2006 or BFIN 2410; PROG: Joseph M. Katz Grad Sch Bus

BFIN 2069 - FIXED INCOME SECURITIES

Minimum Credits: 2
Maximum Credits: 2
This course examines the concepts that are most frequently encountered in the market for fixed income securities. Specifically, the course describes the most important fixed income securities and markets and develops tools for valuing these securities and managing their interest rate and credit risk. Historically, "fixed-income" refers to securities which promise fixed cash flows over their lives such as a fixed-rate coupon bond. Now, it is generally accepted that a fixed income instrument is one whose value is driven by the level of interest rates and/or the value of a related underlying asset. This classification would include floating rate bonds, callable bonds, bond futures, bond options, caps, floors and collars, interest rate swaps, credit derivatives and asset-backed securities. The analysis of fixed income securities is quantitative in nature. We will focus on the intuition behind the various concepts presented in class but there will be a fair amount of computation involved. Students should be comfortable with linear algebra, calculus, probability distributions, regression analysis and statistical concepts like mean, variance and correlation (covariance). The course will also assume a high level of familiarity with a spreadsheet package like microsoft excel.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BFIN 2006 or BFIN 2410; PROG: Joseph M. Katz Grad Sch Bus

BFIN 2123 - COMMERCIAL BANKING

Minimum Credits: 2

Maximum Credits: 2

This course examines the role commercial banks play in facilitating the flow of capital between providers of capital (i.e. Depositors) and users of capital (i.e. Borrowers).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BFIN 2006 or BFIN 2410 ; PROG: Katz Graduate School of Business

BFIN 2124 - INVESTMENT BANKING AND VENTURE CAPITAL

Minimum Credits: 1.5

Maximum Credits: 1.5

This course will examine financing transactions from the viewpoints of managers of these financial institutions and managers of firms seeking financing.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BFIN 2006 or BFIN 2410 ; PROG: Katz Graduate School of Business

BFIN 2129 - ENERGY PROJECT FINANCE

Minimum Credits: 2

Maximum Credits: 2

This course will cover all aspects of infrastructure project finance with a focus on the energy industry. We will look in depth at why project finance exists and who the players are, how deals are structured and investors evaluate opportunities, the unique contractual issues and risks in the transactions and the specialized financial modeling and analysis. This course is designed to provide students who are interested in the energy and other infrastructure-reliant industries (like transportation or real estate development) with a practical understanding of how large-scale projects are financed in today's marketplace.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BFIN 2409 and BFIN 2410; PROG: Joseph M. Katz Grad Sch Bus

BFIN 2130 - VALUATION 2

Minimum Credits: 2

Maximum Credits: 2

This is a continuation of valuation 1.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: CREQ: BFIN 2030; PROG: Katz Graduate School of Business

BFIN 2140 - REAL ESTATE FINANCE

Minimum Credits: 2

Maximum Credits: 2

This course provides an introduction to real estate with a focus on the valuation and financing of real estate. The following topics are expected to be covered as the course focuses on income producing properties: economic theory of real estate, valuation technique (including pro-forma cash flow projections), financing strategies, risk analysis, taxation, and the securitization of real property interests. No prior knowledge of the industry is

required, but students are expected to rapidly acquire a working knowledge of real estate terminology and real estate markets. Classes are conducted in a standards lecture format with discussion required.

Academic Career: Graduate

Course Component: Lecture

Grade Component: LG/SNC Elective Basis

Course Requirements: PREQ: BFIN 2006 or BFIN 2410; PROG: Katz Graduate School of Business

BFIN 2145 - FINANCIAL MODELING

Minimum Credits: 3

Maximum Credits: 3

The course will apply finance theory to solve various problems in financial management and investments. It will take a hands-on approach in building financial spreadsheet models using Microsoft excel. Students will learn to address issues that arise in various areas of financial analyses. These issues include but are not limited to discounted cash flow valuation, cost of capital estimation, asset return calculations, portfolio theory, index models, option pricing models, bond pricing and investment performance analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BFIN 2006 or 2410; PROG: Joseph M. Katz Grad Sch Bus

BFIN 2150 - RISK MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

This course examines financial risk management from the perspective of the corporate manager. We will examine three issues. The first is why a corporation should manage risk. To understand this, we need to consider how corporations create value for shareholders and the frictions they face that create wedges between what the corporation produces and what is ultimately passed through to shareholders. The second issue is how a corporation should manage risk. This requires an understanding of certain financial instruments that are generally referred to as derivatives - instruments whose values derive from other more fundamental assets such as commodities, currency exchange rates, stocks (equities) and bonds (interest rates). The building blocks for many of these financial instruments are two basic derivative instruments, forwards/futures and options. The third issue is the cost of risk management. We will start by pricing forwards/futures and options under the assumption that markets are efficient and there is no arbitrage. We will then use Monte Carlo simulation as a tool for pricing more exotic derivatives.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BFIN 2306 - FINANCIAL MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

An introduction to the tools used in corporate financial decision making. Develops two basic valuation models commonly used in finance--present value models and the capital asset pricing model and focuses on the use of these models in corporate decision making. Examines capital budgeting, corporate structure policy, and corporate dividend policy.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BFIN 2409 - FINANCIAL MANAGEMENT 1

Minimum Credits: 2

Maximum Credits: 2

The main objective of this course is to gain understanding of the theory and practice of financial decision making. This course develops the tools and framework necessary to address the question what investment projects should be undertaken to maximize shareholder wealth? To examine this question, we will learn how to value an uncertain stream of cash flows and apply the concept of the time value of money in valuing bonds and equity. The course covers a number of market-based investment criteria and develops an entity valuation model, based on discounted cash flows (DCF) used

for standard capital budgeting decisions. We will conclude with a short introduction to the concept of risk and return, resulting in the cost of capital. We will cover a case discussion on capital budgeting to put our framework in a more realistic environment.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: BACC 2401 or BQOM 2401; PROG: Joseph M. Katz Grad Sch Bus

BFIN 2410 - FINANCIAL MANAGEMENT 2

Minimum Credits: 2

Maximum Credits: 2

This course builds on financial management i and develops an asset pricing framework used in corporate finance based on the trade-off between risk and return. We use modern portfolio theory to determine a suitable asset pricing model and arrive at determining the relevant discount rate to reflect the risk associated with the cash flow we focused on in financial management i. Finally, we will address how financing and capital structure choices affect project and firm value using the above techniques and methods. The course will conclude with three valuation methods: WACC, APV, and FTE and an extensive case discussion. Financial management i & ii are prerequisite courses for any other finance elective in the curriculum.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BFIN 2409; PROG: Joseph M. Katz Grad Sch Bus

BFIN 2555 - PRACTICUM PORTFOLIO MANAGEMENT AND SECURITY ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

The students in this class will have hands-on experience in the areas of security analysis, security selection and portfolio management.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BFIN 2410 and 2030; CREQ: BFIN 2039; PROGRAM: Joseph M. Katz Grad Sch Bus

BFIN 3000 - FINANCE FUNDAMENTALS

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

BFIN 3010 - INDEPENDENT STUDY IN FINANCE

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad HSU Basis

BFIN 3016 - ADVANCED TOPICS IN FINANCE

Minimum Credits: 3

Maximum Credits: 3

This course examines empirical corporate finance in the areas of equity and debt financing, capital structure, and financial intermediaries in the primary capital market. International aspects of a number of topics are covered. The course uses a mix of influential papers and recent papers in each area. Students will present papers, write referee reports, and complete a term project.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: Katz Grad School of Business students only.

BFIN 3018 - MARKET MICROSTRUCTURE

Minimum Credits: 3

Maximum Credits: 3

Analyzes the process and results of trading assets under a set of explicit trading rules. Research in this area examines the structure provided by various market mechanisms to model how rules for price setting evolve in markets. The purpose of this seminar is to provide an introduction to the basic paradigms that are used to explain the behavior of markets and their participants. In addition to discussing the theory underlying market microstructure, we will examine a variety of empirical papers that use tick-by-tick data on bonds, stocks, options and futures.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BFIN 3030 - FINANCE RESEARCH SEMINAR

Minimum Credits: 1.5

Maximum Credits: 1.5

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

BFIN 3031 - CORPORATE FINANCE THEORY AND METHODS

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

BFIN 3032 - CORPORATE FINANCE SEMINAR 1

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

BFIN 3033 - CORPORATE FINANCE SEMINAR 2

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

BFIN 3034 - CORPORATE FINANCE SEMINAR 3

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

BFIN 3035 - FINANCIAL EMPIRICAL METHODS

Minimum Credits: 2

Maximum Credits: 2

This doctoral seminar covers the empirical techniques used most often in the analysis of financial markets and their application to actual market data. Topics covered include the statistical properties of asset returns and the efficient markets hypothesis, empirical tests of asset pricing models (CAPM, APT, intertemporal CAPM, consumption CAPM), and tests of conditional asset pricing models. Topics of related interest may also be covered.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

BFIN 3036 - EMPIRICAL ASSET PRICING

Minimum Credits: 2

Maximum Credits: 2

This doctoral seminar covers empirical research on institutional investors. Both asset pricing and corporate finance topics will be addressed

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

BFIN 3037 - FINANCE SEMINAR IN MARKET MICROSTRUCTURE

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

BFIN 3038 - PROPERTY RIGHTS AND THEORY OF THE FIRM

Minimum Credits: 2

Maximum Credits: 2

This doctoral seminar covers the theoretical and empirical literature on transactions costs, property rights, theory of the firm, ownership, and compensation. Topics of related interest may also be covered.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

BFIN 3099 - READINGS IN FINANCE

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

Business Human Resources Mgt

BHRM 2023 - HUMAN RESOURCES PLANNING/STRATEGY 1

Minimum Credits: 2

Maximum Credits: 2

Personnel policies and programs as well as the available skills, knowledge and attitudes can provide particular opportunities or limitations to management as an organization's strategic goals and plans are defined. This seminar is designed to examine organizational human resources

management from a strategic perspective. The key focus will be on exploring human resources planning and strategy concepts, developing an understanding of the related analytical tools, & determining how these concepts and tools can be used to enhance an organization's position.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BHRM 2024 - HUMAN RESOURCES PLANNING/STRATEGY 2

Minimum Credits: 2

Maximum Credits: 2

A continuation of "Human Resources Planning/Strategy 1".

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BHRM 2060 - INDEPENT STUDY HUMAN RESOURCES MANAGEMENT

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BHRM 3010 - INDEPENT STUDY HUMAN RESOURCES MANAGEMENT

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad HSU Basis

BHRM 3099 - READINGS HUMAN RESOURCES MGT

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

Business Marketing

BMKT 2031 - MARKETING RESEARCH

Minimum Credits: 3

Maximum Credits: 3

Emphasizes the understanding of research purposes and processes from the viewpoint of a consumer of research. Topics include problem analysis and hypothesis formulation, research design, implementation of research, and analysis of research results.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BQOM 2401; CREQ: BMKT 2409; PROG: Joseph M. Katz Grad Sch Bus

BMKT 2032 - APPLIED BEHAVIORAL ECONOMICS

Minimum Credits: 3

Maximum Credits: 3

This course will introduce students to the theory and application of "behavioral economics," a sub-domain that has gained considerable practical popularity across a range of fields, including marketing, finance, accounting, human resources and public policy. Popularized by books such as "Predictably Irrational" by Dan Ariely and "Nudge" by Cass Sunstein and Richard Thaler, Behavioral Economics focuses on the ways that humans' natural psychological tendencies can be used or overcome in ways that lead to desirable outcomes. Importantly, behavioral economics acknowledges that humans generally do not conform to the assumptions that underlie classical economics and that the ways in which we fail to be rational, self-interested, perfect information processors can be used to our benefit, rather than to our detriment.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BMKT 2033 - INTERNATIONAL MARKETING

Minimum Credits: 2

Maximum Credits: 2

Introduces the student to a systematic treatment of marketing on a global scale. In addition to examining the problems of performing various market functions in other countries, heavy emphasis will be given to analyzing and understanding the different cultures in which a firm's products might be marketed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: (PREQ: BMKT 2411 or CREQ: BMKT 2409); PROG: Joseph M. Katz Grad Sch Bus

BMKT 2035 - CONSMR BEHAV THEORY & PRACTICE

Minimum Credits: 3

Maximum Credits: 3

A variety of social and psychological theories and concepts related to consumer behavior as well as their practical application to the field of marketing are examined and discussed. Students have the opportunity to further apply what they learn through case presentations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BMKT 2060 - INDEPENDENT STUDY IN MARKETING

Minimum Credits: 1

Maximum Credits: 6

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BMKT 2061 - INDEPENDENT STUDY IN MARKETING MANAGEMENT 2

Minimum Credits: 1

Maximum Credits: 9

Self designed elective course in marketing management.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BMKT 2062 - INDEPENDENT STUDY IN MARKETING MANAGEMENT 3

Minimum Credits: 1

Maximum Credits: 9

Self designed elective course in marketing management.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BMKT 2306 - MARKETING MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

Topics include the role of marketing in a developed society, consumer behavior, competitive behavior, social and technological change, demand analysis and measurement, marketing research and model building, and marketing planning, strategy, and control.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BMKT 2409 - MARKETING MANAGEMENT

Minimum Credits: 2

Maximum Credits: 2

This course examines the role of marketing in creating value for the firm. It helps students answer the central question of marketing strategy, what value to provide and to whom, using the tools of segmentation, targeting, and positioning (STP) of brands. The course shows how central aspects of marketing mix programs, product, place, pricing, and promotion, all follow from an effective STP program, and how marketing support functions such as marketing research, advertising, and new product development can support effective marketing decisions. Emerging trends in digital marketing, competition and globalization are examined. The course emphasizes experience-based learning to develop the necessary marketing knowledge and skills among students.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BMKT 2509 - MARKETING PLANNING & STRATEGY

Minimum Credits: 2

Maximum Credits: 2

Designed to create an understanding of marketing problems and perspectives and the contexts in which they arise. The ability to structure and analyze marketing problems is reviewed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: (PREQ: BMKT 2411 or CREQ: BMKT 2409); PROG: Joseph M. Katz Grad Sch Bus

BMKT 2513 - CONSUMER BEHAVIOR 1

Minimum Credits: 2

Maximum Credits: 2

Examines a wide variety of social science concepts as they relate to the behavior of consumers. Although consumer research methodology is not a main focus, students will be expected to become familiar with the more common research techniques used to study consumers.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: CREQ: BMKT 2411 or BMKT 2409; PROG: Joseph M. Katz Grad Sch Bus

BMKT 2514 - CONSUMER BEHAVIOR 2

Minimum Credits: 2

Maximum Credits: 2

A continuation of "Consumer Behavior 1".

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: CREQ: BMKT 2513; PROG: Katz Graduate School of Business

BMKT 2515 - MARKETING AND SOCIAL MEDIA STRATEGY

Minimum Credits: 3

Maximum Credits: 3

This course covers new and non-traditional marketing communications in the age of digital marketing and social media. Through a series of lectures, case discussions, team workshops, projects, and guest lectures, students will learn about this new and exciting area of marketing and how companies and brands can leverage social media platforms and the social interactions that occur between consumers (e.g., Word-of-mouth) to help them achieve their marketing and business goals. Topics covered include consumer-to-consumer interactions, social networks, marketing on digital social media platforms (e.g., Facebook), viral marketing, social CRM, integrated campaigns featuring advertising and social media, and new marketing opportunities with emerging technologies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: (PREQ: BMKT 2411 or CREQ: BMKT 2409); PROG: Joseph M. Katz Grad Sch Bus

BMKT 2522 - SALES MANAGEMENT

Minimum Credits: 2

Maximum Credits: 2

This course is somewhat unique in that it stresses hiring characteristics that should be sought by the sales manager and various recruiting techniques that have proven effective. The entire course will provide assistance to the student in sales positions following graduation and will form the basis for sales management decisions in future years.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: (PREQ: BMKT 2411 or CREQ: BMKT 2409); PROG: Katz Graduate School of Business

BMKT 2526 - PRODUCT DEVELOPMENT & MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

This course deals with the development of new products. It focuses on the set of decisions that need to be made in the development of new products and tools useful for making these decisions. This course will also introduce the student to a systematic treatment of marketing on a global scale. In addition to examining the problems of performing various market functions in other countries, heavy emphasis will be given to analyzing and understanding the different cultures in which a firm's products might be marketed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: (PREQ: BMKT 2411 or CREQ: BMKT 2409); PROG: Katz Graduate School of Business

BMKT 2528 - ADVERTISING

Minimum Credits: 2

Maximum Credits: 2

Advertising is a complex phenomenon - at once leading, lagging and reflecting the values of society. The pragmatic, operational and decision-making aspects of advertising are emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: (PREQ: BMKT 2411 or CREQ: BMKT 2409); PROG: Joseph M. Katz Grad Sch Bus

BMKT 2530 - SERVICES MKTG:STRATEGIES/TACTICS

Minimum Credits: 2

Maximum Credits: 2

The intention of the course is to provide a managerial frame work of services marketing for managers and students with an interest in the services sector. Its focus is primarily on services businesses but much of it is relevant to services in the manufacturing businesses. The course focus is on problem solving through discussion and analysis of contemporary service marketing cases. The course is appropriate for: 1) any student seeking a follow up course to the basic marketing course and 2) students who plan marketing careers with service firms.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: (PREQ: BMKT 2411 or CREQ: BMKT 2409); PROG: Katz Graduate School of Business

BMKT 2532 - PRICING STRATEGIES AND TACTICS

Minimum Credits: 2

Maximum Credits: 2

The course focuses on an important element of the marketing mix. While product, promotion and distribution are aspects of the mix that will help create value to consumers, the price creates value to the firm in the form of profits.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: (PREQ: BMKT 2411 or CREQ: BMKT 2409); PROG: Joseph M. Katz Grad Sch Bus

BMKT 2533 - BUSINESS TO BUSINESS

Minimum Credits: 2

Maximum Credits: 2

Most mba graduates will join organizations that market their products and/or services to other businesses, institutions or government agencies. Such marketing is referred to as business-to-business (b2b) marketing. In this class we will look at those management activities that enable a supplier firm to understand, create and deliver value to other businesses, governments and/or institutional customers.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: (PREQ: BMKT 2411 or CREQ: BMKT 2409); PROG: Katz Graduate School of Business

BMKT 2544 - SHOPPER ANALYTICS

Minimum Credits: 3

Maximum Credits: 3

To achieve the objectives of this course, we will be using several methods during the semester, including lectures, guest speakers, readings, and class assignments/presentations. The philosophy underlying this course may be a bit different than you are accustomed to. While lectures will be a component, the general approach will be that of a practicum. That is, you will be exposed to a concept or database, then apply those concepts and databases via a project which is presented to the class. Readings are drawn from both business publications and academic journals. You are strongly encouraged to bring in other relevant materials that you encounter.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: BMKT 2411 or BMKT 2409; PROG: KATZ Graduate School of Business

BMKT 2551 - DIGITAL AND SOCIAL MEDIA ANALYTICS

Minimum Credits: 2

Maximum Credits: 2

This course presents a data-driven approach to strategic and tactical marketing decision making in the context of digital and social media. Covering the three main media types of paid, owned, and earned media, students will learn about frameworks and methods that allow them to take data from sources such as google, Facebook, and twitter to be able to generate valuable and actionable managerial insights. The focus is on learning how to use digital and social media activity data to make better decisions, not on statistical methodologies (however, familiarity with excel is needed). The course will involve a combination of lectures, guest speakers, and hands-on workshops. This course is part of the digital marketing certificate and complements the "marketing and social media strategy" course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: BMKT 2515 or 2553

BMKT 2553 - SOCIAL MEDIA STRATEGY

Minimum Credits: 2

Maximum Credits: 2

Social media is changing how business is done around the world in almost every industry. How does social media effect your business? This course provides students with a detailed and up-to-date understanding of social media from a business strategy perspective. Through a series of lectures, case studies, and workshops, students learn how to identify opportunities for using social media in a variety of business areas, including marketing, operations, advertising, services, and human resources. The course takes a broad perspective and considers how social media it can be used successfully for business-to-consumer, business-to-business, and intra-company purposes. A central theme in this course is for students to apply what they learn to their own businesses and industries in order to identify opportunities for strategic, value creating uses of social media in their companies. After taking this course students will see how social media impacts business in many different ways and goes beyond simply using Facebook, twitter, or other popular social platforms for basic marketing purposes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

BMKT 2554 - MARKETING DESIGN AND ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

This course presents a data-driven approach to strategic and tactical marketing decision making in the context of digital and social media.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BMKT 2569 - BRAND MANAGEMENT

Minimum Credits: 2

Maximum Credits: 2

This course explores the role played by brands in influencing consumers' choices, and investigates how to move effectively manage such brands. The course uses a variety of tools including lectures, cases, simulations, in-class exercises, hands-on, industry visitors and individual projects.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BMKT 2411 or BMKT 2409; PROG: Katz Graduate School of Business

BMKT 3001 - CONSUMER BEHAVIOR 1

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

BMKT 3002 - CONSUMER BEHAVIOR 2

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

BMKT 3010 - INDEPENDENT STUDY IN MARKETING

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis

BMKT 3014 - MARKETING STRATEGY

Minimum Credits: 3
Maximum Credits: 3
Identifies the foundations of all aspects of marketing including product development and management distribution channel activity, sales force management, sales promotion, pricing, planning and strategy, information systems, and marketing organization and management, among other topics.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BMKT 3015 - FOUNDATIONS OF CONSUMER BEHAVIOR

Minimum Credits: 3
Maximum Credits: 3
This seminar seeks provide students a broad overview of the literature in consumer decision making and behavior. Students will also be encouraged and expected to delve more deeply into areas of their particular interest. Further, students will increase their ability to develop and present their research ideas.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Katz Grad School of Business students only.

BMKT 3017 - MARKETING MODELS

Minimum Credits: 3
Maximum Credits: 3
Examines applications of management science techniques and methodology to improve marketing decision making. Emphasis will be on the use and interpretation of multivariate statistical methods and/or the application and implementation of operations research rather than their theoretical development. Students develop knowledge of at least one managerially relevant problem area and apply or critique the application/implementation of management science techniques through real data analysis or simulation.
Academic Career: Graduate
Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: Katz Grad School of Business students only.

BMKT 3018 - SPECIAL TOPICS IN MARKETING

Minimum Credits: 3

Maximum Credits: 3

Intended to cover a few current topics in marketing in depth. Topics will be those emerging in the field as critical issues.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: Katz Grad School of Business students only.

BMKT 3025 - MARKET BEHAVIOR RESEARCH

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BMKT 3099 - READINGS IN MARKETING

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

Cardiothoracic Surgery

CTSURG 5461 - PEDIATRIC CARDIOTHORACIC SURGERY

Minimum Credits: 0

Maximum Credits: 0

Four-week elective with clinical experience on pediatric cardiothoracic surgery service. Student will actively participate in care of pediatric cardiac surgery patient and attend weekly med/surg cardiology conference. Covers types of congenital heart disease, physiology and patho-physiology and current methods of operative intervention for palliation or repair. Time can be spent participating in clinical or laboratory research in progress.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

CTSURG 5462 - ADULT CARDIAC SURGERY

Minimum Credits: 0

Maximum Credits: 0

Clinical experience on adult cardiac surgical service. Students will participate in preoperative, intraoperative and postoperative care of patients suffering from acquired cardiac diseases. Students will be expected to work in the cardiac ICU and on the wards assisting house staff managing day-to-day patient care issues.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

CTSURG 5463 - ADULT THORACIC SURGERY

Minimum Credits: 0

Maximum Credits: 0

Students will be assigned to the thoracic service of UPMC. Participation will be in operative experiences, clinic setting and ward work. Focuses will be on benign and malignant surgical problems of the lungs, esophagus, mediastinum, chest wall and diaphragm. Students will be exposed to minimally invasive approaches including esophagostomy, lobectomy and others.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

CTSURG 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0

Maximum Credits: 0

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

CTSURG 5840 - CARDIOTHORACIC SURGERY RESEARCH

Minimum Credits: 0

Maximum Credits: 0

This elective is available to interested and motivated students. This elective provides opportunities to learn basic research methodology which may include approach to experimental design, protocol development, data analysis and evaluation of results. Student may participate in ongoing research in the lab and on patients.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

CTSURG 5899 - INDEPENDENT STUDY IN CARDIOTHORACIC SURGERY

Minimum Credits: 0

Maximum Credits: 0

The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

CTSURG 5900 - EXTRAMURAL CARDIOTHORACIC SURGERY

Minimum Credits: 0

Maximum Credits: 0

A clinical experience in cardiothoracic surgery may be arranged at an institution other than the University of Pittsburgh school of medicine. Arrangements must be made in accordance with the process set out in the UPSOM catalog with all appropriate approvals to be received before the course may be added to the student's schedule for credit.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Cell Biol & Molecular Physio

MSCBMP 2800 - MS THESIS RESEARCH

Minimum Credits: 1

Maximum Credits: 14

A directed research project which results in a thesis for a master's degree.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

MSCBMP 2840 - REGULATION OF MEMBRANE TRAFFIC

Minimum Credits: 2

Maximum Credits: 2

Course analyzes membrane/protein traffic along both the biosynthetic & endocytic pathways. Emphasis placed on how this traffic is regulated.

Topics include the role of g-proteins (both heterotrimeric & small), coat proteins (coatamer 1 & 2 & adaptors), signal transduction cascades (pkc, pka, ip3, etc.), & Snare complexes in protein trafficking. Also, we will discuss the role of the cytoskeleton in transporting cargo & signal transduction. Membrane traffic in several specialized cell types will be covered including polarized epithelial cells, cells of the immune system, & neurons.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSCBMP 2852 - RESEARCH SEMINAR IN CELLULAR BIOLOGY

Minimum Credits: 1

Maximum Credits: 1

Advanced research seminar with journal club format specializing in current aspects of membrane trafficking.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

MSCBMP 2853 - RESEARCH SEMINAR IN REPRODUCTIVE PHYSIOLOGY

Minimum Credits: 1

Maximum Credits: 1

Advanced research seminar with journal club format specializing in current aspects of reproductive physiology.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

MSCBMP 2855 - RESEARCH SEMINAR IN MOLECULAR PHYSIOLOGY

Minimum Credits: 1

Maximum Credits: 1

Advanced research seminar with journal club format specializing in current aspects of molecular and cellular physiology.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

MSCBMP 2860 - MULTIPARAMETRIC MICROSCPC IMAGNG

Minimum Credits: 3

Maximum Credits: 3

A lecture/lab course which immerses students in the theory and practical aspects of modern microscopic imaging. The fields will cover the theory and implementation of all types of light and electron microscopy and computer aided imaging. Students will be expected to reach a functional capability in a selected technology.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSCBMP 2870 - HISTOLOGY

Minimum Credits: 5

Maximum Credits: 5

The objective of this lecture/lab course is student comprehension of the relationship between cell structure and organ function, and the application of this knowledge to the identification of light and electronmicroscopic images of cells and organs.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSCBMP 2875 - EXPERIMENTS AND LOGIC IN CELL BIOLOGY

Minimum Credits: 1

Maximum Credits: 1

The purpose of experiments and logic in cell biology (ELCB) is to engage the students of the cell and molecular physiology graduate program in a self-directed seminar structured to stimulate the students' ability to think scientifically and critically as future scientists. The iterative, collaborative and collegial process of ELCB is the same used by teams of collaborating scientists to develop and solve biomedical projects.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: PROG: School of Medicine (PMEDS)

MSCBMP 2880 - CELLULAR BIOLOGY OF NORMAL AND DISEASE STATES

Minimum Credits: 4

Maximum Credits: 4

This one-term course will explore the cellular basis of multiple disease states. The course, which meets twice a week (two hours each session), will be taught through both lecture and in class discussion of primary literature. Each of seven modules will examine normal cell biology and function and then define how defects in these processes lead to the spectrum of pathologies associated with each disease. Discussion of how bench top findings can be translated to treatments in the clinic will be facilitated by a diverse faculty that includes both basic and physician scientists. The seven modules are as follows: the first examines insulin secretion and signaling and how these events are perturbed in diabetes mellitus. The second module focuses on cell-cell adhesion and its role in cancer progression and epithelial barrier function. The third module defines how defects in endocytosis of the low-density lipoprotein receptor leads to hypercholesterolemia. The fourth analyzes the cellular basis of hypertension and how altered internalization of the epithelial sodium channel leads to elevated blood pressure. The fifth module investigates the role of apical membrane recycling and how defects in aquaporin-2 traffic leads to nephrogenic diabetes insipidus. The sixth module appraises the current state of our understanding of cystic fibrosis and how degradation of defective cystic fibrosis transmembrane conductance regulator by the quality control machinery in the endoplasmic reticulum and cell periphery leads to disease. The last module examines cell migration in wound healing and angiogenesis. At the end of the course students will have an increased understanding of normal cellular function and how research in cell biology can lead to a deeper understanding of diseases that impact millions of people each year.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MSCBMP 2885 - IMAGING CELL BIOLOGY IN LIVING SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

The focus of this new course will be to study relevant problems in cell biology, immunology, developmental biology and neurobiology and how they have been solved using imaging approaches. For example at the cell level we will investigate how techniques such as TIRF and high speed confocal have addressed basic problems in endocytosis; at the organismal level we will use multiphoton, confocal, fret, and other approaches to understand aspects of cell biology in cell polarity, respiration and organ development in c. Elegans, Drosophila, Zebra fish and mice. In each case the application will focus on how imaging tools are used to study defined problems in living systems. The course will follow a lecture/demo/journal club format. Lectures will be two part, the first 1/3 will be a description of the technology, how it was developed and how it works (10-15 minutes) followed by description of the scientific problem and how it was solved. This will be followed by lab demonstrations showing the approach in action. Lectures will be interspersed with a journal club discussion of a relevant paper on each technology. Students will prepare the journal club presentations in an alternating fashion. Examination will be a combination of class participation, journal club and written exam.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSCBMP 2890 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

This course provides the student an opportunity to carry out a specific laboratory project in any area of interest in cell biology or physiology.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Cell Biol & Molecular Physio (PHD) or Interdis Biomedical (UNK)

MSCBMP 2895 - CELLULAR PHYSIOLOGY OF THE KIDNEY

Minimum Credits: 2

Maximum Credits: 2

This summer course will provide an introduction to the kidney and lower urinary tract, with emphasis on kidney structure and function. The course, which meets once a week (two hours each session), will be taught through both lecture and in class discussion of the primary literature. Discussion of how bench top findings can be translated to treatments in the clinic will be facilitated by a diverse faculty that includes both basic and physician scientists. You will first learn about the specialized cell types that comprise the kidney and lower urinary tract. Subsequently, you will be introduced to renal stem cells and how they lead to kidney development. Next, you will learn the functions of the kidney, including regulation of water and ion balance. This will be followed by a discussion of the lower urinary tract. Finally, you will learn how drugs can be used to treat kidney dysfunction and how kidney transplants can be used to treat those patients with end-stage renal disease.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSCBMP 3800 - PHD DISSERTATION RESEARCH

Minimum Credits: 1

Maximum Credits: 14

After advancement to candidacy for the Ph.D. degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation. A minimum of forty credits of this course are required for the Ph.D. degree in the school of medicine.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: Cell Biol & Molecular Physio (PHD)

MSCBMP 3835 - DNA REPAIR JOURNAL

Minimum Credits: 1

Maximum Credits: 1

The course is a journal club on current topics in DNA repair as it relates to human disease, DNA damage processing, genome stability, telomere biology, cancer and aging. Primarily designed for students in the second year of their graduate program and beyond. Presentations will be held twice

per month during the fall and spring semester. In order to receive credit for the course, students must attend a minimum of 80% of the sessions, present once per semester, participate in class discussion and complete anonymous peer-evaluations for each presenter. One week prior to presentation, presenters will identify a recent publication in the field and distribute it to their classmates. Presenters must define the hypothesis of the paper, provide background and significance, describe experimental methods used, interpret the data, conclude whether the data support the authors' conclusions and propose future experiments. Grades will be determined by attendance (10%), class participation (20%) and quality of presentation (70%).

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

MSCBMP 3840 - REPRODUCTIVE DEVELOPMENT FROM MODEL ORGANISMS TO HUMANS

Minimum Credits: 2

Maximum Credits: 2

This course focuses on the molecular aspects of the transition from gamete to a reproductive organism. The course progresses through the building of germ cells, fertilization and stem cell participation to sex determination, gonad morphogenesis, puberty, menopause and pregnancy. This course highlights both human and model organisms to bring together diverse aspects of the cell and developmental biology of reproductive tissues and their impact on disease pathology.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: INTBP 2000

Cellular & Molecular Pathology

MSCMP 2700 - MS THESIS RESEARCH

Minimum Credits: 1

Maximum Credits: 14

A directed research project which results in a thesis for a master's degree.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

MSCMP 2730 - MOLECULAR MECHANISMS OF TISSUE GROWTH & DIFFERENTIATION

Minimum Credits: 3

Maximum Credits: 3

The course covers the anatomy, embryology, histology, function, and growth regulation (growth factors, receptors, and signaling pathways) of various differentiated tissues (central nervous system, lung, liver, pancreas, urinary and reproductive systems, breast, endocrine system, skin, bone, skeletal muscle, bone marrow). Multidisciplinary lectures are given by the members of the departments of pathology, cell biology and physiology, medicine, and surgery who have ongoing research in these areas.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSCMP 2740 - MOLECULAR PATHOBIOLOGY

Minimum Credits: 3

Maximum Credits: 3

Some representative of major disease categories (autoimmune, inflammatory, toxic, degenerative, infectious, genetic, and neoplastic) will be examined in terms of patient demographics (who), gross and microscopic morphology (what), and etiology/molecular mechanisms (why).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSCMP 2750 - RESEARCH SEMINAR

Minimum Credits: 1

Maximum Credits: 1

Students present their research, or a recent research article from a broad range of topics selected by the student in consultation with a faculty advisor. The course meets weekly during which the student presents his/her research in progress or an article of his/her choice. Emphasis is placed on a careful analysis and critical evaluation of the manuscript as well as the development of teaching and speaking skills needed for scientific presentation. The student is expected to elucidate issues relevant to the topic and to answer questions from other graduate students and faculty.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

MSCMP 2760 - INTRODUCTION TO TISSUE ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

The purpose of this course is to introduce students to tissue engineering. Tissue engineering is defined as the development and manipulation of laboratory-grown molecules, cells, tissues, or organs to replace and/or support the function of injured body parts. Tissue engineering is highly interdisciplinary and therefore crosses numerous engineering and medical specialties. Upon completing this course, the graduate and undergraduate students should: understand the basic principles behind human cell and tissue biology and cell. Be familiar with the general types of biomaterials used in tissue engineering. Understand techniques utilized to design, fabricate, and functionally assess tissue engineering systems. Apply the combined knowledge of tissue organization and tissue engineering strategies to design a unique, reasonable tissue engineering solution. This five-part course covers cell and tissue biology, biomaterials, drug delivery, engineering methods and design, and clinical implementation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MSCMP 2770 - BIOMATERIALS AND BIOCOMPATIBILITY

Minimum Credits: 3

Maximum Credits: 3

This course serves as an introduction to biomaterials and biocompatibility and assumes some background in organic chemistry and biology. The first half of the course connects biomaterial applications. The second part of the course introduces biocompatibility issues as they follow from protein adsorption, thrombosis, inflammation and infection are primary interest. Throughout the course ties are made between the topic of student and clinically relevant material and device performance.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSCMP 2780 - SPECIAL TOPICS

Minimum Credits: 3

Maximum Credits: 3

Students will focus on a selected topic in cellular and molecular pathology and write a paper under the direction of a faculty advisor.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

MSCMP 2790 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

This course provides the student an opportunity to carry out a specific laboratory project in any area of interest in cellular and molecular pathology.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Cellular & Molecular Pathology (PHD) or Interdis Biomedical (UNK)

MSCMP 3700 - PHD DISSERTATION RESEARCH

Minimum Credits: 1

Maximum Credits: 14

After advancement to candidacy for the Ph.D. degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation. A minimum of 40 credits of this course are required for the Ph.D. degree in the school of medicine.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

MSCMP 3710 - CANCER BIOLOGY AND THERAPEUTICS

Minimum Credits: 3

Maximum Credits: 3

This course presents biochemical and clinical aspects of cancer biology and therapy, and is designed for graduate students training in the basic sciences or medicine. The lectures cover: the biology of normal and neoplastic cells, mechanisms of neoplastic transformation, chemical and environmental carcinogenesis, viral oncogenesis, breast and prostate cancer, chemotherapy, radiotherapy, gene therapy, tumor immunology, and nutrition and cancer.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSCMP 3715 - BIOINF CANCER BIOL & THERPUTCS

Minimum Credits: 1

Maximum Credits: 1

Reading and discussion on bioinformatics resources available to enhance research on cancer biology and therapeutics. We will discuss bioinformatics databases and other resources related to: regulatory networks and signal transduction pathways, genes associated with cancer risk and the progression of cancer; cytogenomics, sources of information on the distribution of cancer occurrence and trends in the us population, databases DNA repair genes, their structure & function, models of cancer progression & responses to therapy, biomarkers for cancer detection, treatment & prevention.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

MSCMP 3730 - TOPICS IN EXPERIMENTAL NEUROPATH

Minimum Credits: 1

Maximum Credits: 1

This course critically evaluates the latest scientific literature concerning diseases of the central nervous system. Emphasis will be placed on methodologies as they are applied to the study of human neurologic diseases. Participants will present scientific papers and lead the classroom discussions. This course is open to students of all levels and will include both basic scientists and clinicians (residents, faculty).

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

MSCMP 3735 - EXTRACELLULAR MATRIX IN TISSUE BIOLOGY AND BIOENGINEERING

Minimum Credits: 3

Maximum Credits: 3

Extracellular matrix (ECM) is an important structural and signaling component of all tissues. It plays a defining role in how differentiated cells and tissues respond to homeostatic signals, tissue regeneration, response to inflammation, and wound healing. Indeed one can generalize and state that there is no aspect of the biology or function of any given tissue in which ECM does not play an important role. The objective of the proposed course

is to bring to students the knowledge of fundamental aspects of ECM, its importance for tissue function and its potential use in bioengineering applications. The course will start by providing information about structure and gene expression regulation of the main protein and glycosaminoglycan components of ECM. This will be followed by lectures describing the mechanisms by which ECM components interact with their receptors (integrins) and the intracellular signaling cascades and multiple protein allosteric interactions mediating the transmission of the signal from integrins to multiple intracellular targets affecting cell proliferation, function and cell-cell communication. TGF-beta is an important regulator of ECM synthesis and a special lecture will be devoted to gene regulation of ecm components and the role of TGF-beta. Subsequent lectures will focus on histologic techniques for visualization of ECM and specific tissue examples in which ECM changes define a particular biological model. ECM is known to be remodeled early in liver regeneration and re-synthesized at the end of the regenerative process. ECM signaling is defining the regulation of liver size and termination of regeneration. This will provide an example to illustrate the multifaceted aspects of ecm and cell interaction in a well-known model of tissue biology. Specific targeted lectures will also be given on ECM in wound healing, and repair of tissue in central nervous system, bone and cartilage. ECM is important as a potential barrier for cancer invasion. The mechanisms by which cells invade ECM will be examined in the context of cancer and also in the context of organ building and tissue morphogenesis in embryonic development. The cellular approaches utilizing ECM in bioengineering and tissue reconstruction will be also presented. These will include preparation of decellularized organs (a technique currently applied to liver with partial success in cell recolonization); functions of hyaluronic acid in tissue reconstruction and aspects of its signaling; ECM in vascular reconstruction, and biology of joints; ECM in muscle biology and reconstruction. The course is addressed to graduate students of the interdisciplinary biomedical science program of the school of medicine as well as the bioengineering graduate program. We are expecting a roughly equal proportion of students from those two groups in a class of 20 students. Even though both groups of students are highly sophisticated, particular attention will be given to ensure that the differences in backgrounds do not interfere with assimilation of the fundamental concepts imparted from the lectures. It is also anticipated that some of the concepts to will be presented will be summaries of a vast amount material of biomedical literature. To facilitate full development of lectures and topics which chose a format of 1.5 hours per lecture, to give the lecturers the opportunity of covering all relevant issues in proper depth. To our knowledge, there is no comparable course fully dedicated to ECM biology and bioengineering applications in either the school of medicine or the bioengineering curriculum. It should also be noted that the reviewers of the Cater Training grant noticed the absence of such a course and expressed a desire to have one developed. We believe this course will be important in generating an interest and a depth of knowledge in issues related to matrix biology as well as support the mission of the cater training grand.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSCMP 3740 - STEM CELLS

Minimum Credits: 3

Maximum Credits: 3

This course will provide a comprehensive overview of stem cell biology - an intriguing & a most-debated research area. The course will focus on the biology of stem cells & their role in health & disease with emphasis on development & carcinogenesis. Trans-differentiation of stem cells for tissue engineering applications will also be discussed. Lectures & student presentations will cover: embryonic as well as fetal & adult stem cells in blood, liver, brain, muscle, kidney, pancreas & gut. Students will also be educated on bioethical issues & existing laws governing stem cell research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSCMP 3750 - ANGIOGENESIS

Minimum Credits: 3

Maximum Credits: 3

Angiogenesis/vasculogenesis is one of the important research areas in biomedical sciences. This course will provide extensive basic knowledge of devel, cellular, mol biology of angiogenesis and most recent advances in its clinical applications. Topics include: 1. Angiogenesis in physiological and pathological process; 2. Molecular and cellular regulation of angiogenesis; 3. Current advances in angiogenic therapies. Recent outstanding research publications will also be discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MSCMP 3760 - RESEARCH SEMINAR: REGENERATIVE MEDICINE

Minimum Credits: 1

Maximum Credits: 1

Research seminar in regenerative medicine is geared towards providing updates information on topics in the field of regenerative medicine, tissue

engineering and stem cell applications. Through biweekly seminars, the students will be acquainted to the recent advances in the ever-growing field of regenerative medicine. Experienced faculty will deliver lectures in this seminar series.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

MSCMP 3770 - CELL THERAPY

Minimum Credits: 3

Maximum Credits: 3

This course will focus on cellular therapy, which includes technologies and strategies applied to the isolation, expansion and preservation of cells for use in regenerative medicine and transplantation, and the use of cellular therapy techniques to a variety of disease states. The overall topic of this course closely interfaces with the areas of gene therapy, stem cell biology, immunology and tissue engineering. Students will also critically read and review the literature in the field of cellular therapy.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSCMP 3780 - SYSTEMS APPROACH INFLAMMATION

Minimum Credits: 2

Maximum Credits: 2

This course is focused on particular topics of great biologic complexity in critical illness, where modeling has the potential to translate in improved patient care. Lectures are provided by basic (biological and mathematical sciences) and clinical faculty, in conjunction with members of industry and speakers from outside institutions. This information will be communicated within the framework of defined themes that describe the complexity of inflammation in acute and chronic illnesses.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSCMP 3790 - BASICS OF PERSONALIZED MEDICINE

Minimum Credits: 3

Maximum Credits: 3

Personalized medicine is becoming a reality that is being driven by ongoing discoveries in cell biology, genomics, proteomics, and metabolomics. The translational speed of these discoveries, particularly in the diagnostic, prognostic, and theragnostic arenas, is rapid. We believe that in the future personalized medicine diagnostics will involve both physicians and basic scientists. A major obstacle to this approach is the lack of training components for basic scientists in this area. This course aims to close that gap and provide an appreciation for, and understanding of, key principles of clinical development and testing in order to help bridge this gap. The course will be designed to delve into concepts of personalized medicine using focused topic areas. The first week will introduce the principles and overriding concepts of clinical test development, which differ qualitatively from investigational research. Next there will be six 2-week sessions, with each section focusing on a separate testing modality. Topics will include inherited genetic diseases and predispositions, acquired genetic changes (cancer), metabolomic profiles of endocrine diseases, immune networks for transplant and rejection, proteomic profiling in blood disorders, and proteomic detection of shock and organ failure.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Petroleum Engineering

PETE 2004 - PRACTICUM

Minimum Credits: 1

Maximum Credits: 1

This course is designed to provide students who are engaged in thesis or dissertation research an opportunity to participate in an internship with an external organization. The internship must be related to the thesis or dissertation research.

Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis
Course Requirements: PROG: Swanson School of Engineering

PETE 2097 - SPECIAL PROJECTS

Minimum Credits: 1

Maximum Credits: 6

Student develops an individual project under supervision of a faculty member. Project may be experimental, design-oriented, or instructional. A written report is prepared.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

PETE 2160 - PETROLEUM RESERVOIR ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

This course covers the principles of reservoir engineering and material balance calculation in petroleum reservoirs. The topics include petroleum origin and oil occurrence and migration; oil , gas, and gas-condensate reservoirs; basic drilling of oil and gas wells; p-v-t behavior of natural gas; material balances in gas reservoirs; oil reservoirs under simultaneous dissolved gas drive, gas cap drive, and water drive; generalized material balance in petroleum reservoirs; basic equations for fluid flow in reservoirs, absolute, effective, and relative permeabilities; and a design project on reservoir calculations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

PETE 2201 - RECOVERY OF OIL BY WATERFLOODING

Minimum Credits: 3

Maximum Credits: 3

Theory of immiscible fluid displacement starting with frontal advance theory and applying it to waterflooding, fluid patterns, sweep efficiency, stratified reservoirs, etc. Relative permeability experiments are simulated.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

PETE 2204 - ENHANCED OIL RECOVERY PROCESSES

Minimum Credits: 3

Maximum Credits: 3

This course covers different topics on enhance oil recovery processes (co₂, thermal, miscible fluids and surfactants); coal-bed methane, enhanced methane recovery, and underground coal gasification; surface and in-situ heavy oil, tar sand and oil shale production; and co₂ capture, sequestration and disposal. The fundamentals, thermodynamics, reaction kinetics and transport phenomena as well as the environmental issues and regulations related to these topics are also covered.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

PETE 2205 - PETROLEUM PRODUCTION ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

This course covers principles of oil and gas production from hydrocarbon-bearing formations. Topics include: flow through porous media of incompressible, compressible and slightly compressible fluids; reservoir, producing formation, vertical lift, and chock performances; principles of gas lift, gas lift valves and design; and sucker rod pumping design; and design project on artificial gas lift.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering (PENGR)

PETE 2207 - PETROLEUM AND NATURAL GAS PROCESSING

Minimum Credits: 3

Maximum Credits: 3

The course covers different topics on natural gas, petroleum and petrochemical processing. The topics include natural gas cleanup, methane reforming for h₂ production, partial oxidation of ch₄ for synthesis gas production, and chemicals from methanol; refinery feedstocks, crude distillation and refinery products, alkylation, hydrotreating, catalytic reforming and isomerization, catalytic cracking, resid, tar sands and oil shale processing; and methanol/other alcohols, ethylene, fertilizer, and plastic production plants.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

PETE 2208 - PETROLEUM DRILLING AND WELL COMPLETION DESIGN

Minimum Credits: 3

Maximum Credits: 3

This course covers different topics related to drilling operations; directional drilling techniques; completion operations; and work-over operations. The drilling operations encompass drilling rig components, bit selection program, drilling fluid types, cementing program design and well control/safety. The directional drilling techniques include: well-path design/applications, downhole motor components, directional surveys, and logging while drilling. The well completion operations contain: formation evaluation tools, open-hole log interpretation, coring tools, flow testing, perforating, hydraulic fracturing and other stimulation techniques. The work-over operations comprise work-over rig components, cased hole log interpretation, plugs/packers/fishing tools, squeeze job design, casing integrity tests and stimulation evaluation. A special project on casing design is also included.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

PETE 2209 - HYDRAULIC FRACTURING MECHANICS AND APPLICATIONS

Minimum Credits: 3

Maximum Credits: 3

Course description: this class will prepare students to wisely and critically design hydraulic fracturing treatments as well as make informed recommendations to employers, governments, and communities about the risks and benefits of hydraulic fracturing methods. Upon completion of this course, students will be equipped to use engineering formulae to estimate hydraulic fracture dimensions, evaluate strengths and weaknesses of various modeling approaches, characterize subsurface conditions from wellbore pressure analysis, make sound recommendations for monitoring, and compare and contrast approaches and risks for a range of application domains.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PETE 2211 - RESERVOIR SIMULATION

Minimum Credits: 3

Maximum Credits: 3

This course introduces the students to the simulation process of fluid flow in petroleum reservoirs. Governing equations required to describe fluid flow in porous media are derived, numerical techniques for solving the equations are introduced. Students will learn how reservoir flow simulators can be used in assessment studies of hydrocarbon reservoirs.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

PETE 2212 - CO2 FOR ENHANCED OIL RECOVERY AND FRACKING

Minimum Credits: 3

Maximum Credits: 3

This course will cover the physical properties of CO₂ that make it an attractive solvent for enhanced oil recovery (EOR), the natural and anthropogenic sources of CO₂, the types of fields that are suitable for CO₂ EOR, and the mechanisms responsible for CO₂ increasing oil recovery. The current status of CO₂ EOR in the United States will also be reviewed, along with its potential for future expansion. The foremost technical challenges of CO₂ EOR, namely mobility control and conformance control, will be discussed along with a current research efforts. The course will conclude with a brief review of how CO₂ has been used as a hydraulic fracturing, whether as a pure fluid, as the gaseous component of foams, or as an energizing component.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: Swanson School of Engineering

PETE 2900 - GRADUATE FELLOWSHIPS AND PROPOSAL-WRITING WORKSHOP

Minimum Credits: 1

Maximum Credits: 1

This workshop will provide information and guidance to students interested in competing for external fellowships to support their graduate research, as well as instruction on proposal writing in general. The workshop will consist of structured class time and outside-the-class mentoring teams to work with students on the preparation of a fellowship application.

Academic Career: Graduate

Course Component: Workshop

Grade Component: Grad SN Basis

PETE 2910 - SPECIAL PROJECTS

Minimum Credits: 1

Maximum Credits: 12

Individual study programs at M.S. Level.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad Letter Grade

PETE 2980 - MS RESEARCH METHODOLOGY

Minimum Credits: 1

Maximum Credits: 1

This course involves the discussion and application of research methodology important for the successful completion of MS thesis research.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

PETE 2982 - ISSUES IN RESEARCH AND TRAINING

Minimum Credits: 2

Maximum Credits: 2

This course will present to graduate students issues relating to safety, ethics in science, and research methods. Topics in scientific writing, data analysis and oral presentation skills will be discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PETE 2998 - GRADUATE PROJECTS

Minimum Credits: 1

Maximum Credits: 6

Graduate projects in petroleum engineering.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis

PETE 2999 - M.S. THESIS

Minimum Credits: 1

Maximum Credits: 12

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Chemical Engineering

CHE 2013 - MOLECULAR MANUFACTURING

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

CHE 2015 - MOLECULAR CHEMICAL AND NUCLEAR REACTION KINETICS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

CHE 2016 - FUNDAMENTAL PRINCIPLES OF BIODEGRADABLE METALLIC ALLOYS

Minimum Credits: 3

Maximum Credits: 3

Biodegradable metals have emerged as a new class of materials with significant potential for myriad biological applications, in particular, the craniofacial, orthopedics and cardiovascular areas. The latter has already witnessed clinical trials with few patients already being implanted with a biodegradable metallic stent. This course is designed to introduce the principles and various fundamental concepts of this novel class of metallic alloys. These include fundamental principles of metal alloy physics and theory, important concepts of phase diagrams, physical metallurgy concepts, metallic glass theory, processing fundamentals, biocompatibility, and toxicity issues. The effect of microstructure on biocompatibility and corrosion will also be discussed. The course objective is to introduce the student to this new family of bio-functional metals and their biodegradable properties. In doing so, the student will be familiar with these materials and their useful applications. The students are expected to have had courses in thermodynamics and physiology.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Graduate School of Engineering

CHE 2017 - CHEMICAL ENERGY AND THE NATURE OF THE CHEMICAL BOND

Minimum Credits: 3

Maximum Credits: 3

An overview of energy transformations arising from chemical bonding in chemical catalysis, electrocatalysis, and combustion. Students will be introduced to qualitative quantum chemistry concepts: potential energy and kinetic energy operators, wave functions, electron correlation, and GVB diagrams for analysis of chemical bonds and molecular structures in energy transformations. Students are expected to have completed Undergraduate physical chemistry course on quantum mechanics or equivalent or have prior consent from the instructor.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

CHE 2018 - INTRODUCTION TO SURFACE ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

Surface and interface engineering is critical to many important applications, e.g., coating, composite, biomedical device and membrane. With the fast growth of nanotechnology, understanding the surface properties becomes even more important since nano-sized materials, e.g., graphene, have no bulk phase but surfaces. This course combines elements of physical chemistry and materials of surface and interface in order to serve as the introduction to the surface engineering. The course spans from surface tension, capillary, superwettability to lubrication as well as 2D materials, allowing a comprehensive view to both classic surface science and cutting-edge surface technology. By the end of this class, students will understand both the fundamental principles of surface science and engineering approaches on tailor a given solid surface.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

CHE 2043 - ELECTRON MICROSCOPY IN MATERIALS SCIENCE

Minimum Credits: 3

Maximum Credits: 3

Electron optics, lens aberrations, depth of field, depth of focus, resolution, contrast, bright and dark field microscopy, selected area diffraction, calibration, specimen preparation, electron scattering, electron diffraction, Bragg's law, Laue conditions, structure factor, Ewald construction, double diffraction, twinning, Kikuchi lines, contrast theory, kinematical theory of diffraction by perfect and imperfect crystals, limitations, column approximation, extinction contours, dynamical theory, special techniques, high voltage microscopy, applications.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

CHE 2101 - FUNDAMENTALS OF THERMODYNAMICS

Minimum Credits: 3

Maximum Credits: 3

In-depth development of basic thermodynamic relations for macroscopic systems is covered. Emphasis on mathematical foundation and application of free energy concepts to system analysis. Topics in solution theory are covered.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

CHE 2201 - FUNDAMNTL OF REACTION PROCESSES

Minimum Credits: 3

Maximum Credits: 3

The basic principles for the analysis of reaction rates in heterogeneous reacting systems will be discussed with special emphasis on three-phase reaction systems. The fundamentals of multiphase reactor design will also be presented as time permits.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

CHE 2250 - CARDIO CLINICAL INTERNSHIPS

Minimum Credits: 1

Maximum Credits: 6

Professional application training in cardiovascular medicine and surgery. Students will spend three months each in bioengineering practice training programs within cardiology, cardiothoracic surgery, and vascular surgery.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PROG: Swanson School of Engineering

CHE 2301 - FUNDAMNTL TRANSPORT PROCESSES 1

Minimum Credits: 4

Maximum Credits: 4

A systematic development of the basic concepts and equations for heat, mass, and momentum transfer. Extensive problem solving of fundamental and practical natures.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

CHE 2410 - MATHMTCL METHD IN CHEMCL ENGRG 1

Minimum Credits: 3

Maximum Credits: 3

Application of mathematical techniques to chemical engineering problems requiring the solution of ordinary differential equations and partial differential equations. Series solutions, transform solutions, vector calculus, and quadrature are covered.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

CHE 2535 - APPLIED SOLID STATE CHEMISTRY FOR ENGINEERS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

CHE 2540 - PRACTICAL ELECTROCHEMISTRY

Minimum Credits: 3

Maximum Credits: 3

This graduate-level elective focuses on the practice of electrochemistry in laboratory analysis and in a wide range of technological applications. We

will begin with a brief overview of the fundamentals of electrochemistry in terms of thermodynamics, kinetics, and transport processes. We will then dive immediately into practical concepts with a survey of laboratory methods and technological/industrial applications of electrochemistry.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

CHE 2600 - PRINCIPLES AND PROPERTIES OF COMPLEX ENGINEERED MATERIALS

Minimum Credits: 3

Maximum Credits: 3

Complex engineered materials are a new class of systems comprising a variety of inorganic materials. This course is designed to introduce the principles and various functional properties exhibited by inorganic materials at the Nano, Micro and Meso scales. Since inorganic materials comprising metallic and non-metallic systems are a very complicated class of materials that display myriad properties, this course is outlined to discuss the most important properties. Thus, the course will mainly cover optical, electrical, thermal and electrochemical properties of both crystalline and amorphous inorganic complex engineered materials. In each category, the principles underlining each property will be discussed followed by the material class, behavior and applications. The effect of microstructure on each of the properties will also be discussed. The course objective is to introduce the student to these complex engineered materials family and their properties. In doing so, the student should be able to identify a material for a particular application.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

CHE 2754 - PRINCIPLES OF POLYMER ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

This course deals with the elements of polymer science and engineering necessary for entry-level understanding of polymer technology. While the chemistry determines macromolecular microstructure, an understanding of polymer manufacture and processing requires the addition of physical chemistry and transport phenomena. The essential material covered in this class includes the elements of polymers thermodynamics, rheology, mechanical behavior, and equipment design.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

CHE 2811 - BIOMATERIALS & BIOCOMPATIBILITY

Minimum Credits: 3

Maximum Credits: 3

Chemical and physical properties of orthopaedic and cardiovascular biomaterials. Wear and corrosion of implant materials; fracture healing; inflammatory response; fixation and loosening of permanent implants; protein absorption; coagulation cascade, bacterial adhesion.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Swanson School of Engineering

CHE 2870 - SOLIDS PROCESSING AND TRANSPORT

Minimum Credits: 3

Maximum Credits: 3

Particle technology affects as much as 80% of the chemical process industry, yet is often omitted from the undergraduate curriculum of chemical engineers. This course is designed to give advanced undergraduates as well as early-term graduate students an introduction to this rich and diverse field. Topics will range from fundamentals (particle classification, properties, and flow) to applied (hopper design, mixing, etc. Industry related examples and designs will be presented.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: Swanson School of Engineering

CHE 2900 - GRADUATE FELLOWSHIPS AND PROPOSAL-WRITING WORKSHOP

Minimum Credits: 1

Maximum Credits: 1

This workshop will provide information and guidance to students interested in competing for external fellowships to support their graduate research, as well as instruction on proposal writing in general. The workshop will consist of structured class time and outside-the-class mentoring teams to work with students on the preparation of a fellowship application.

Academic Career: Graduate

Course Component: Workshop

Grade Component: Grad SN Basis

CHE 2910 - SPECIAL PROJECTS

Minimum Credits: 1

Maximum Credits: 12

Individual study programs at MS Level.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad Letter Grade

CHE 2980 - MS RESEARCH METHODOLOGY

Minimum Credits: 1

Maximum Credits: 1

This course involves the discussion and application of research methodology important for the successful completion of MS thesis research.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

CHE 2982 - ISSUES IN RESEARCH AND TEACHING

Minimum Credits: 2

Maximum Credits: 2

This course will present to graduate students issues relating to safety, ethics in science, and research methods. Topics in scientific writing, data analysis and oral presentation skills will be discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

CHE 2999 - M.S. THESIS

Minimum Credits: 1

Maximum Credits: 15

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

CHE 3001 - GRADUATE SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis
Course Requirements: PROG: Swanson School of Engineering

CHE 3004 - PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
This course is designed to provide students who are engaged in thesis or dissertation research an opportunity to participate in an internship with an external organization. The internship must be related to the thesis or dissertation research.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis
Course Requirements: PROG: Swanson School of Engineering

CHE 3460 - ADVANCED SCIENTIFIC VISUAL COMMUNICATION

Minimum Credits: 3
Maximum Credits: 3
This fast-paced course will train students to produce professional scientific visual work, suitable for publications, presentations, and communicating to the public. Advanced topics, such as 3d modeling & animation, handling and visualizing large datasets, interactive displays, and 3d printing will be covered. The course will emphasize the importance of producing high quality artwork in scientific communication. The primary tools used will be gimp, inkscape, and blender, all of which are open source, and the python programming language for large dataset visualization. PowerPoint for presentations and limited figure production will also be used.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

CHE 3910 - INDIVIDUAL STUDY

Minimum Credits: 1
Maximum Credits: 3
Individual study program at Ph.D. Level.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad Letter Grade

CHE 3921 - SPECIAL TOPICS IN CHEMICAL ENGINEERING

Minimum Credits: 1
Maximum Credits: 1
Covers a variety of topics of specialized interest to chemical engineering including topics in thermodynamics, reaction engineering, mathematics, electrochemistry, materials science, and biological engineering.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

CHE 3922 - MODELING OF SOFT MATTER

Minimum Credits: 3
Maximum Credits: 3

This course will provide an overview of several contemporary research topics pertaining to modeling soft and biological materials. Lectures will focus on self-assembly and phase transitions, colloidal dispersions, polymers, gels, liquid crystals. A brief introduction to flow of complex fluids (rheology) and computer simulation methods (such as dissipative particle dynamics, cell dynamics systems, lattice Boltzmann simulations and others) will also be provided. Special attention will be given to point out how methods learned during this course are applied in current frontier research in soft condensed matter: from studies focusing on the origin of life to studies aiming to design soft synthetic biomimetic materials. Along with the lectures the course will include short in-class implementation workshops of some of the methods using mathematical software.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

CHE 3935 - PARTICLE-BASED MATERIALS MODELING

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the variety of particle-based simulation techniques that are of utility in the study of functional materials. The techniques discussed range from atomistic/quantum techniques, to Meso-scale techniques, to microscale techniques and are useful for modeling such phenomena as: isotope separation using carbon nanotubes, surfactant migration on the surface of droplets, and granular flows in large-scale mixing devices. While the applications range of length and time scales is quite diverse we will emphasize how similar are the theoretical underpinnings of many of these techniques. Among others, we will discuss molecular dynamics, Monte Carlo, molecular mechanics, and the path integral formalism as representative atomistic and quantum simulation techniques; dissipative particle dynamics, Stokesian/Brownian dynamics and lattice Boltzmann for Meso-scale simulation; and the discrete element method.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: Swanson School of Engineering

CHE 3980 - PHD RESEARCH METHODOLOGY

Minimum Credits: 1

Maximum Credits: 1

This course involves the discussion and application of research methodology important for the successful completion of Ph.D. dissertation research.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

CHE 3990 - ADVANCED GRADUATE PROJECTS

Minimum Credits: 1

Maximum Credits: 15

Preliminary work for Ph.D. Dissertation.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

CHE 3999 - PH.D. DISSERTATION

Minimum Credits: 1

Maximum Credits: 15

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Chemistry

CHEM 2000 - RESEARCH AND THESIS MS DEGREE

Minimum Credits: 1

Maximum Credits: 12

Course designed to be taken by master's degree students who are writing their thesis.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

CHEM 2090 - SEMINAR IN CHEMISTRY

Minimum Credits: 1

Maximum Credits: 1

This course is created for graduate students to register for their thesis seminar when they do not declare a division or do not satisfy divisional requirements. Only students planning to present a seminar should register for this course. Others may attend without registering.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

CHEM 2110 - CHEMICAL SYMMETRY: APPLICATIONS IN SPECTROSCOPY AND BONDING

Minimum Credits: 3

Maximum Credits: 3

Group theory and molecular symmetry, with emphasis on their application to the theoretical aspects of bonding in inorganic and organometallic complexes, as well as to the experimental techniques (electronic, vibrational, and photoelectron spectroscopy) typically used to elucidate the nature of intramolecular interactions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHEM 2120 - DESCRIPTIVE INORGANIC AND ORGANOMETALLIC CHEMISTRY

Minimum Credits: 3

Maximum Credits: 3

This course is intended to provide a solid background in modern inorganic chemistry for those doing research in all branches of chemistry. Much of the course material is descriptive, but the objective of the selection and presentation of the material will be to develop an understanding of the principles controlling the structures and reactivity of inorganic materials. Aspects of all areas of inorganic chemistry will be discussed, including main group, transition metal, and organometallic chemistry.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHEM 2180 - INORGANIC CHEMISTRY

Minimum Credits: 3

Maximum Credits: 3

Modern bonding theories are developed to the level that permits some understanding of the effects of structure and bonding on chemical properties. Periodic relationships are discussed and applied to selected families of elements. Emphasis is placed on those aspects of structure, bonding and periodic relationships that are helpful in unifying a large body of chemical knowledge. Selected topics of current interest in inorganic chemistry are discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHEM 2190 - SEMINAR IN INORGANIC CHEMISTRY

Minimum Credits: 1

Maximum Credits: 1

Only students planning to present a seminar should register for this course. Others may attend without registering.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

CHEM 2210 - ELECTROANALYTICAL CHEMISTRY

Minimum Credits: 3

Maximum Credits: 3

Fundamental electrode processes common to all electrochemical cal methods; thermodynamics and kinetics of electrode processes; reaction coordinate diagrams for faradaic currents; exchange current and activation polarization; non-faradaic currents and electric double layer. Mass transfer processes. Linear sweep, cyclic and pulse voltammetric methods and their application to analysis as well as the study of reaction mechanisms and problems in battery technology, electrocatalysis, photovoltaic cells and chemically modified electrodes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHEM 2220 - CHEMICAL SEPARATIONS

Minimum Credits: 3

Maximum Credits: 3

A broad thermodynamic and kinetic framework encompassing all chemical separations is used to classify techniques. Concepts such as separation efficiency are generalized. The most powerful and widely used separations techniques are chromatographic, thus solution chemistry will be discussed to provide a chemical framework for chromatography. The use of gas and liquid chromatography will be presented.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHEM 2230 - ANALYTICAL SPECTROSCOPY

Minimum Credits: 3

Maximum Credits: 3

Fundamentals of optical spectroscopic methods of analysis for determining composition and structure. The course includes analytical applications as well as mechanisms and instrumentation. Recent developments such as Fourier Transform IR Spectroscopy and the use of lasers in spectroscopy are emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHEM 2240 - MASS SPECTROMETRY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

CHEM 2290 - SEMINAR IN ANALYTICAL CHEMISTRY

Minimum Credits: 1

Maximum Credits: 1

Only students planning to present a seminar should register for this course. Others may attend without registering.

Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad LG/SNC Basis

CHEM 2310 - ADV ORGANIC CHEMISTRY 1

Minimum Credits: 3
Maximum Credits: 3

A qualitative discussion of modern mechanistic interpretations of relations between structure and reactivity. Special emphasis is placed on the roles of reactive intermediates such as Carbonium ions, carbanions, carbenes and radicals. Study of the factors that influence the equilibria and reaction mechanisms of organic molecules.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 2320 - ADV ORGANIC CHEMISTRY 2

Minimum Credits: 3
Maximum Credits: 3

A course designed to cover modern synthetic methods for the assembly of complex organic molecules (stereospecific olefin synthesis, cycloaddition reactions, sigmatropic rearrangements, organometallic chemistry, natural product synthesis).

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 2330 - ORGANOMETALLIC CHEMISTRY

Minimum Credits: 2
Maximum Credits: 2

A single-semester two-credit lecture course focusing on the mechanistic and synthetic aspects of state-of-the-art organometallic chemistry will be offered. Understanding how organometallic structure and electronics influence reactivity patterns will provide students with predictive tools for interpreting and exploiting organometallic reactivity. The course will focus on the thermodynamics, kinetics and stereoselectivity of main group- and transition metal-mediated reactions having applications in organic synthesis.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 2370 - SYNTHETIC ORGANIC CHEMISTRY

Minimum Credits: 2
Maximum Credits: 2

This early graduate level course builds onto sophomore organic I and II courses by applying the learned principles to the synthesis of FDA-approved drug molecules. The emphasis of the course will be on analyzing the molecular structures of drugs in a retrosynthetic fashion, followed by developing suitable synthetic routes to these molecules. The reaction mechanisms of key steps of these syntheses will be discussed in detail. Further discussion will include fundamental functional group interconversions, chemoselectivity, and protecting group use, enantioselective synthesis, and organometallic chemistry. Students will learn about the complexities of modern drug molecules, how their structures can be analyzed, and how they are synthesized.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 2380 - TECHNIQUES OF ORGANIC RESEARCH

Minimum Credits: 2
Maximum Credits: 2

A course which serves as a guide to the interpretation of ultraviolet, infrared, nuclear magnetic resonance and mass spectra of organic compounds.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CHEM 2390 - SEMINAR IN ORGANIC CHEMISTRY

Minimum Credits: 1

Maximum Credits: 1

Only students planning to present a seminar should register for this course. Others may attend without registering.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

CHEM 2430 - QUANTUM MECHANICS AND KINETICS

Minimum Credits: 3

Maximum Credits: 3

Basic quantum mechanics, with emphasis on the theory of chemical structure and dynamics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHEM 2440 - THERMODYNAMICS & STATISTICAL MECHANICS

Minimum Credits: 3

Maximum Credits: 3

Development of equilibrium statistical mechanics and thermodynamics. Applications to chemical systems. These applications include solutions, phase transitions (Ising Model) and reaction theory.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHEM 2490 - SEMINAR IN PHYSICAL CHEMISTRY

Minimum Credits: 1

Maximum Credits: 1

Only students planning to present a seminar should register for this course. Others may attend without registering.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

CHEM 2540 - INTRO TO MASS SPECTROMETRY

Minimum Credits: 3

Maximum Credits: 3

A basic, yet comprehensive, introduction to mass spectrometry is presented including a summary of instrumentation, spectral interpretation procedures, and data handling. Applications of mass spectrometry to geology, biochemistry, energy research and the environment are emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHEM 2600 - SYNTHESIS & CHARACTERIZATION OF POLYMERS

Minimum Credits: 3

Maximum Credits: 3

Synthesis and characterization of polymers is focus of course. Current methods of polymer synthesis will be surveyed, practical implementation of

reactions and kinetic consequences of reaction strategies in homopolymer, copolymer and block copolymer synthesis. Techniques for characterization of polymer molecular weight, chemical composition, and stereochemistry (Ft-Ir, NMR, other spectroscopic and chemical methods) will be discussed. Brief treatment of polymer solution thermodynamics and selected topics in polymer chemistry will be discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHEM 2620 - ATOMS, MOLECULES AND MATERIALS

Minimum Credits: 3

Maximum Credits: 3

This course will use qualitative molecular orbital theory to understand the design and performance of new materials. A link will be made between "small molecule" intuition and the solid-state perspective on large molecules, clusters and solids.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHEM 2700 - GRADUATE RESEARCH SEMINAR

Minimum Credits: 0

Maximum Credits: 0

Seminar given by faculty on graduate research opportunities in chemistry. This course is designed especially to help students in their selection of a research adviser.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

CHEM 2710 - CHEMISTRY RESEARCH ROTATION EXPERIENCE

Minimum Credits: 1

Maximum Credits: 1

First year graduate students will spend a term carrying out research in various laboratories in order to make a well informed decision about choosing a PhD research adviser.

Academic Career: Graduate

Course Component: Credit Laboratory

Grade Component: Grad LG/SNC Basis

CHEM 2810 - BIOLOGICAL CHEMISTRY 1

Minimum Credits: 3

Maximum Credits: 3

This course considers the chemical properties of amino acids, oligopeptides, and proteins; the biosynthesis of proteins; the physical interactions that determine the properties of proteins; the conformational properties of polypeptide chains and biomacromolecules, integral membrane proteins and ion channels; interactions between proteins and other molecules; enzyme kinetics; catalytic antibodies; and biosynthesis of small molecules.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHEM 2820 - BIOLOGICAL CHEMISTRY 2

Minimum Credits: 3

Maximum Credits: 3

This course will discuss select biological systems and problems and the chemical tools that are being developed in order to study and address them. In addition to an introduction to cell biology and molecular and cell biological techniques, topics may include: conditional control of gene editing, forward and reverse chemical genetics, sensors of cellular processes, protein bioconjugation, small molecule inhibitors of kinase function, activity-based probes, small molecule dimerizers of proteins, and targeted protein degradation. This will lead to the following expected learning outcomes:

basics of cell biology, biological techniques and vocabulary relevant to the field of chemical biology, important research topics and research areas in the field of chemical biology, navigating and critical reading of chemical biology primary articles and review articles, and knowledge of key labs that are major contributors to the field of chemical biology.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHEM 2830 - SYNTHETIC BIOLOGY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHEM 2890 - SEMINAR IN BIOLOGICAL CHEMISTRY

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

CHEM 2970 - TEACHING OF CHEMISTRY

Minimum Credits: 1

Maximum Credits: 1

This course is for graduate students who are teaching assistants/fellows in the department.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

CHEM 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 12

Research credits towards a MS and Ph.D. degree.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

CHEM 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1

Maximum Credits: 12

Research credits for the Ph.D. Degree.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

CHEM 3001 - PREPARATION FOR THE STEM CLASSROOM

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad HSU Basis

CHEM 3002 - ADVANCED LEARNING THROUGH EVIDENCE-BASED STEM TEACHING

Minimum Credits: 1

Maximum Credits: 1

This course consists of a MOOC offered by Coursera, jointly developed at Boston University, Vanderbilt, Michigan State and Wisconsin-Madison, combined with in-person class meetings of the local learning community at the University of Pittsburgh. Students will meet with the facilitator for the course, Dr. Mary Besterfield-Sacre, four times during the semester to go over the material in the online sessions, and to relate it to their teaching experiences in labs, discussions, and classrooms. The course will draw on the expertise of experienced stem faculty, educational researchers, and staff from University teaching centers, many of them affiliated with the center for the integration of research, teaching and learning (CIRTL), a network of 22 research universities collaborating in the preparation of stem graduate students and post-docs as future faculty members.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Attributes: Hybrid

CHEM 3100 - ADVANCED TOPICS INORGANIC CHEM 1

Minimum Credits: 1

Maximum Credits: 1

Minicourse. Topics vary from term to term, but all focus on some aspect of inorganic chemistry.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHEM 3110 - ADVANCED TOPICS INORGANIC CHEM 2

Minimum Credits: 2

Maximum Credits: 2

Minicourse. Topics vary from term to term, but all focus on some aspect of inorganic chemistry.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHEM 3120 - ADVANCED TOPICS INORGANIC CHEM 3

Minimum Credits: 1

Maximum Credits: 1

Minicourse. Topics vary from term to term but all focus on some aspect of inorganic chemistry.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHEM 3300 - ADVANCED TOPICS ORGANIC CHEM 1

Minimum Credits: 1

Maximum Credits: 1

Minicourse. Topics vary from term to term but all consider some specific aspect of organic chemistry.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHEM 3310 - ADVANCED TOPICS ORGANIC CHEM 2

Minimum Credits: 2

Maximum Credits: 2

Minicourse. Topics vary from term to term but all consider some specific aspect of organic chemistry.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHEM 3380 - ORGANIC GROUP MEETING

Minimum Credits: 1

Maximum Credits: 1

A weekly meeting to discuss the most recent advances in organic chemistry.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHEM 3390 - SYNTHETIC ORGANIC COLLOQUIUM

Minimum Credits: 1

Maximum Credits: 1

A weekly workshop on current synthetic organic chemistry literature and state of the art research.

Academic Career: Graduate

Course Component: Colloquium

Grade Component: Grad LG/SNC Basis

CHEM 3410 - ADVANCED TOPICS PHYSICAL CHEM 2

Minimum Credits: 2

Maximum Credits: 2

Minicourse. Topics vary from term to term but all consider some specific aspect of physical chemistry.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHEM 3430 - INTRO MODERN COMPUTATIONAL CHEM

Minimum Credits: 3

Maximum Credits: 3

This advanced quantum mechanics course will cover the treatment of angular momentum in electronic states, scattering and spectroscopy. The use of Clebsch-Gordon and Wigner coefficients to analyze angular momentum coupling and recoupling will be discussed, as will be methods to create and measure polarization and alignment in molecules.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHEM 3450 - MOLECULAR MODELING AND GRAPHICS

Minimum Credits: 3

Maximum Credits: 3

This course will introduce the student to computational methods to determine molecular structures and stabilities, Monte Carlo and Molecular Dynamics Simulation Methods, and the use of graphics for displaying structures, charge densities, and other properties. Use will be made of both microcomputers and the Cray XMP at the Pittsburgh Super Computing Center.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHEM 3460 - INTRO MODERN COMPUTATIONAL SCI

Minimum Credits: 3

Maximum Credits: 3

This course will emphasize the application of microcomputers and numerical methods for solving problems of importance in chemistry. Methods to be studied include solving systems of linear and differential equations, least squares fitting, eigenvalue problems, solution of nonlinear equations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHEM 3480 - KINETICS AND MOTION IN CHEM RXNS

Minimum Credits: 3

Maximum Credits: 3

A general treatment of the rates of gas phase reactions with emphasis on theories and experimental measurements of elementary rate processes. Principle topics include data handling, mechanisms, and transport effects; two-body unimolecular, and recombination reactions; and special topics such as explosions, flames, shock tube kinetics, excited states, and energy transfer.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHEM 3700 - SCIENTIFIC PROPOSAL WRITING

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

CHEM 3800 - ADVANCED TOPICS BIOLOGICAL CHEMISTRY 1

Minimum Credits: 1

Maximum Credits: 1

Minicourse. Topics vary from term to term but all consider some specific aspect of biological chemistry.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHEM 3902 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 12

Directed study in a specific area of chemistry to enhance preparation for graduate research.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

Chinese

CHIN 2000 - RESEARCH AND THESIS MA DEGREE

Minimum Credits: 1

Maximum Credits: 6

This course recognizes work performed in the course of preparing the thesis.

Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Attributes: Asian Studies

CHIN 2025 - ASPECTS OF THE CHINESE LANGUAGE

Minimum Credits: 3

Maximum Credits: 3

Aspects of the Chinese language will offer a linguistic introduction to Chinese. No prior knowledge of linguistics is assumed although familiarity with linguistic analysis is a plus. The Chinese language is substantially different from English or other Indo-European languages. It is also distinct from some other East Asian languages. For instance, it has a logographic writing system and is a tonal language. Its word order is more flexible than English and is a topic-prominent language. It does not have rich grammatical inflections but has a limited number of aspectual markers. The course serves the following purposes: (1) introduce the basic facts of the Chinese language including its development, the phonology, morphology, the semantic and syntactic aspects of Mandarin Chinese, and the interactions of the language with Chinese culture and the society; (2) introduce elementary linguistic concepts relevant to Chinese to enable students to use the right tool to describe and critically analyze the features of a language; (3) encourage students to reflect on their language learning experience or knowledge of other languages to conduct reasoning, such as analyzing the sources of difficulty in their studying of Chinese; (4) to inspire interest in a range of topics including differences in modern and classical Chinese, philosophical belief embodied in the language, Chinese culture manifested in the language (such as the notion of politeness, face, etc.), and to lay a foundation for further studies in linguistics as well as in those relevant topics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHIN 2047 - CHINESE AND WESTERN POETRY

Minimum Credits: 3

Maximum Credits: 3

A comparative study of Chinese and Western lyric poetry. This course explores the world of feeling as expressed in the poetry of two vastly different worlds: China and the West and focuses on the language of feeling in a poetic medium. The purpose of this course is to appreciate how differences between the two poetic traditions is essential to a better understanding of the two cultures.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Asian Studies, West European Studies

CHIN 2059 - ADAPTED FOR THE SCREEN: CHINESE LITERATURE AND FILM

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

CHIN 2083 - MASTERPIECES OF CHINESE LITERATURE

Minimum Credits: 3

Maximum Credits: 3

This course is devoted to the study of Chinese literature from ancient times to the end of the 19th century. Lectures and readings include prose (historical, philosophical and literary texts, legends and myths of the remote past, anecdotes, short stories and fantastic tales of ghosts and love) and poetry (from the book of songs to the poetry of the T'ang and Sung periods).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHIN 2084 - MASTERPIECES OF CHINESE LITERATURE AND FILM

Minimum Credits: 3

Maximum Credits: 3

A critical analysis of some of the most representative literary works in modern China from a literary and socio-political perspective. Film is used as a means of enhancing the student's appreciation of the works under consideration.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHIN 2088 - NEW CHINESE CINEMA

Minimum Credits: 3

Maximum Credits: 3

Students will study Chinese films made by filmmakers of mainland China and Taiwan. They will learn about origins, development, themes, and styles with major directors and important films of new Chinese cinema being studied. Students will have an opportunity to understand contemporary Chinese culture and society.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHIN 2089 - THE WORLD OF CHINA

Minimum Credits: 3

Maximum Credits: 3

Various topics are covered.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHIN 2090 - GREAT MINDS OF CHINA

Minimum Credits: 3

Maximum Credits: 3

First segment on Confucianism, including the Analects and Mencius, will be studied with relevant commentaries, stressing implications for Chinese culture, especially in ethical and socio-political dimensions. Second segment on Taoism, Lao Tzu and Chuang Tzu, will be studied with emphasis on impact on the arts and literature. Final segment on Buddhism will concentrate on representative sutras of the tradition, Diamond Sutra and texts from the Chan (Zen) masters.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHIN 2700 - TRANSLATION THEORY AND PRACTICE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CHIN 2902 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 6

Tutorial for advanced graduate study.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis
Course Attributes: Asian Studies

Civil & Environmental Engineer

CEE 2085 - GRADUATE DEPARTMENTAL SEMINAR

Minimum Credits: 0
Maximum Credits: 0
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: PROG: Swanson School of Engineering

CEE 2100 - NUMERICAL METHODS

Minimum Credits: 3
Maximum Credits: 3
Finite difference methods and finite element methods for parabolic, elliptic and hyperbolic differential equations. Also included are numerical methods for structure analysis and dynamics of vibration.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Swanson School of Engineering

CEE 2105 - ADV CIVIL ENGRNG MATERIALS

Minimum Credits: 3
Maximum Credits: 3
Advanced topics in material behavior - fatigue, creep, fracture, etc. - As applied to high performance civil engineering materials; high strength low alloy steel, high strength concrete, composite materials, laminated timbers, etc., With special emphasis upon infrastructure rehabilitation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Swanson School of Engineering

CEE 2106 - NONCONVENTIONAL ENGINEERING MATERIALS

Minimum Credits: 3
Maximum Credits: 3
This course focuses on materials science topics relevant to the application of nonconventional materials in [civil] engineering structures, infrastructure and products. Increasingly, engineers are looking to [often locally-sourced] nonconventional materials to augment or replace resource-intensive conventional engineered materials, such as steel and concrete. This is especially true in resource-scarce regions of the planet. This course will address a broad range of nonconventional materials falling into three categories: i. advanced reinforced polymer composites (GFRP, CFRP, BFRP, pGFRP) and metals (Al and Ti); ii. traditional and vernacular materials such as earth-based materials and bamboo; iii. historic materials (and the repair and restoration thereof); Course deliverables are partially project driven, allowing students to pursue materials issues of interest to their plan or study or research. This course is open to all Engineering and Architecture students (as a technical elective).
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: CEE 1105 or ENGR 0022; CEE and ENGR Undergraduates must have at least 75 credit hours completed and a GPA greater than 3.2.; BS (Architecture) students may take course with permission

CEE 2201 - CONSTRUCTION COST ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

This course teaches the methodology for estimating construction costs. The course covers all types of costs and all types of construction. The student is introduced to standard reference materials and to computerized estimating systems. The course teaches methods and procedures for developing accurate estimates and the basis for follow-on cost control.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Graduate School of Engineering

CEE 2202 - CONSTRUCTION SCHEDULING

Minimum Credits: 3

Maximum Credits: 3

This course teaches the student the theory and practice of planning, scheduling, and controlling the time and cost of construction projects. The course covers various advanced techniques such as cost duration analysis, critical resource analysis, stochastic modeling, and cost control. The course teaches the use of contemporary computerized software systems with hands-on application.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Graduate School of Engineering

Course Attributes: Global Studies

CEE 2203 - CONSTRUCT METHODS AND EQUIPMENT

Minimum Credits: 3

Maximum Credits: 3

This course teaches the student how to plan, organize, and execute construction operations. The course includes typical operations in both building construction and engineering construction. The course describes how to properly construct in order to achieve quality and productivity objectives.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Graduate School of Engineering

CEE 2204 - CONSTRUCTION LAW AND RISK MGMNT

Minimum Credits: 3

Maximum Credits: 3

This course introduces the student to the legal and risk management issues in construction. The course covers the principles of contract law and various legal areas affecting construction such as environmental regulations, insurance, bonds, tort liability, dispute resolution, and professional services.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Graduate School of Engineering

CEE 2205 - CONSTRUCT FINANCE & COST CONTROL

Minimum Credits: 3

Maximum Credits: 3

This course introduces the student to the company level financial and accounting systems which are used in the construction industry, and to project control systems which are used to manage cost and time. The course includes such topics as financial accounting, cost accounting, financial statements, and variance analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Graduate School of Engineering
Course Attributes: Global Studies

CEE 2206 - CONSTRCT & COST OF ELEC SUPPLY

Minimum Credits: 3

Maximum Credits: 3

This course teaches basic construction and cost estimating methodologies for single and three-phase electrical distribution systems that include wiring, power, and controls. The course uses commercial estimating systems and the national electrical code.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Graduate School of Engineering

CEE 2207 - CONSTRCT & COST OF MECHL SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

This course teaches the student how to plan, organize, and execute mechanical construction operations; and the methodologies for estimating their costs. The course covers mechanical systems such as water (supply and waste), HVAC, fire protection, and their controls.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Graduate School of Engineering

CEE 2209 - LIFE CYCLE ASSMNT METH & TOOLS

Minimum Credits: 3

Maximum Credits: 3

This class will introduce students to life cycle thinking and provide engineers with tools to assess the sustainability and environmental impact of a product, process, or activity. Life Cycle Assessment (LCA) principles, methods, tools, and challenges will be explored throughout the course. Topics include material and energy flow analysis, environmental indicators and metrics for sustainability, case studies of LCA applications, and impact assessment.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Graduate School of Engineering

CEE 2210 - ENGR AND SUSTAINABLE DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

This course is intended as an introductory interdisciplinary engineering course. Topics include principles of sustainable design in engineering, manufacturing, infrastructure, communications, and community development; overview of environmental issues for engineers; design for the environment; models of environmental processes; introduction to the use of life cycle assessment; and case studies examining the relationship of green design and the field of engineering.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Swanson School of Engineering

Course Attributes: Global Studies

CEE 2217 - GREEN BUILDING DESIGN AND CONSTRUCTION

Minimum Credits: 3

Maximum Credits: 3

Understanding the design and construction of green buildings are key elements in green and sustainable engineering. This course teaches all of the major aspects of green building design and construction, including sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, innovation, and design process. The United States green building council's leadership in energy and environmental design green building rating system is used to demonstrate one possible green building rating system. Life cycle thinking will be discussed to expand the focus from not only design and construction, but also use, operations, and decommissioning.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

CEE 2218 - DESIGN FOR THE ENVIRONMENT

Minimum Credits: 3

Maximum Credits: 3

Design for the environment (DFE) is a specific set of design practices aimed at creating eco-efficient products and processes. Incorporating sustainability into product and process design as a design constraint is clearly a necessity, as all engineers must understand the limits on natural resources. Students will be introduced to the DFE toolbox which includes design for demanufacture, life cycle assessment, and ecofriendly materials selection. Students will also be exposed to real world industry sustainability challenges and hands on lab experiences designed in conjunction with local industry and organization partners. The course is also intended to be inter-disciplinary between engineering and business students to foster a balance between sustainability design efforts and business plans and strategies. Students can expect that labs will consist of a mix of field trips to partner companies and labs at the university. A major aspect to the course will involve student partnerships with local companies; students will be challenged to apply their DFE skills to projects that address sustainability challenges. Additionally, students will have the opportunity to participate in a summer residency to implement their project with their sponsor company at the end of the course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

CEE 2230 - BUILDING INFORMATION MODELING

Minimum Credits: 3

Maximum Credits: 3

The goal of this course is to introduce the students to building information modeling (BIM) and other new and evolving technologies which are revolutionizing the building and horizontal infrastructure construction industry. Students will learn how BIM and other innovative technologies are being adopted currently by progressive builders to streamline the construction process through enhanced coordination, visualization, logistical planning, cost estimation and analysis. They will also learn how these new tools are enabling (and in some instances requiring) new highly integrated processes that are redefining architecture, engineering, construction and operations (AEEO) business relationships and delivery contracts.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

CEE 2320 - ADVANCED MECHANICS OF MATERIALS

Minimum Credits: 3

Maximum Credits: 3

The fundamentals of elasticity are introduced and related to various problems such as beams and bars on elastic foundations, unsymmetrical bending, torsion of thin walled members, curved bars, failure theories, and stability.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Graduate School of Engineering

CEE 2321 - ELASTICITY, PLASTICITY AND FRACTURE MECHANICS

Minimum Credits: 3

Maximum Credits: 3

This course provides first-year graduate students with the fundamentals regarding mathematical derivations, mechanical models and numerical analyses in elasticity, plasticity and fracture mechanics. It is aimed at laying the foundations for the students for their future study and research in advanced mechanical problems. The main topics of this course includes: 1) equilibrium and compatibility in elastic domains; 2) complex potential method for elasticity problems; 3) plasticity fundamentals; 4) linear elastic fracture mechanics; 5) stress intensity factors; 6) cohesive crack model and crack band model; 7) size effect and scaling; 8) probabilistic fracture mechanics; and 9) micromechanics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Swanson School of Engineering (PENGR)

CEE 2330 - ADVANCED STRUCTURAL ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

Theory and application of matrix stiffness and flexibility methods for analysis of framed structures. Computer implementation for the solution of two- and three-dimensional frames, trusses, and grid systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Graduate School of Engineering

CEE 2333 - INTRODUCTION TO FINITE ELEMENTS

Minimum Credits: 3

Maximum Credits: 3

Introduction to the finite element method and its application to various problems of elastic elements and structures. Both physical and variational approaches are used.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Swanson School of Engineering

CEE 2340 - CONCRETE STRUCTURES 2

Minimum Credits: 3

Maximum Credits: 3

Advanced behavior, strength and design of reinforced concrete structures, including column and frame stability effects, two-way slabs, and serviceability criteria. Introduction to earthquake design concepts.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Graduate School of Engineering

CEE 2341 - STEEL STRUCTURES 2

Minimum Credits: 3

Maximum Credits: 3

Advanced design criteria for steel structures, including composite beams, columns, and frames; member and system stability; first- and second- order analysis of frames; and serviceability criteria.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Graduate School of Engineering

CEE 2343 - PRESTRESSED CONCRETE

Minimum Credits: 3

Maximum Credits: 3

Design of prestressed concrete beams and slabs, including shear and torsion effects.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Graduate Engineering Students

CEE 2346 - REPAIR AND RETROFIT OF STRUCTURES

Minimum Credits: 3

Maximum Credits: 3

Introduction and use of performance-based design concepts. Analysis and modeling techniques for existing and repaired structures. Gravity and lateral load retrofit procedures. Selection, modeling and design of repair and/or retrofit measures for a variety of structures and building materials. Retrofit for blast loads.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Swanson School of Engineering

CEE 2347 - BRIDGE ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

Introduce concepts of bridge engineering by providing the students with the necessary knowledge and skills to apply the AASHTO IRFD specifications for the analysis and design of highway bridge superstructure components.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Swanson School of Engineering

CEE 2350 - MACHING LEARNING IN INFRASTRUCTURE ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

This course covers theory and practical algorithms in machine learning from a variety of perspectives, with applications to solve problems in civil infrastructure engineering. The topics include linear methods for regression and classification, regularization, kernel smoothing methods, bayesian inference, sampling, decision tree learning, support vector machines, statistical learning methods, unsupervised learning and deep learning, as well as their field applications. This course is designed to give graduate-level students a thorough grounding in methodologies, technologies and algorithms in machine learning and push field applications in, but not limited to, civil infrastructure engineering.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

CEE 2360 - DYNAMICS OF STRUCTURES

Minimum Credits: 3

Maximum Credits: 3

Fundamentals of free and forced vibration of one and multi degree of freedom structures, including damping. Matrix formulation of multi-degree of freedom structures. Analytical and numerical methods for determining response; deflection and stress evaluation including damping effects.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Swanson School of Engineering

CEE 2370 - INTRODUCTION TO NONDESTRUCTIVE EVALUATION AND STRUCTURAL HEALTH MONITORING

Minimum Credits: 3

Maximum Credits: 3

The course aims at providing an overview of the different techniques for the nondestructive evaluation (NDE) and the structural health monitoring (SHM) of civil and aerospace structures. Techniques such as electrical resistance strain gauges, fiber optic sensing and ultrasonics will be described within the framework of the NDE. Applications to materials characterization and defect detection will be discussed with emphasis on steel and composite structures. Global and local methods for SHM will be introduced with emphasis on vibration and ultrasonic methods, respectively. The course will also provide the essential tools necessary for the digital signal processing of ultrasonic data. Mat lab and laboratory exercises on recent researches will be investigated.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Swanson School of Engineering

CEE 2401 - OPEN CHANNEL HYDRAULICS

Minimum Credits: 3

Maximum Credits: 3

Basic theories and principles of open channel flows (including flows in rivers and streams). Methods of calculating uniform flow, gradually varied flow, rapidly varied flow, and unsteady flow. Design of open channels.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Graduate Engineering Students

CEE 2410 - WATER RESOURCES ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

This course addresses fundamental and practical issues of water resources engineering. The increasing demand for sufficient water quantity and quality that is distributed in time and space forces engineers and policy makers to develop more comprehensive, complex, and ambitious plans for environmental and water systems. This course emphasizes understanding, formulating, and approaches of solving problems of water resources engineering. Quantitative overview of the water resources development, water resources problems, impacts of climate variability and global warming on water resources, and the fundamental principles and basic tools to solve these problems will be covered. Topics to be discussed also include introduction to basic concepts of hydrology, GIS (Geographic Information Systems) applications, theory of unit hydrograph, frequency analysis, flood routing through reservoirs and rivers, introduction to rainfall-runoff analyses, and watershed modeling.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Graduate Engineering Students

CEE 2416 - SEDIMENT TRANSPORT

Minimum Credits: 3

Maximum Credits: 3

This course describes the interaction of fluid and sediment transport processes. This interaction causes morphodynamic changes in open channel flows. This course covers topics such as boundary layer flow and distribution of flow velocities and shear stresses in open channel flows; physical properties of sediments; types of sediment transport (bed-load and suspended-load) for uniform and mixture, dynamics of bed forms, modulation of bedforms into hydrodynamics and morphodynamics, review of the state-of-the-art in sediment transport research, review of the importance of sediment transport processes into engineering projects. This course serves contains computational, analytical and some experimental projects.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

CEE 2500 - ENVRNMNTL ENGRG MICROBIOL

Minimum Credits: 3

Maximum Credits: 3

Biological fundamentals as applied to the description and evaluation of natural environments and environmental quality control systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Graduate School of Engineering

Course Attributes: Global Studies

CEE 2501 - ENVIRONMENTAL ENGINEERING CHEMISTRY

Minimum Credits: 3

Maximum Credits: 3

Chemical fundamentals as applied to the description and evaluation of natural environments and environmental quality control systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Graduate School of Engineering

Course Attributes: Global Studies

CEE 2502 - PHYSICAL-CHEMICAL PRINCIPLES IN ENVIRONMENTAL ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

Basic principles and applications of thermodynamics, reaction kinetics, equilibria, diffusion, and mass transfer.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Graduate School of Engineering

Course Attributes: Global Studies

CEE 2505 - WATER TREATMENT AND DISTRIBUTION SYSTEMS DESIGN

Minimum Credits: 3

Maximum Credits: 3

Stepwise development and process design, equipment selection, economic evaluation, layout, and operating guidelines for water treatment, storage and distribution systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Graduate School of Engineering

CEE 2511 - ENVIRONMENTAL ENGINEERING PROCESS LABORATORY

Minimum Credits: 3

Maximum Credits: 3

Chemical and biological laboratory procedures and techniques for instrumental analysis applied to evaluation of liquids and gases for environmental assessment and operation and control of environmental quality control systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: Graduate School of Engineering

CEE 2513 - ENVIRONMENTAL IMPACT ASSESSMENT

Minimum Credits: 3

Maximum Credits: 3

Technical and procedural aspects of environmental impact analysis and assessment with emphasis on regulatory framework, characterization of impacts and their remediation, and the decision process when applied to engineering systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Graduate School of Engineering

Course Attributes: Global Studies

CEE 2515 - WASTEWATER COLLECTION AND TREATMENT PLANT DESIGN

Minimum Credits: 3

Maximum Credits: 3

Stepwise development and process design, equipment selection, economic evaluation, layout, and operating guidelines for wastewater collection and treatment systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Graduate School of Engineering

Course Attributes: Global Studies

CEE 2609 - LIFE CYCLE ASSESSMENT METHODS AND TOOLS

Minimum Credits: 3

Maximum Credits: 3

Life cycle assessment (LCA) is a tool for evaluating the environmental impacts of a product or process by documenting energy and material flows from inception to ultimate disposal. This course teaches framework, methods, and tools that can be applied to decision making in the design, construction, operation, and maintenance of the built environment. Topics include the principles of life cycle assessment, case studies of applications of life cycle assessment, methods for life cycle inventory, and methods for life cycle impact assessment. The course aims to encourage systems thinking and to facilitate life cycle applications to graduate students' individual research topics. Students can expect to develop a project and paper applying LCA to their research topic. In most cases, students will produce a publishable journal article at the end of the semester.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

CEE 2610 - ENGINEERING AND SUSTAINABLE DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

This course is intended as an introductory interdisciplinary engineering course. Topics include principles of sustainable design in engineering, manufacturing, infrastructure, communications, and community development; overview of environmental issues for engineers; design for the environment; models of environmental processes; introduction to the use of life cycle assessment; and case studies examining the relationship of green design and the field of engineering.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

CEE 2612 - DESIGN AND ANALYSIS OF EXPERIMENTS

Minimum Credits: 3

Maximum Credits: 3

Principles of designing experiments, analysis of variance techniques for hypothesis testing, simultaneous confidence intervals, robust design and Taguchi methods, block designs, factorial experiments, random effects and mixed models, split plot designs, analysis of covariance, response surface

design

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

CEE 2620 - ADVANCED GREEN BUILDING AND CONSTRUCTION

Minimum Credits: 3

Maximum Credits: 3

This course first provides an overview all of the major aspects of green building design and construction, including sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, innovation, and design process. The course then focuses on energy modeling, indoor environmental quality monitoring, and post-occupancy evaluations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

CEE 2700 - TRAFFIC MGMNT AND OPERATIONS

Minimum Credits: 3

Maximum Credits: 3

Introduction to traffic flow theory and characteristics. Highway capacity analysis. Basic traffic management and control.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Swanson School of Engineering

CEE 2710 - TRAFFIC CONTROL SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

A range of traffic control systems including the analysis and design of traffic signals are discussed along with traffic signal systems. Other topics covered include data collection for traffic control systems, optimization software and models; traffic signal hardware design; traffic signal systems selection (adaptive traffic signal systems versus traditional systems) and design and implementation. Pre-requisite CEE 1703 for 1710 and CEE 2700 for 2710

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: CEE 2700; PROG: Swanson School of Engineering

CEE 2711 - ADVANCED TRANSPORTATION MANAGEMENT STRATEGIES

Minimum Credits: 3

Maximum Credits: 3

This is a management-oriented course that covers key aspects of how government transportation agencies operate their transportation systems. Focus is on the strategies that are used to improve public safety and mobility, including traffic incident management, traffic management, traveler information and pricing. Emphasis is also placed on processes, including planning, performance management and systems engineering, that agencies apply in advancing programs and projects. The course concludes with a look at the future, including the effects that automated vehicles and Smart City concepts will have on the future of transportation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

CEE 2714 - PAVEMENT DESIGN AND ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

Concepts and principles in the structural design of pavements for highways and airfields including: traffic loads, climatic factors, soil and material characterization. Application of current pavement design practices and procedures. Economic evaluation of highway and airport pavements.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Graduate School of Engineering

CEE 2715 - PAVEMENT MAINTENANCE AND REHAB

Minimum Credits: 3

Maximum Credits: 3

Engineering concepts and information needed to maintain and rehabilitate pavements. Project evaluation, testing and analysis. Design of rigid and flexible overlays, and other methods of rehabilitation. Selection of rehabilitation alternatives. Analysis of the effects of maintenance activities on pavement performance. Initial and life cycle cost analysis of various rehabilitation alternatives.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Graduate School of Engineering

CEE 2717 - COMPONENTS, PROPERTIES AND DESIGN OF PORTLAND CEMENT CONCRETE

Minimum Credits: 3

Maximum Credits: 3

Examines the influence of constituent materials (cements, aggregates and admixtures) on the properties of fresh and hardened concrete, mix design handling and placement of concrete; and behavior of concrete under various types of loading and environment; test methods, designing concrete mixes for specific applications.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Graduate School of Engineering

CEE 2718 - ADVANCED CONSTRUCTION AND BITUMINOUS MATERIALS

Minimum Credits: 3

Maximum Credits: 3

Soils, soil stabilization, aggregates, bituminous materials and mixtures. Advanced topics in selection and design of bituminous materials. Asphalt cement, rheology, emulsions, chip seals, hot-mix asphalt design, visco-elasticity characterization.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Swanson School of Engineering

CEE 2720 - URBAN TRANSPORTATION PLANNING

Minimum Credits: 3

Maximum Credits: 3

All aspects of the transportation planning process including transportation planning and decision making, transportation modeling, demand and supply analysis, transportation studies, environmental issues and project implementation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: CEE 2700; PROG: Swanson School of Engineering

CEE 2721 - TRAVEL DEMAND ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

The analysis of travel demand. Aggregate and disaggregate models. Activity and time budgets.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Swanson School of Engineering

CEE 2725 - PUBLIC TRANSPORTATION SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

This course is designed to give seniors and graduate students a basic background in the planning, operations and development of public transportation systems within the context of the overall transportation system.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering (PENGR)

CEE 2730 - HIGHWAY ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

Highway administration, classification, planning and programming. Geometric design of highways. Traffic characteristics and capacity analyses. Traffic operations and control. Highway design project.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Swanson School of Engineering

CEE 2750 - PROJECT DEVELOPMENT AND IMPLEMENTATION

Minimum Credits: 3

Maximum Credits: 3

Project development and implementation - 3 credits: this course provides overview of the process used in project programming and planning, design, construction and operation. The course will emphasize the process used for implementation of major projects with emphasis on construction management and how that task interfaces with other aspects of project development. Students will be involved in a team effort to conceptualize the project, plan alternatives, determine the environmental impact, examine design alternatives, prepare the project for construction documents, recommend award of the contract, manage the contract during construction and determine operational needs of the project.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

CEE 2800 - ENGINEERING GEOLOGY

Minimum Credits: 3

Maximum Credits: 3

Review of basic geologic principles with emphasis on the importance and influence of geology and geologic processes on engineering projects such as dam sites, foundations, tunnels, mine subsidence, landslides, highways, groundwater problems, and seismic studies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Swanson School of Engineering

Course Attributes: Global Studies

CEE 2801 - ADVANCED SOIL MECHANICS

Minimum Credits: 3

Maximum Credits: 3

Mathematical and graphical operations on stress and strain, seepage analysis and flow net, consolidation theory, upper and lower bound analysis, earth pressure theory, bearing capacity, and plasticity based soil models.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Graduate School of Engineering

CEE 2802 - GEOTECHNICAL ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

Fundamentals of the analytical and numerical methods in geotechnical engineering are explored. Emphasis will be placed upon implementation and verification of various formulations into basic programs. Seepage, stress distribution, settlement, consolidation, sheet piling wall, and beams on elastic foundations are some of the topics covered.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Graduate School of Engineering

Course Attributes: Global Studies

CEE 2805 - EARTHQUAKE ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

Earthquake hazard assessment, time domain and frequency domain analysis of multi-degrees of freedom systems, response spectrum, material nonlinearity, stochastic response and failure assessment, soil-structure interaction.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Swanson School of Engineering

CEE 2809 - HYDRAULIC FRACTURING MECHANICS

Minimum Credits: 3

Maximum Credits: 3

This class will prepare students to wisely and critically design hydraulic fracturing treatments as well as make informed recommendations to employers, governments, and communities about the risks and benefits of hydraulic fracturing methods. Upon completion of this course, students will be equipped to use engineering formulae to estimate hydraulic fracture dimensions, evaluate strengths and weaknesses of various modeling approaches, characterize subsurface conditions from wellbore pressure analysis, make sound recommendations for monitoring, and compare and contrast approaches and risks for a range of application domains.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

CEE 2814 - SLOPES & EARTH RETAINING STRUCT

Minimum Credits: 3

Maximum Credits: 3

Conventional methods and recent advances in slope stability analyses; classical and modern earth pressure theories; design of rigid and flexible retaining structures; earth dams, their design and stability.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: Graduate School of Engineering

CEE 2900 - GRADUATE FELLOWSHIPS AND PROPOSAL-WRITING WORKSHOP

Minimum Credits: 1

Maximum Credits: 1

This workshop will provide information and guidance to students interested in competing for external fellowships to support their graduate research, as well as instruction on proposal writing in general. The workshop will consist of structured class time and outside-the-class mentoring teams to work with students on the preparation of a fellowship application.

Academic Career: Graduate

Course Component: Workshop

Grade Component: Grad SN Basis

CEE 2996 - SPEC INVSTGTN FOR M.S. STUDENTS

Minimum Credits: 1

Maximum Credits: 9

A special project course in which students may broaden their knowledge by studying approved topics or problems in a specific field within the department under the guidance of a faculty member.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

CEE 2997 - RESEARCH, M.S.

Minimum Credits: 1

Maximum Credits: 15

Non-thesis option research project for the MS Degree under the guidance of a civil engineering faculty member.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

CEE 2999 - M.S. THESIS

Minimum Credits: 1

Maximum Credits: 15

Scheduled discussion periods with the student's advisor. Literature survey, selection of thesis topic, development of research methods and procedures, and preparation of thesis under the guidance of a civil engineering faculty member.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

CEE 3209 - ADVANCED TOPICS IN LIFE CYCLE ASSESSMENT

Minimum Credits: 3

Maximum Credits: 3

Life cycle assessment (LCA) is a tool for evaluating the environmental impacts of a product or process by documenting energy and material flows from inception to ultimate disposal. This course teaches framework, methods, and tools that can be applied to decision making in the design, construction, operation, and maintenance of the built environment. Topics include the principles of life cycle assessment, case studies of applications of life cycle assessment, methods for life cycle inventory, and methods for life cycle impact assessment. The course aims to encourage systems thinking and to facilitate life cycle applications to graduate students' individual research topics. Students can expect to develop a project and paper applying LCA to their research topic. In most cases, students will produce a publishable journal article at the end of the semester.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: PROG: PENGGR

CEE 3330 - STRUCTURAL STABILITY

Minimum Credits: 3

Maximum Credits: 3

An upper level graduate course focusing on classical solutions for column and frame buckling.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Swanson School of Engineering (PENGGR)

CEE 3333 - ADVANCED FINITE ELEMENT METHODS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Civil & Environmental Engineer (PHD)

CEE 3361 - STRUCTURAL WIND & EARTHQUAKE ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

Introduction to nature of wind, aerodynamic wind loading and design. Investigation of the response of structures to dynamic and pseudo-dynamic wind, earthquake, shock waves, and other deterministic and random loading. Design criteria for buildings and nuclear power stations, special topics in lifeline, computer applications.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: CEE 2360

CEE 3408 - ADVANCED ENVIRONMENTAL FLUID MECHANICS

Minimum Credits: 3

Maximum Credits: 3

This course describes the theory behind fluid mechanics processes for environmental flows. Topics to be covered are: a review of boundary layer flow and distribution of flow velocities and shear stresses in open channel flows; turbulence in open channel flows, shear layer flows, hydrodynamics of lakes and reservoirs, stratified flows, geophysical flows. This course contains computational, analytical and some experimental homework and projects.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

CEE 3414 - ADVANCED HYDROLOGY

Minimum Credits: 3

Maximum Credits: 3

Fundamental and advanced theories and processes of hydrology. Topics to cover include processes of water in the atmosphere, over land surface, and within soil; advanced representation of infiltration and evapotranspiration processes; partitions of water and energy budgets at the land surface; snow and snowmelt processes; applications of remote sensing (e.g., Satellite and radar), and flood and drought analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

CEE 3501 - ENVRNMTL ENGRG PROCESSES 1

Minimum Credits: 3

Maximum Credits: 3

Theory and applications of physical and chemical principles to water and wastewater treatment and disposal. Mixing, equalization, coagulation, sedimentation, filtration, disinfection and solids handling.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Graduate School of Engineering

Course Attributes: Global Studies

CEE 3502 - ENVRNMTL ENGRG PROCESSES 2

Minimum Credits: 3

Maximum Credits: 3

Theory and applications of aerobic, anoxic and anaerobic biological processes in environmental quality control.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Graduate School of Engineering or (PREQ: CEE 1503 or CET 1141; PROG: Undergraduate School of Engineering)

Course Attributes: Global Studies

CEE 3609 - ADVANCED TOPICS IN LIFE CYCLE ASSESSMENT

Minimum Credits: 3

Maximum Credits: 3

Life cycle assessment (LCA) is a tool for evaluating the environmental impacts of a product or process by documenting energy and material flows from inception to ultimate disposal. This course teaches framework, methods, and tools that can be applied to decision making in the design, construction, operation, and maintenance of the built environment. Topics include the principles of life cycle assessment, case studies of applications of life cycle assessment, methods for life cycle inventory, and methods for life cycle impact assessment. The course aims to encourage systems thinking and to facilitate life cycle applications to graduate students' individual research topics. Students can expect to develop a project and paper applying LCA to their research topic. In most cases, students will produce a publishable journal article at the end of the semester.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

CEE 3714 - ADVANCED PAVEMENT DESIGN & ANAL

Minimum Credits: 3

Maximum Credits: 3

Theoretical models for analysis of pavement systems. Design and analysis of pavements through the use of transfer functions relating pavement response to pavement performance. Evaluation of current pavement design practices and procedures. Economic evaluation of highway and airport pavements.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Graduate School of Engineering

CEE 3805 - ROCK MECHANICS

Minimum Credits: 3

Maximum Credits: 3

Behavior and properties of rock as an engineering material; failure of rock; design and construction of underground structures and slopes in rock; design of rock abutments for dams.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Graduate School of Engineering

CEE 3996 - SPECIAL INVSTGTN FOR PH.D. STDNT

Minimum Credits: 1

Maximum Credits: 6

A special project course in which advanced students may broaden their knowledge by studying approved topics or problems in a specific field within the department under the guidance of a faculty member.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

CEE 3997 - RESEARCH, PH.D

Minimum Credits: 1

Maximum Credits: 15

Directed research and study for the preparation of the Ph.D. Dissertation proposal.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

CEE 3999 - PH.D. DISSERTATION

Minimum Credits: 1

Maximum Credits: 15

Scheduled discussion periods with the student's advisor. Literature survey, selection of dissertation topic, development of research methods and procedures, and preparation of the dissertation, under the guidance of a civil engineering graduate faculty member.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Classics

CLASS 2019 - GLOBAL ISSUES THROUGH CLASSICS 1

Minimum Credits: 1

Maximum Credits: 1

This course represents the first half of a two-semester graduate proseminar introducing students to global issues through ancient Greek and Roman sources in translation. The course proposes that global issues are not only transnational but in fact transhistorical: that is to say, the processes of connection and disruption, inequality, precarity, and violence, associated with the uneven flows of people and power through space and over time can be found operating around the ancient world as much as in the modern. Consequently, not only can ancient texts, sources, and ideas be used to enrich our understanding of today's global issues, but methods from Global Studies can also be usefully applied to probe these same processes in antiquity. Topics may include: poverty and inequality; war, peace, and diplomacy; citizenship and xenophobia; indigeneity and nationalism; migration and mobility; center versus periphery; terrorism; imperialism; conceptions of race and ethnicity; and the organization of knowledge and circulation of information. Students are expected to complete weekly readings of ancient texts, and to prepare materials for discussions of ancient and contemporary global issues.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

CLASS 2020 - GLOBAL ISSUES THROUGH CLASSICS 2

Minimum Credits: 2

Maximum Credits: 2

This course is the continuation of a two-semester graduate proseminar investigating contemporary global issues through ancient Greek and Roman sources in translation. The course proposes that global issues are not only transnational but in fact transhistorical: that is to say, the processes of connection and disruption, inequality, precarity, and violence, associated with the uneven flows of people and power through space and over time can be found operating around the ancient world as much as in the modern. Consequently, not only can ancient texts, sources, and ideas be used to enrich our understanding of today's global issues, but methods from Global Studies can also be usefully applied to probe these same processes in antiquity. Topics may include: poverty and inequality; war, peace, and diplomacy; citizenship and xenophobia; indigeneity and nationalism; migration and mobility; center versus periphery; terrorism; imperialism; conceptions of race and ethnicity; and the organization of knowledge and circulation of information. Students are expected to complete weekly readings of ancient texts, to prepare materials for discussions of ancient and contemporary global issues, and to develop an independent research project or paper.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

CLASS 2090 - TOPICS IN CLASSICS

Minimum Credits: 3

Maximum Credits: 3

Close study of selected topics in classical studies. Course may be repeated for credit provided material covered is different.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

CLASS 2140 - ANCIENT POETRY AND RECEPTION

Minimum Credits: 3

Maximum Credits: 3

Students will read, in translation, a selection of Greek and Roman poets and the reception of their works across varying genres, cultures and timeframes. Particular focus will be placed on the specific literary, cultural and historical contexts, those in which the authors wrote and those in which their works were received.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CLASS 2301 - ANCIENT PHILOSOPHY

Minimum Credits: 3

Maximum Credits: 3

This is a beginning to intermediate level graduate seminar in ancient philosophy, with emphasis on Plato and Aristotle, taken almost exclusively by students in the doctoral program, usually during their first or second year of residence. The exact contents of the course vary from one occasion to the next.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

CLASS 2319 - FROM PHILO TO PHILOPONUS: AN INTRODUCTION TO THE HISTORY OF PHILOSOPHY IN LATE ANTIQUITY

Minimum Credits: 3

Maximum Credits: 3

This course is designed thematically and historically to expand the course offerings of the Departments of Classics and Philosophy. The history of philosophy in Late Antiquity is lamentably neglected by historians of ancient philosophy, even though the thinkers of this period made crucial and

formative contributions to the development of Western philosophy, theology, and science. The aim of this course is to provide students with a clear sense of the cultural and social forces that shaped the doctrinal and philosophical debates and concerns of the first six centuries CE, and to familiarize them with the roots of what was to become medieval and Renaissance philosophy.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

CLASS 2320 - CLASSICS, PHILOSOPHY, AND ANCIENT SCIENCE GREEK AND LATIN SEMINAR 1

Minimum Credits: 3

Maximum Credits: 3

Bringing together students and faculty members, the aim of this course is to read and discuss a variety of Ancient Greek and Latin authors in their original language. The format of the course is flexible. Each participant translates a portion of text and singles out topics for discussion, whether philological, philosophical or methodological in nature. All members are encouraged to interrupt and participate as the mood strikes. We attempt to cover authors both central and at the margins of the curriculum, depending on students' interest. The course alternates weekly between Greek and Latin authors.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

CLASS 2321 - CLASSICS, PHILOSOPHY, AND ANCIENT SCIENCE GREEK AND LATIN SEMINAR 2

Minimum Credits: 3

Maximum Credits: 3

Bringing together students and faculty members, the aim of this course is to read and discuss a variety of Ancient Greek and Latin authors in their original language. The format of the course is flexible. Each participant translates a portion of text and singles out topics for discussion, whether philological, philosophical or methodological in nature. All members are encouraged to interrupt and participate as the mood strikes. We attempt to cover authors both central and at the margins of the curriculum, depending on students' interest. The course alternates weekly between Greek and Latin authors.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

CLASS 2390 - TOPICS IN ANCIENT PHILOSOPHY

Minimum Credits: 3

Maximum Credits: 3

Study of selected topics in the area of ancient philosophy. Course may be repeated for credit if the material covered is different.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

CLASS 2392 - ARISTOTLE'S CONCEPT OF NATURAL SCIENCE

Minimum Credits: 3

Maximum Credits: 3

Among theoretical forms of investigation and knowledge, Aristotle distinguishes mathematics, natural science and first philosophy (metaphysics). This seminar explores Aristotle's understanding of the aims, methods and the conceptual and explanatory structure of natural science, and the relationship between it and the other forms of theoretical inquiry.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

CLASS 2547 - ARISTOTLE'S PHILOSOPHY OF SCIENCE

Minimum Credits: 3

Maximum Credits: 3

This seminar explores Aristotle's views on the nature of science, such as explanation, causation, demonstration, and necessity. We will study a number of Aristotle's works, including the analytics and physics.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

CLASS 2902 - DIRECTED STUDY FOR M.A. STUDENTS

Minimum Credits: 1

Maximum Credits: 9

Directed study on classical topics for students in the MA Program.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

CLASS 2970 - TEACHING OF GREEK

Minimum Credits: 3

Maximum Credits: 3

Practical experience in the teaching of ancient Greek.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad SN Basis

CLASS 2971 - TEACHING OF LATIN

Minimum Credits: 3

Maximum Credits: 3

Practical experience in the teaching of Latin.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad SN Basis

CLASS 2972 - TEACHING OF CLASSICAL CIVILIZATION

Minimum Credits: 3

Maximum Credits: 3

Practical experience in the teaching of courses in classical civilization.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad SN Basis

CLASS 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 9

Independent study on classical topics for graduate students.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

CLASS 2992 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 3

Directed study on classical topics for students in the graduate program.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

CLASS 2995 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

Directed study on classics topics for students in the graduate program.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

CLASS 3000 - DISSERTATION RESEARCH FOR PH.D.

Minimum Credits: 1

Maximum Credits: 9

Research for and writing of the doctoral dissertation in classics.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

CLASS 3902 - DIRECTED STUDY FOR PH.D STUDENTS

Minimum Credits: 1

Maximum Credits: 9

Directed study on classical topics for Ph.D. Students.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Clinical Nurse Specialist

NURCNS 2161 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 3

Students elect an area of interest and work with a specific faculty member to meet agreed upon objectives.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

NURCNS 2350 - GROUP THERAPY THEORY

Minimum Credits: 2

Maximum Credits: 2

This course examines models of group interventions in psychiatric mental health nursing from a holistic perspective and incorporates theory and research from nursing and related sciences to develop a framework for guiding advanced nursing practice. Clinical therapeutics focus on the use of group interventions across the life cycle with different populations in altering human responses associated with mental and emotional problems. Various classifications of systems of nursing phenomena are considered in relation to advances in psychobiology and in relation to use of group interventions with specific client populations. Group management skills are explored within the context of a selected clinically-related management role and case management.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: CREQ: NURCNS 2351

NURCNS 2351 - GROUP THERAPY PRACTICUM

Minimum Credits: 1

Maximum Credits: 1

This clinical practicum is taken concomitantly with NURCNS 2350 and includes practice and a weekly clinical conference. Clinical applications of theoretical knowledge focus on experiences in short-term group interventions and in the clinically related role of manager.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

Course Requirements: CREQ: NURCNS 2350

NURCNS 2352 - FAMILY THEORY/THERAPY TECHNIQUES

Minimum Credits: 2

Maximum Credits: 2

This course examines models of community mental health and mental health nursing from a holistic nursing perspective with a focus on family mental health and family functioning. Theories and research about family dynamics and processes are examined as the student develops a conceptual framework to guide clinical practice. Clinical therapeutics focus on the use of interventions for maintaining functional and altering dysfunctional patterns of responses with family systems and in a selected clinically related management role in community mental health services.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Nursing students only.

NURCNS 2353 - FAMILY THERAPY ROLE SEMINAR AND CLINICAL PRACTICUM

Minimum Credits: 1

Maximum Credits: 1

This clinical practicum is taken concomitantly with NURCNS 2352 and includes clinical experiences as a family therapist. Experiential seminars are held. Knowledge gained from theory course is applied and synthesized into a conceptual framework for advanced nursing practice.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

Course Requirements: School of Nursing students only.

NURCNS 2354 - INDIVIDUAL PSYCHOTHERAPY THEORY

Minimum Credits: 2

Maximum Credits: 2

This course will focus on the theory relevant to individual psychotherapy. The emphasis is on preparing the student to provide appropriate models of psychotherapy within the managed care and private practice environments.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: CREQ: NURCNS 2355; PROG: Graduate School of Nursing

NURCNS 2354D - INDIVIDUAL PSYCHOTHERAPY THEORY

Minimum Credits: 2

Maximum Credits: 2

This course will focus on the theory relevant to individual psychotherapy. The emphasis is on preparing the student to provide appropriate models of

psychotherapy within the managed care and private practice environments.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Attributes: Distance Education

NURCNS 2355 - INDIVIDUAL PSYCHOTHERAPY PRACTCM

Minimum Credits: 1

Maximum Credits: 1

The goal of this practicum is to provide the student with an opportunity to gain skills in the practice of individual psychotherapy with patients across the life span and in different populations. The student will be expected to provide psychotherapy to patients through the beginning, middle, and end phases of treatment, utilizing concepts learned in NURCNS 2354 individual psychotherapy theory.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

Course Requirements: CREQ: NURCNS 2354

NURCNS 2361 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 3

An in-depth study in a particular area of interest by arrangement with a designated faculty member.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis

NURCNS 2850 - CNS ROLE IMPLEMENTATION

Minimum Credits: 2

Maximum Credits: 2

This course is designed to provide a framework for clinical nurse specialist (CNS) practice that is organized around the three spheres of influence (patient, nursing personnel, organization/network) that encompass consumers of CNS services. Students are introduced to unique competencies in each sphere of influence as operationalized in acute care. Emphasis will be placed on acquisition of skills needed to develop population-based programs of care; facilitate systems that promote innovative, cost-effective and comprehensive care; develop and implement evidence-based practice initiatives; and collaborate with health team members to improve health care delivery and patient outcomes. Using model cases and problems derived from their practice, students examine how leadership, consultation and collaboration skills can be used to solve problems for patients/populations, health team members, and organizations/systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

NURCNS 2851 - CNS CLINICAL PRACTICUM 1

Minimum Credits: 4

Maximum Credits: 5

Practicum is the first of two clinical practica designed to provide experience in role development for the clinical nurse specialist (CNS). Emphasis is placed on enhancing competencies within the three spheres of influence of the CNS (patient, nursing personnel, organization/network) and developing characteristics essential to CNS practice.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NUR 2850

NURCNS 2852 - CNS CLINICAL PRACTICUM 2

Minimum Credits: 1

Maximum Credits: 4

This practicum is designed to provide experience in role development for the clinical nurse specialist (CNS). Emphasis is placed on further refinement of characteristics essential to CNS practice and competencies

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

NURCNS 2853 - CLINICAL EMPHASIS SPECIALTY

Minimum Credits: 3

Maximum Credits: 3

This course is designed to develop a comprehensive theoretical and practical foundation for advanced nursing care of adult-gerontology patients with dysfunctions/alterations in the selected area of clinical specialization. The course integrates the pathophysiology of dysfunctions/alterations in the selected area with appropriate diagnostic parameters and management strategies. Aspects of health promotion and maintenance appropriate to these patients and families will also be emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NUR 2004; PROG: NURS

NURCNS 3039 - DNP-CNS ROLE PRACTICUM

Minimum Credits: 1

Maximum Credits: 5

This course is designed to provide a culminating practicum experience for the DNP clinical nurse specialist (CNS). Students will focus on promoting evidence based practice as interdisciplinary team members and providing high quality, cost effective care in a dynamic health care environment. Emphasis is placed on further refinement of competencies within the three spheres of influence of the CNS (patient, nursing personnel, and systems) and further development of characteristics essential to CNS practice at the doctoral level.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

NURCNS 3239 - DNP CNS ROLE PRACTICUM

Minimum Credits: 1

Maximum Credits: 5

This course is designed to provide a culminating practicum experience for the dnp clinical nurse specialist (CNS). Students will focus on promoting evidence based practice as interdisciplinary team members and providing high quality, cost effective care in a dynamic health care environment. Emphasis is placed on further refinement of competencies within the three spheres of influence of the CNS (patient, nursing personnel, and systems) and further development of characteristics essential to CNS practice at the doctoral level.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Clinical Rehab and Mental Health Counseling

COUN 2715 - MEDICAL & PSYCHOLOGICAL ASPECTS OF DISABILITY

Minimum Credits: 3

Maximum Credits: 3

This course is designed to prepare counseling professionals to become skillful interpreters and users of medical information and terminology. Students examine major chronic illnesses and disabilities in order to obtain a practical and theoretical understanding of the implications of these conditions on all areas of functioning and participation, including interpersonal relationships, sexuality, education, employment, and independent living.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

COUN 2723 - ASSISTIVE TECHNOLOGY TO PROMOTE MENTAL & PHYSICAL FUNCTIONING

Minimum Credits: 2

Maximum Credits: 2

This course will address aspects of assistive technology for use at home, in education and the workplace. Topics will include legislation, computer access, ergonomics, mobility, and adaptations for visual, auditory, motor, cognitive and mental health impairments. Field trips and guest speakers will provide unique experiences and insights.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Requirements: School of Health and Rehabilitation Sciences students only.

COUN 2728 - FOUNDATIONS OF REHABILITATION & MENTAL HEALTH COUNSELING

Minimum Credits: 2

Maximum Credits: 2

The course provides an overview of the professional practice of counseling. The content includes the origins of counseling and rehabilitation, the professions associated with rehabilitation and mental health counseling through the philosophy, legislative, and clinical history of the disciplines. The goal of studying history and foundations is to gain perspective on the nature and scope of counseling practice. Students are exposed to the requisite knowledge and skills for effective practice. Students understand need for, and develop skills for professional and sociopolitical advocacy for the counseling professions and service recipients. The course also provides fundamental knowledge about psychosocial aspects of disability, including models of disability and adjustment to disability.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Clin Rehab and Mntl Hlth Cnsln or SBPLAN: Rehabilitation Counseling (Health and Rehabilitation Scs-MS)

COUN 2729 - HUMAN DEVELOPMENT ACROSS THE LIFESPAN

Minimum Credits: 2

Maximum Credits: 2

The course provides an in-depth study of human development from a disability and multicultural perspective. The content will cover theories of physical, cognitive, social, cultural, and emotional human development from the prenatal period through aging and death. Clinical approaches for each stage of development will be reviewed. Multi-cultural competencies, personal biases, and client preferences will be explored, tested, and applied to clinical work. Students are expected to develop knowledge of human development, disability, and culture that will inform future case conceptualization and treatment as a clinical rehabilitation mental health counselor. Application of these skills and knowledge will be evaluated through direct observation in the community.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Clin Rehab and Mntl Hlth Cnsln or SBPLAN: Rehabilitation Counseling (Health and Rehabilitation Scs-MS)

COUN 2730 - CULTURAL CONSIDERATIONS IN COUNSELING

Minimum Credits: 2

Maximum Credits: 2

This course is designed to increase multicultural awareness, knowledge, and skills in the competencies necessary to effectively work with and relate to ethnically and culturally diverse clients. Students will examine their own culture, attitudes, beliefs and internalized messages. Knowledge and skills in the area of multicultural counseling will be explored and practiced. Application of these skills and knowledge will be evaluated through direct observation in the community. Students will learn about a variety of topics including theories and models of multicultural counseling, intersectionality, social justice and advocacy, implicit bias, cross-cultural communication, microaggressions and generational trauma. Cultural

humility will be introduced as a process to help build authentic relationships with clients of different cultural and ethnic backgrounds. The course will also expose students to historic and current cultural events.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

COUN 2731 - FOUNDATIONS OF REHABILITATION & MENTAL HEALTH COUNSELING

Minimum Credits: 3

Maximum Credits: 3

The course provides an overview of the professional practice of counseling. The content includes the origins of counseling and rehabilitation, the professions associated with rehabilitation and mental health counseling through the philosophy, legislative, and clinical history of the disciplines. The goal of studying history and foundations is to gain perspective on the nature and scope of counseling practice. Students are exposed to the requisite knowledge and skills for effective practice. Students understand need for, and develop skills for professional and sociopolitical advocacy for the counseling professions and service recipients. The course also provides fundamental knowledge about psychosocial aspects of disability, including models of disability and adjustment to disability.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Clin Rehab and Mntl Hlth Cnsln or SBPLAN: Rehabilitation Counseling (Health and Rehabilitation Scs-MS)

COUN 2732 - HUMAN DEVELOPMENT ACROSS THE LIFESPAN

Minimum Credits: 3

Maximum Credits: 3

The course provides an in-depth study of human development from a disability and multicultural perspective. The content will cover theories of physical, cognitive, social, cultural, and emotional human development from the prenatal period through aging and death. Clinical approaches for each stage of development will be reviewed. Multi-cultural competencies, personal biases, and client preferences will be explored, tested, and applied to clinical work. Students are expected to develop knowledge of human development, disability, and culture that will inform future case conceptualization and treatment as a clinical rehabilitation mental health counselor. Application of these skills and knowledge will be evaluated through direct observation in the community.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Clin Rehab and Mntl Hlth Cnsln or SBPLAN: Rehabilitation Counseling (Health and Rehabilitation Scs-MS)

COUN 2733 - COUNSELING SKILLS & TECHNIQUES

Minimum Credits: 3

Maximum Credits: 3

This is an experiential course where students will learn advanced counseling skills and apply them into clinical practice. The class will consist of three themes, including: (1) listening skills, building trust and rapport, and multicultural competencies; (2) development and application of counseling skills; (3) clinical documentation and progress reports. Class time will be utilized for practicing counseling techniques and styles through class activities, demonstrations, and role-plays. This course requires students to conduct, video-record, and document ongoing counseling sessions with a simulated client. Students are expected to effectively conduct 50-minute goal-directed counseling sessions with a cross-theoretical approach by the end of the course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Clin Rehab and Mntl Hlth Cnsln or SBPLAN: Rehabilitation Counseling (Health and Rehabilitation Scs-MS)

COUN 2734 - COUNSELING THEORIES AND TECHNIQUES

Minimum Credits: 3

Maximum Credits: 3

This course provides an in-depth overview of major counseling theories, principles and techniques. Theories and techniques are explored with an

emphasis on multicultural considerations. Emphasis is on both theory and practical applications of the various approaches. Students are encouraged to learn the theoretical principles of counseling theories and begin to integrate various theories to develop their own understanding and approach to counseling. Instruction includes experiential learning such as in-class role-plays and recorded counseling sessions with individualized feedback.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Clin Rehab and Mntl Hlth Cnsln or SBPLAN: Rehabilitation Counseling (Health and Rehabilitation Scs-MS)

COUN 2735 - CAREER COUNSELING & VOCATIONAL ISSUES

Minimum Credits: 2

Maximum Credits: 2

This course focuses on theory and practice of career and vocational counseling. Module 1 of this course focuses on models of theories of career development and career counseling, with cultural considerations taken into account. Students learn to incorporate theory into career counseling practice. Module 2 emphasizes vocational issues including job placement, pre-placement analysis, client-readiness, job development, job modification, and employer culture and attitudes. Module 2 content includes sources of occupational data, lab or market analysis, job analysis, job seeking skills, and procedures for analyzing transferable work skills. Students learn various employment alternatives including competitive employment, supported employment, self-employment, etc.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Clin Rehab and Mntl Hlth Cnsln or SBPLAN: Rehabilitation Counseling (Health and Rehabilitation Scs-MS)

COUN 2736 - CRISIS COUNSELING, RISK MANAGEMENT AND DISASTER PREPAREDNESS

Minimum Credits: 2

Maximum Credits: 2

The course provides guidelines and parameters for risk assessment and risk management of harm to self and/or others. Students will demonstrate proficiency in establishing risk assessment/management plans for clinical practice. Students examine research on crisis theory, resolution, and resilience. Students will learn the effects of crises, disasters, and other trauma-causing events on persons of all ages. The course examines diverse crisis situations and the assessment and treatment strategies used by counselors to assist individuals, groups, and organizations in managing and resolving crises. Students learn how people deal with crises, explore personal crisis experiences, and develop crisis intervention competency.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Clinical Rehab & Mental Health Counseling (CRMHC-MS) or Rehabilitation Counseling (MSRC-SP)

COUN 2737 - CLINICAL, DIAGNOSTIC AND FUNCTIONAL ASSESSMENT IN COUNSELING

Minimum Credits: 3

Maximum Credits: 3

This course is focused on the psychometric qualities, indications for use, administration and interpretation of various assessment procedures. Procedures include interview and mental status examination, psychological and neuropsychological testing, functional assessment, vocational testing and vocational evaluation, and specialized assessments such as EMA. Professional and ethical standards and the effect of culture and disability on assessment are included. Students learn to apply assessment findings to goal setting and intervention planning through a series of case studies that require interpretation of test data in the context of a client's life (as presented in the case study). Students are required to demonstrate proficiency in written and oral reporting and communicating assessment results to professionals and clients. The course includes a lab where student teams develop, norm administer and interpret naturalistic assessment tool.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Clin Rehab and Mntl Hlth Cnsln or SBPLAN: Rehabilitation Counseling (Health and Rehabilitation Scs-MS)

COUN 2738 - DIAGNOSIS & TREATMENT OF COGNITIVE AND MENTAL HEALTH DISORDERS

Minimum Credits: 3

Maximum Credits: 3

This course contains three modules: 1) dsm-5 and differential diagnosis, 2) cognitive rehabilitation, and 3) psychiatric rehabilitation. Students develop skills in diagnostic formulation and clinical intervention planning and implementation. The influence of multicultural identity in diagnosis and treatment is addressed. In module 1, students learn about the diagnosis of cognitive, behavioral, and mental health disabilities through extensive review of the current edition of the diagnostic and statistical manual and related information. In module 2, students learn specialized counseling techniques for individuals with cognitive impairments and behavioral issues. Students demonstrate use of techniques such as external cognitive aids, metacognitive strategies, and social skills training. In module 3, students learn interventions for mental health disorders such as psychiatric rehabilitation day programming, assertive community treatment and case management, and self-help and peer-delivered services.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Clin Rehab and Mntl Hlth Cnsln or SBPLAN: Rehabilitation Counseling (Health and Rehabilitation Scs-MS)

COUN 2739 - GROUP COUNSELING

Minimum Credits: 3

Maximum Credits: 3

In this course, students are introduced to group work, including theoretical approaches, personal and professional characteristic of an effective group leader, guidelines for forming a group, and leader and participant tasks and behaviors throughout the stages a group. Group counseling ethical, professional, and legal considerations, as well as multicultural issues are discussed throughout the course. Experiential and interactive learning is supplemented by lecture and video demonstration. Using evidence-based practice techniques, students research and evaluate a group intervention of their choice. Students develop a group proposal and demonstrate proficiency in leading a group of their choice. Participation in a 10-week experiential group is required (lab).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Clin Rehab and Mntl Hlth Cnsln or SBPLAN: Rehabilitation Counseling (Health and Rehabilitation Scs-MS)

COUN 2740 - CLINICAL APPLICATIONS IN COUNSELING

Minimum Credits: 3

Maximum Credits: 3

This course is divided into two modules designed to provide students with basic skills needed for 1) interviewing for intake and assessment purposes and engaging clients in a therapeutic relationship, and 2) application of evidence-based counseling using cognitive behavioral therapy (cbt). The course will employ brief didactic presentations, discussion of readings, video review, and role-play. Students will have the opportunity to conduct a clinical interview and a brief course of cbt with an actor playing the role of the client. These sessions will be video recorded. Evaluation by self, peers, and instructor will occur. Student performance will be evaluated to determine competency for entry-level practice and specific detail for student remediation will be provided if needed.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

COUN 2741 - CASE CONCEPTUALIZATION & TREATMENT PLANNING

Minimum Credits: 3

Maximum Credits: 3

This course presents the process of synthesizing relevant client information including client history, interview, and assessment results, along with contextual information (environmental and demand information) in order to achieve accurate case conceptualization. Students learn and demonstrate proficiency in goal setting, treatment planning, case monitoring, and measurement-based care using individual, evolving client case studies. Students explore and develop a compendium of community resources.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Clin Rehab and Mntl Hlth Cnsln or SBPLAN: Rehabilitation Counseling (Health and Rehabilitation Scs-MS)

COUN 2742 - LEGAL, ETHICAL & PROFESSIONAL ISSUES IN COUNSELING

Minimum Credits: 3

Maximum Credits: 3

This course introduces students to legal, ethical, and professional issues pertaining to the practice of clinical rehabilitation and mental health counseling. This course will offer an in depth focus on the relevant knowledge, awareness and skills necessary to practice safely and responsibly in counseling. Students will examine a variety of complex legal and ethical issues that confront clinical rehabilitation and mental counselors as they work with clients and colleagues within difference counseling systems. Aca, nbcc, and crcc codes of ethics will be examined, as well as decision making models that will facilitate students informed decision making when faced with ethical and legal issues in the workplace. Clinical rehabilitation and mental health counselor standards of practice will be examined.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Clinical Rehab & Mental Health Counseling (CRMHC-MS) or Rehabilitation Counseling (MSRC-SP)

COUN 2743 - FAMILY AND COUPLES COUNSELING

Minimum Credits: 3

Maximum Credits: 3

In this course, a broad theoretical and practical foundation for counseling couples and families is emphasized. The course includes an introduction to theories of family therapy, counseling strategies and techniques, and research in family counseling and functioning. Using a family systems approach, the course exposes students to the dynamics of contemporary family structures, living patterns, and lifestyles. Students learn the family development framework and common family issues across the family life cycle. Students are challenged to better understand their own family system and to examine some of their beliefs and values about what constitutes a family. Learning methods include readings, didactic presentations, discussions, role-playing, and case reviews.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Clin Rehab and Mntl Hlth Cnsln or SBPLAN: Rehabilitation Counseling (Health and Rehabilitation Scs-MS)

COUN 2744 - EVIDENCE BASED PRACTICE IN COUNSELING

Minimum Credits: 3

Maximum Credits: 3

This course prepares students to be competent counselors that utilize evidence-based practice in their clinical practice. Students will learn to (1) understand the rationale for using evidence-based practice, (2) use guidelines for determining acceptable evidence, (3) effectively locate free access ebp articles, and (4) create program evaluation plans. At the end of the course, students are required to make evidence-based practice recommendations for clinical case studies. Students also must effectively design a program evaluation protocol for a complex counseling intervention.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: HRS PLAN: Clinical Rehab & Mental Health Counseling (CRMHC-MS) or Rehabilitation Counseling (MSRC-SP)

COUN 2745 - SUBSTANCE ABUSE AND ADDICTIONS COUNSELING

Minimum Credits: 2

Maximum Credits: 2

This course is an introduction to substance abuse counseling. The expected student outcomes of the course include: develop understanding of substance use disorders; develop evidence-based addiction counseling competencies; and increase competence in providing substance abuse evaluation, education, and treatment services. Students are introduced to the theories of etiology and intervention for alcohol and substance use, abuse, and addiction. Students explore community resources proving substance use intervention.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Clinical Rehab & Mental Health Counseling (CRMHC-MS) or Rehabilitation Counseling (MSRC-SP)

COUN 2746 - COUNSELING PRACTICUM

Minimum Credits: 1

Maximum Credits: 6

Students participate in a minimum of 100 hours of counseling practicum with at least 40 hours of direct clinical service. Students receive supervision from an assigned on-site clinical supervisor, and clinical supervision from a designated faculty clinical mentor. Practicum students increase their awareness and understanding of the differences in values, beliefs, and behaviors of individuals from diverse populations.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

COUN 2749 - CLINICAL COUNSELING INTERNSHIP

Minimum Credits: 1

Maximum Credits: 6

Students participate in a minimum of 600 hours of counseling internship with at least 240 hours of direct clinical service. Students receive supervision from an assigned on-site clinical supervisor with requisite credentials, and clinical supervision from a faculty clinical mentor with the requisite credential and/or license. Internship students increase their awareness and understanding of the differences in values, beliefs, and behaviors of individuals from diverse populations. The internship reflects the comprehensive work experience of a clinical rehabilitation and mental health professional counselor. This course is the final preceptorship prior to the completion of the degree.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad HSU Basis

COUN 2750 - CLINICAL COUNSELING CAPSTONE

Minimum Credits: 1

Maximum Credits: 3

These courses serve as the comprehensive examination. The courses focus on student demonstration of knowledge and skills that reflect the competencies of the clinical rehabilitation and mental health counselor as defined by this program. Students will be assessed on their knowledge and skills accumulated through coursework and clinical experiences. The courses require students to synthesize and apply advanced concepts into clinical practice. The courses implement a case study approach. Students are providing real and/or simulated clients to demonstrate their knowledge and skills. Students are expected to analyze and synthesize case materials for case conceptualization and then develop appropriate and realistic intervention plans. Students are expected to apply appropriate counseling techniques included in their intervention plan via role-play simulations. The courses are delivered over two terms with the first 1-credit course (clinical capstone i) focusing on preparation and practice. If students do not demonstrate readiness for competency evaluation, remediation will be prescribed and deficiencies resolved prior to proceeding. The second 2-credit course will serve as their competency evaluation (clinical capstone ii). Successful completion of this comprehensive examination is needed for the student to demonstrate mastery of graduate study in clinical rehabilitation and mental health counseling.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Clin Rehab and Mntl Hlth Cnslr or SBPLAN: Rehabilitation Counseling (Health and Rehabilitation Scs-MS)

COUN 2751 - CLINICAL COUNSELING CAPSTONE EXAM

Minimum Credits: 1

Maximum Credits: 3

The clinical counseling capstone courses serve as the comprehensive examination. The courses focus on student demonstration of knowledge and skills that reflect the competencies of the clinical rehabilitation and mental health counselor as defined by this program. Students will be assessed on their knowledge and skills accumulated through coursework and clinical experiences. The courses require students to synthesize and apply advanced concepts into clinical practice. The courses implement a case study approach. Students are providing real and/or simulated clients to demonstrate their knowledge and skills. Students are expected to analyze and synthesize case materials for case conceptualization and then develop appropriate and realistic intervention plans. Students are expected to apply appropriate counseling techniques included in their intervention plan via role-play simulations. The courses are delivered over two terms with the first 1-credit course (clinical capstone i) focusing on preparation and practice. If students do not demonstrate readiness for competency evaluation, remediation will be prescribed and deficiencies resolved prior to proceeding. The second 2-credit course will serve as their competency evaluation (clinical capstone ii). Successful completion of this comprehensive examination is

needed for the student to demonstrate mastery of graduate study in clinical rehabilitation and mental health counseling

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Clinical Rehab & Mental Health Counseling (CRMHC-MS) or Rehabilitation Counseling (MSRC-SP)

COUN 2752 - SPECIAL TOPICS IN COUNSELING

Minimum Credits: 1

Maximum Credits: 1

A special topics course. Content will vary from term to term depending on instructor.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

COUN 2753 - SPECIAL TOPICS IN COUNSELING

Minimum Credits: 1

Maximum Credits: 1

A special topics course. Content will vary from term to term depending on instructor.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

COUN 2755 - CLINICAL COUNSELING MENTORSHIP

Minimum Credits: 1

Maximum Credits: 3

This course provides a structure for clinical oversight and guidance through structured student-advisor interaction over the course of the program's first year of study. The objective of the course is to facilitate the clinical application of knowledge and skills students have acquired from didactic coursework. This course involves mentoring and ongoing formal and informal evaluation to ensure that students achieve the required level of competency for clinical counseling practice.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Clinical Research

CLRES 2005 - COMPUTER METHODS FOR CLINICAL RESEARCH

Minimum Credits: 1

Maximum Credits: 1

The course provides instruction on the use of computerized methods for clinical research. Dataset manipulation, descriptive statistics, and the graphical presentation of data will be presented using a standard statistical package.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2010 - CLINICAL RESEARCH METHODS

Minimum Credits: 3

Maximum Credits: 3

Clinical research methods provides an overview of the basic research strategies, methods, and goals of clinical research. Topics include study design,

data analysis and interpretation, and determination of appropriate methodologies to answer different research questions. Bias and confounding in observational research, the clinical value of diagnostic tests, appropriate use of cross-sectional, case control and cohort study designs, and various statistical modeling used in clinical research will be presented.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2017 - CLINICAL RESEARCH INFORMATICS

Minimum Credits: 3

Maximum Credits: 3

This course is an introduction to the emerging field of clinical research informatics (CRI). It involves informatics solutions in support of scientists who conduct clinical research, as well as those who translate evidence in biological, clinical, and epidemiological studies. CRI endeavors to improve clinical research information systems, recruitment of participants to clinical trials, mining of electronic health records for comparative effectiveness research, scientific collaboration, data sharing, re-analysis of extant data, patient registries, results databases, optimization of research workflows, semantic harmonization, and more.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CLRES 2020 - BIOSTATISTICS

Minimum Credits: 4

Maximum Credits: 4

This course focuses on basic concepts and statistical methods and their application to problems in the health and biomedical sciences. Topics include data description and summarization, basic probability theory, estimation, and hypothesis testing with emphasis on one- and two-sample comparisons involving continuous and categorical data. Linear regression and analysis of variance will be introduced. Students will develop their analytic skills through the analysis and discussion of large clinical studies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: MEDEDU 2005; PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2021 - REGRESSION AND ANOVA

Minimum Credits: 1

Maximum Credits: 1

The course is designed for medical researchers who are not biostatistics majors. Topics covered include multiple linear regression, regression diagnostics, ANOVA, analysis of covariance, confounding, mediation, moderation, and model selection. At the completion of the course, trainees should be able to understand the appropriate uses of ANOVA and linear regression, to assess their appropriateness and adequacy, to analyze simple datasets taken from the fields of medicine and public health, and to summarize results from regression models via written communication.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2022 - LOGISTIC REGRESSION

Minimum Credits: 1

Maximum Credits: 1

This introductory course in logistic regression modeling is intended for physicians in fellowship training programs and other researchers with a limited background in statistics. The course focuses on regression methods for binary data and on the basics of maximum likelihood inference. At the

completion of the course, trainees should be able to understand how logistic regression can be used to address a variety of epidemiologic and clinical questions; to interpret models and assess their appropriateness and adequacy; to develop analytic skills through the analysis of datasets taken from the fields of medicine and public health; and to develop oral and written communication skills through the description of analytic strategies and the summarization and interpretation of results.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2023 - SURVIVAL ANALYSIS

Minimum Credits: 1

Maximum Credits: 1

This is an introductory course in regression modeling of time-to-event data. It is intended for physicians in fellowship training programs and other researchers with a limited background in statistics. The course focuses on descriptive methods for survival data, survival analysis, and issues pertaining to time-dependent covariates. At the completion of the course, trainees should be able to recognize when it is necessary to account for time in the analysis of yes/no outcomes and appropriately summarize time-to-event data; be able to interpret the survival analysis model and assess the appropriateness and adequacy of the model; be familiar with issues in the design, analysis, and interpretation of studies involving time-dependent covariates; be able to apply analytic skills to the analysis of datasets taken from the fields of medicine and public health; and be able to develop oral and written communication skills through the description of analytic strategies and the summarization and interpretation of results.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: (CLRES 2005 and 2020 and 2021 and 2022) or (MEDEDU 2005 and 2020 and CLRES 2021 and 2022); PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2025 - DESIGN AND ANALYSIS OF BIOMARKER STUDIES

Minimum Credits: 1

Maximum Credits: 1

The objective of this course is to identify, describe and apply the statistical and epidemiological knowledge, tools and perspectives necessary for effectively designing, analyzing and interpreting biomarker studies. Only a brief introduction is provided on clinical and laboratory aspects of biomarker development as these issues are typically very specific to the individual's field of interest; instead, the course will focus on the study design and associated analysis issues given a particular biomarker, or panel of biomarkers, and a corresponding set of clinical outcomes in a manner that is generalizable to a wide range of research studies. Although applications and perspectives will somewhat focus on cancer research, the described methods are broadly applicable to a range of clinical and epidemiological settings.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: CREQ: CLRES 2010 and 2021 and 2022; PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2026 - ANALYSIS OF CORRELATED DATA

Minimum Credits: 1

Maximum Credits: 1

CLRES 2026 will provide information on statistical methods for analyzing data arising from multilevel or longitudinal studies. The first half of the course lectures will focus on models for continuous data, including mixed effects models, fixed effects models, and generalized estimating equations. The second half of lectures will extend to analysis in the generalized linear model setting (binary outcomes, count data, etc.) We will show students how to investigate data graphically and descriptively before beginning statistical modeling and will introduce students to topics on missing data, group trajectory modeling, and sample size estimation. We will use homework assignments and articles from multilevel and longitudinal studies to facilitate learning of concepts discussed in class.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: CLRES 2020 and 2021 and 2022; PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2040 - MEASUREMENT IN CLINICAL RESEARCH

Minimum Credits: 1

Maximum Credits: 1

The course focuses on properties of good measurement that are integral to the research process. Specific objectives are to analyze methods for testing psychometric properties (reliability and validity) of psychological instruments and physiological instruments; to evaluate the adequacy of selected scaling methodologies used in research; to apply knowledge of instrumentation to the description of a psychosocial instrument and a physiological instrument for a research proposal; and to synthesize course content with statistical criteria for scale evaluation and make decisions regarding scale revision. The domain sampling model is presented as the major theory of measurement error, with the parallel test model presented as a special case of the domain sampling model. The construct, criterion, and content validity of psychosocial instruments are explored, and methods for evaluating each of these relative to specific instruments are presented. A variety of scaling methodologies, as well as the principles involved in the design and formatting of questionnaires, will be discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2045 - SURVEY DESIGN AND DATA ANALYSIS

Minimum Credits: 1

Maximum Credits: 1

Survey design and data analysis will provide information on the skills and resources needed to design and conduct survey and techniques of analyzing survey data. The skills include identifying and developing specific survey objectives, designing survey studies, sampling respondents, developing reliable and valid self-administered questionnaires, and administering surveys. The techniques of analyzing survey data include both classic methods such as factor analysis and advanced methods such as item response theory. A majority of lectures will focus on survey research, constructing surveys, response set, survey administration methods, questionnaire construction and programming surveys, sampling and power calculation, maximizing response rates, data coding and entry, reliability and validity, survey data analysis, factor analysis and item response theory. The students will be introduced to the internet based survey and the computerized adaptive testing to broaden their scope of the current survey design and collection. I will use manuscripts of survey data and protocols of completed studies to facilitate learning of concepts discussed in class.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: CLRES 2040 or MEDEDU 2040; PLAN: Medical Education (ACM or MS) or Clinical Research (ACM or MS) or Clinical and Translational Sci (PHD)

CLRES 2050 - ETHICS & RESPONSIBLE CONDUCT OF RESEARCH (ONLINE)

Minimum Credits: 1

Maximum Credits: 1

It's far too easy to relegate egregious ethical violations to the past. We reassure ourselves these could never happen now. After all, we have IRBs and rules and regulations we have to follow when conducting research on human subjects and animals. IRBs, and those rules and regulations, like the Belmont Report and the Declaration of Helsinki, are important, helpful, and a good start, but researchers need more. Many of the problems researchers will face during their careers will not be black and white, and it's really important to learn to navigate through the shades of gray. In this fully online course, we will read important foundational texts and a work of fiction, and we'll engage with case studies. You'll interact with fellow course participants on discussion boards, and submit written answers to questions taken from the readings. This course presents an in-depth examination of ethical issues in the conduct of clinical research. Topics include issues related to privacy, confidentiality, protection of human and animal subjects, informed consent and the role of the IRB in ensuring the responsible conduct of research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2071 - ADVANCED GRANT WRITING PART 1

Minimum Credits: 3

Maximum Credits: 3

The purpose of the integrated methods course is to build on the skills learned in the methodological core and provide a hands-on research experience. Trainees will learn the phases of the research process from conception to design and, ultimately, to implementation of the research. Through a combination of group sessions and independent work, trainees will use a research topic of their choice to develop their own research proposal in the form of an NIH grant application. The application will include sections on specific aims, background and significance, previous work, and methods. In addition, trainees will review and critique the work of their peers. Mentor must be identified prior to enrollment.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2072 - ADVANCED GRANT WRITING PART 2

Minimum Credits: 1

Maximum Credits: 1

The purpose of the integrated methods course is to build on the skills learned in the methodological core and provide a hands-on research experience. Trainees will learn the phases of the research process from conception to design and, ultimately, to implementation of the research. Through a combination of group sessions and independent work, trainees will use a research topic of their choice to develop their own research proposal in the form of an NIH grant application. The application will include sections on specific aims, background and significance, previous work, and methods. In addition, trainees will review and critique the work of their peers. Mentor must be identified prior to enrollment.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: (CLRES 2005 and 2010 and 2020 and 2040 and 2071) or (MEDEDU 2005 and 2010 and 2020 and CLRES 2040 and 2071); PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2075 - SEMINAR FOR UNDERSTANDING PRINCIPLES AND PRACTICES OF RESEARCH TECHNIQUES (SUPPORT)

Minimum Credits: 0.5

Maximum Credits: 0.5

The SUPPORT Seminar is a mandatory twice-monthly series for medical students in the Clinical Scientist Training Program. The purpose of SUPPORT is to provide a forum for medical students to learn about careers in clinical investigation, to present their research in oral and written form, to explore case studies in the responsible conduct of research and the ethics and regulation of human subjects research, and to consecutively peer review colleagues' research products.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2076 - INTRODUCTION TO GRANT WRITING

Minimum Credits: 1

Maximum Credits: 1

Obtaining peer-reviewed grant support is one of the most critical determinants to academic and career success, yet the process is highly challenging. Through select readings and podcasts, the writing of a draft grant application to request funds from one of the many seed programs available to Pitt students and faculty, and class discussions led by a long-time NIH-funded clinical investigator, Introduction to Grant Writing CLRES 2076 will provide CEED trainees, clinical fellows, post-doctoral students, and junior faculty without any prior grant writing experience with useful knowledge, insights, and skills in the grant writing process to improve their chances of later funding and subsequent career success. Please note that this course is NOT INTENDED for Master's Degree students.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Medical Education (ACM or MS) or Clinical Research (ACM or MS) or Clinical and Translational Sci or Graduate Career Development (GCD-ND)

CLRES 2077 - STRATEGIC LEADERSHIP IN ACADEMIC MEDICINE

Minimum Credits: 1

Maximum Credits: 1

Health care professionals regularly occupy leadership roles in research, educational, and clinical arenas, and leadership opportunities abound in academic settings. Yet clinicians have been described as "accidental administrators," lacking training in skills necessary to be an effective leader. Given the current challenges facing healthcare, increasing reliance on interdisciplinary teams to provide care, and greater emphasis on cost control and quality improvement, the need for clinicians to develop effective leadership skills is paramount. This course is designed for clinician-educators and researchers who want to understand the basics of leadership and management. Through selected readings, this course will develop participants' leadership skills across a variety of domains. Topics covered include understanding how academic medical centers function and how to set team culture, run a meeting, manage time, lead across difference, and create/maintain a five year plan. At the completion of the course, trainees will understand of the basic principles of leadership and management in the context of academic medicine. *Please note in previous terms, this course was titled "Managing Your Career in Clinical & Translational Science" and "Strategic Leadership".

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2080 - MASTERS THESIS RESEARCH

Minimum Credits: 1

Maximum Credits: 6

Trainees may register for this course with approval from the mentor and selected faculty of the Degree Granting Programs in Clinical Research Curriculum Committee. The course is designed for trainees who are prepared to undertake their thesis or substantive research project.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2085 - DIRECTED RESEARCH/INDEPENDENT STUDY IN CLINICAL RESEARCH

Minimum Credits: 1

Maximum Credits: 3

For Master of Science and Doctoral Certificate in Clinical and Translational Science students. An independent study project is designed by the student to pursue an area of study within clinical research that is not covered by the established curriculum. It cannot be used to replace required or core courses. The project is designed by the student and requires that an Institute for Clinical Research Education (ICRE) faculty member supervise the project. The student will complete the directed research independent study form, and the faculty preceptor and Director of Academic Programs must approve it. An independent study project may carry 1-3 graduate semester credits, assigned at the faculty member's discretion based on the project proposed. Doctoral CTS students may only register for a maximum of 2 credits.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2086 - CLINICAL RESEARCH TEACHING PRACTICUM

Minimum Credits: 0

Maximum Credits: 3

The objective of this teaching practicum is to provide students the opportunity to design and/or implement a curriculum. This practicum involves curriculum development and implementation (i.e instruction). Each year the course directors will assess whether substantive curriculum development/refinement is necessary prior to instruction.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2095 - PHARMACOEPIDEMIOLOGY

Minimum Credits: 2

Maximum Credits: 2

This course is an introduction to the field of pharmacoepidemiology which uses epidemiologic methods to examine the benefits or risks of medications in the population. In addition to formal lectures, students will be given the opportunity to examine and critique the literature in this area.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

CLRES 2107 - COMPARATIVE EFFECTIVENESS RESEARCH AND PCOR

Minimum Credits: 2

Maximum Credits: 2

This course will define Comparative Effectiveness Research (CER) and Patient-centered Outcomes Research (PCOR) and highlight the history and current national efforts in promoting CER/PCOR for drugs, devices and other interventions. The curriculum will include topics on the conceptualization, outcome measurements, engagement of patients and stakeholders, study designs, and analysis methods used in CER/PCOR studies. The course is project based and students learn how to define their own CER/PCOR research question and design a research project to answer the question.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2108 - PATIENT REGISTRIES & ELECTRONIC HEALTH RECORDS IN CER

Minimum Credits: 1

Maximum Credits: 1

This course explores the role of research registries that include electronic health record data in comparative effectiveness research. Students will gain an understanding of different registry models, including establishing a registry, evaluating a registry, using registry data and the strengths and weaknesses of different registry models. We will discuss the use of registries with both identifiable and de-identified data. Ethical issues surrounding the use of these data sources for research will be discussed. We will use case studies to facilitate the learning of concepts discussed in class.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2120 - COST EFFECTVNS ANAL HLTH CARE

Minimum Credits: 1

Maximum Credits: 1

CLRES 2120 provides an introduction to the methods used in the economic analysis of health care programs. The course will discuss economic principles that serve as the foundation of cost-effectiveness analysis, will describe the various ratios and methodologies used in cost-effectiveness studies, will highlight the current controversies in cost-benefit analysis, and will explore issues regarding the appropriate use of cost-effectiveness in making medical decisions concerning patients and populations. Additional topics include concepts of perspective, utility analysis, discounting, and

the definition of various costs and benefits.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2121 - CLINICAL DECISION ANALYSIS

Minimum Credits: 1

Maximum Credits: 1

This course presents an overview of the theory of medical decision making. Topics include the incorporation of uncertainty and risk into medical decision making; the use of decision-making techniques in both population and individual patient settings; the design, structure, and evaluation of decision trees generated by software packages; sensitivity analysis and the stability of model outputs; and controversies concerning the perspective of the analysis and the discounting of costs and benefits. The course will help trainees become skilled in structuring and analyzing decision-making problems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2122 - COMPUTER METHODS IN DECISION AND COST-EFFECTIVENESS ANALYSIS

Minimum Credits: 1

Maximum Credits: 1

This course expands upon topics introduced in CLRES 2120 (cost effectiveness analysis) and CLRES 2121 (clinical decision analysis) and provides additional guidelines for using decision sciences in larger, more complex applications. Topics include modeling clinical processes and systems; discrete event simulation; advanced sensitivity analysis and confidence limits; controversies surrounding the use of cost-effectiveness analyses; and multi-attribute utility theory.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2124 - DIRECTED STUDY IN DECISION ANALYSIS AND COST EFFECTIVENESS ANALYSIS

Minimum Credits: 1

Maximum Credits: 3

There are no formal class meetings. Each student will meet independently with their chosen faculty members; develop a timeline and schedule of meetings and milestones for various components of the particular project, or topic review. It is expected that the trainee and faculty member will meet every one-two weeks during the duration of the course.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: CLRES 2122; PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2140 - BEST PRACTICE OF CLINICAL RESEARCH

Minimum Credits: 1

Maximum Credits: 1

CLRES 2140 covers the basic operations of conducting a health services research project, from developing realistic timelines and schedules to building tracking databases, training interviewers and data collectors, monitoring data collection and budgets, reporting, and closing out a study.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2141 - MEDICAL WRITING AND PRESENTATION SKILLS (ONLINE)

Minimum Credits: 1

Maximum Credits: 1

Medical educators and researchers must be able to present their work clearly and effectively. However, important educational material and research data are sometimes obscured by poorly delivered presentations or poorly written manuscripts. The main objective of this course is to help students develop excellent medical writing and presentation skills. This objective will be achieved through a combination of videos, readings, individual assignments, and team projects in which students will practice specific skills. Students will craft an abstract, write a discussion section of a manuscript, practice methods of disseminating their science to the lay public, create a poster, construct a table or figure, and develop a PowerPoint presentation and record themselves delivering a 10-minute talk.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2155 - MEDICAL PRODUCT IDEATION

Minimum Credits: 3

Maximum Credits: 3

A didactic class that explores the principles and use of "ethnography" as a tool to observe and document clinical activity in order to draft a clear statement of a clinical problem in need of solution and methods for concept generation to identify potential solutions. Students will be able to describe and use ethnographical techniques in identifying workplace problems and be able to describe and use concept generation methods to develop potential solutions. Topics covered: ethnography in the workplace; group brainstorming; brain-writing; affinitization; morphological analysis; basic human factors design.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

CLRES 2156 - MEDICAL PRODUCT DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

A didactic course that uses principles of system engineering, the stage-gate process for medical product development and engineering and business analysis principles to evaluate the commercial potential proposed medical devices to further develop feasible solutions to a clinical problem identified in BIOENG 2150. Students will demonstrate use of systems engineering techniques to prioritize a set of feasible device and/or system solutions and ability to use intellectual property (IP) tools to determine suitability for further development. Students will demonstrate use of course principles in development of a commercialization plan for a proposed medical product. Design controls required by FDA and international bodies; systems engineering methodologies; intellectual property (IP) and IP search tools; brief market analysis; size by region, growth, competition, barriers to entry, sustainable advantage; reimbursement issues for proposed medical device/system; basic financial analysis ' students will construct spreadsheets typically presented to senior business management. This will include estimates of costs, margins, break-even analysis, NPV, hurdle rates, ROI, IRR; codes, standards, and regulatory processes (FDA, IEC & ISO, UL, ministry of health (Japan), NRC, BRH, notified bodies, obtaining broad indications for use); safety, reliability, product liability considerations, manufacturability considerations (DFM ' design for manufacture, workflows)

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

CLRES 2160 - BIG DATA & HEALTHCARE ANALYTICS: A PATH TO PERSONALIZED MEDICINE

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CLRES 2170 - MAKING THE MOST OF MENTORING

Minimum Credits: 1
Maximum Credits: 1

We strongly believe that effective mentoring is the cornerstone of a successful academic career, whether it be in education, research, or clinical work. Good mentors are able to guide mentees as they attempt to navigate through the course of their careers. This course is designed to provide a basis for understanding the mentor-mentee relationship and to provide strategies for making the most out of the experience. Topics will include communication and negotiation, the use of mentoring contracts, providing and accepting feedback, evaluating the mentoring relationship, and solving problems and meeting challenges. Fellows, postdocs, other Institute for Clinical Research Education (ICRE) trainees, and junior faculty will discover useful ways to enhance the mentoring relationship and make it a rewarding experience both for the mentees and the mentors.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2200 - INTRODUCTION TO RESEARCH DISPARITIES ON HEALTH CARE

Minimum Credits: 2
Maximum Credits: 2

This course will provide knowledge and skills to understand and apply the basic principles of healthcare disparities research. Students will be introduced to a variety of healthcare disparities that have been identified in the literature. They will learn about a 3-phase conceptual framework for advancing disparities research that involves detecting (phase 1), understanding (phase 2), and reducing/eliminating (phase 3) disparities. They will become familiar with methodological and conceptual issues that pertain to research designed to detect healthcare disparities, understand multi-level factors that contribute to disparities, and reduce or eliminate healthcare disparities. Students will use their knowledge and skills from the course to develop and present a research proposal focused on a healthcare disparities topic of their choice. The course will consist of didactic lectures, interactive discussions, and homework assignments to establish basic knowledge of research on disparities in health care. It will also include guest presentations by faculty with experience conducting research focused on disparities in health care.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's, MS, Not Candidate for Degree), Clinical Research (CERT-Master's, MS, Not Candidate for Degree), Clinical and Translational Sci (PHD)

CLRES 2300 - INTRODUCTION TO SYSTEMIC REVIEWS AND META ANALYSIS

Minimum Credits: 1
Maximum Credits: 1

The course is an overview of the concepts necessary for performing systematic reviews and meta-analyses, covered in sufficient detail to enable students to conduct their own reviews and analyses after completion of the course. Students will learn about the individual steps involved in conducting systematic reviews and meta-analyses, including developing a focused research question, assembling a team to perform the study, designing a study protocol, defining inclusion and exclusion criteria, identifying relevant literature databases (including Cochrane databases and Medline), developing literature search strategies, performing the literature search, creating a data abstraction form, handling data abstraction and management, and using statistical methods for meta-analysis. We will discuss important topics such as criteria for meta-analysis, exploration of heterogeneity, choice of a meta-analytic method, study quality assessment, sensitivity and subgroup analysis, evaluation of potential sources of bias, presentation of results, and application of review results. Each class will have both a didactic component and a hands-on component that allows students to immediately apply the concepts introduced during the session. Students will use concepts learned in this course to evaluate and update a published systematic review and meta-analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: (CLRES 2005 or MEDEDU 2005) and (CLRES 2020 or MEDEDU 2020); PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2320 - CLINICAL TRIALS PRACTICUM

Minimum Credits: 2

Maximum Credits: 3

The purpose of the clinical trials practicum is for trainees (fellows and junior faculty) who are (or want to be) involved with a clinical trial to obtain course credit for their research experience. Each trainee is required to work with an experienced clinical researcher (investigator) who formally agrees to provide the trainee mentorship. The investigator must be planning a clinical trial, conducting a clinical trial, or have conducted a clinical trial. Trainees are expected to become part of the research team and learn how studies or trials are actually designed, implemented, managed, and analyzed. Trainees are expected to provide an outline of readings relevant for the practicum objectives and at the end of the practicum provide summaries of their experiences and reading materials. They may also receive credit by taking a specific question and analyzing a dataset from the trial. They can write up their findings for possible publication under the supervision of the investigators and are expected to provide a written summary of their involvement that is validated by their mentors at the end of the experience. Please see the link below for the NIH's definition of clinical trials: http://grants.nih.gov/grants/peer/tree_glossary.pdf. (Prerequisites: CLRES 2800, CLRES 2810, and CLRES 2820 or instructor permission)

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: CLRES 2800 and 2810 and 2820; PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2400 - QUALITATIVE RESEARCH METHODS

Minimum Credits: 1

Maximum Credits: 1

The course will introduce participants to the characteristics and various approaches to designing and conducting qualitative research projects in health and health services research. Each student will gain hands-on experience in various qualitative methods and analysis techniques while carrying out a research project related to his or her area of interest. Topics covered will include study design; data collection, with an emphasis on focus group and in-depth interviewing methods; qualitative data analysis theory, techniques, and tools; and the presentation and dissemination of qualitative research results. Course assignments will include designing an interview or focus group question protocol relevant to the student's own research interests, conducting an in-depth interview, and performing preliminary data analysis on the interview text. The final project will be tailored to meet the current research development needs of each individual student and may involve writing a focused literature review, drafting a qualitative research proposal, or writing up the results of a qualitative research project for publication.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2430 - INTRODUCTION TO COMMUNITY BASED PARTICIPATORY RESEARCH

Minimum Credits: 1

Maximum Credits: 1

This course is organized around themes central to the conceptualization and implementation of community-based participatory research and practice (CBPRP). The goal of this course is to familiarize students with community-based participatory research and practice. Students will become conversant in seminal community-based participatory research and practice literature. Discussion, interactive learning exercises, and examples of current research will be used to provide an understanding of cbpr and the associated strengths and limitations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education(ACM) or Medical Education(MS) or Clinical Research(ACM) or Clinical Research(MS) or Clinical and Translational Sci(PHD)

CLRES 2431 - TRANSLATING RESEARCH FOR POLICY AND PRACTICE

Minimum Credits: 1

Maximum Credits: 1

This course provides an introduction to concepts and skills in knowledge translation (a coordinated, collaborative approach to ensure that research findings are utilized by key stakeholders) and to the role of research in changing policy and practice at local, regional, and national levels. This module will build on concepts in community-partnered research introduced in module a of this three-part sequence in community based participatory research. This skills-based module will introduce learners to theoretical concepts in knowledge translation (KT), dissemination and implementation science, and apply these concepts to practical exercises to translate research findings for relevance to other key stakeholders, including community partners, program developers, and policy makers. One session will be devoted specifically to skills building in legislative and media advocacy. The goal of this course is to familiarize learners with the critically important steps involved in translating research findings for relevance to stakeholders beyond academia. Discussion, interactive learning exercises, and examples of research dissemination and implementation science will be used to provide a foundation in KT as an aspect of community-partnered research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education(ACM) or Medical Education(MS) or Clinical Research(ACM) or Clinical Research(MS) or Clinical and Translational Sci(PHD)

CLRES 2432 - CONCEPT MAPPING: A PARTICIPATORY RESEARCH METHOD

Minimum Credits: 1

Maximum Credits: 1

This course provides hand-on training in the participatory research method known as concept mapping (CM). CM gives community members and other stakeholders a unique chance to have their own words communicate ideas and concepts. Research participants contribute directly in the processing of this information as it directly relates to their community and intervention needs. The goal of the course is to familiarize students with example applications of the research method and to provide training related to concept mapping data collection and analysis. Discussion, interactive learning exercises, and examples of current research will be used to provide an understanding of CBPR and the associated strengths and limitations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education(ACM) or Medical Education(MS) or Clinical Research(ACM) or Clinical Research(MS) or Clinical and Translational Sci(PHD)

CLRES 2600 - SOCIAL NETWORKS & HEALTH

Minimum Credits: 1

Maximum Credits: 1

This course is an introduction to the theory, methods, and procedures of network analysis with emphasis on applications to health and social behavior. The goal of the course is to provide a working knowledge of concepts and methods used to describe and analyze social networks so that professionals and researchers can understand the results and implications of this body of research. The course also provides the training necessary for scholars to conduct network analysis in their own research and practice careers.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

CLRES 2601 - PRINCIPLES AND PRACTICES OF PALLIATIVE CARE PART 1

Minimum Credits: 1

Maximum Credits: 1

The broad objectives of this course are to provide trainees with an overview of the basic and clinical sciences underlying the professional care of dying patients, and to introduce them to the primary reference sources in the field of palliative medicine. The course will be taught in a small-group, discussion format, with faculty drawn from content-experts throughout the medical center. Discussions will combine analysis of the evidence base for a wide range of palliative care interventions with clinical case discussions. Cases will be drawn from the literature, faculty experience, and current clinical activities of the trainees themselves.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2602 - PRINCIPLES AND PRACTICES OF PALLIATIVE CARE PART 2

Minimum Credits: 1

Maximum Credits: 1

The broad objectives of this course are to provide trainees with an overview of the basic and clinical sciences underlying the professional care of dying patients, and to introduce them to the primary reference sources in the field of palliative medicine. The course will be taught in a small-group, discussion format, with faculty drawn from content-experts throughout the medical center. Discussions will combine analysis of the evidence base for a wide range of palliative care interventions with clinical case discussions. Cases will be drawn from the literature, faculty experience, and current clinical activities of the trainees themselves.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2610 - RESEARCH METHODS IN PALLIATIVE CARE

Minimum Credits: 1

Maximum Credits: 1

This special methods course will provide the critical bridge between the more general research skills and the particular challenges of doing patient-oriented research in palliative care. It consists of the following components: discussion of the use of specific research methods and their strengths and limitations in palliative care and review OIF landmark research articles in palliative care and a critical appraisal of the methodologies. The course is taught in a graduate seminar fashion with an emphasis on discussion and critical analysis. Sessions are often co-moderated by a palliative care physician and a researcher with the particular methodological expertise under discussion.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2700 - FUNDAMENTALS OF BENCH RESEARCH

Minimum Credits: 2

Maximum Credits: 2

The course is designed to teach fellows in training and future clinician scientists the core principles of scientific investigation. The course is organized such that fellows can learn the theory behind most of the common research approaches as well as new and innovative approaches of current scientific endeavors. In addition, participants acquire laboratory technical skills via a "learning by doing" approach in a two-week period.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2715 - UNDERSTANDING AND APPLYING OMICS

Minimum Credits: 1

Maximum Credits: 1

This required course for the translational research track will provide information on resources available at university of Pittsburgh to facilitate high throughput research techniques and will involve in-depth discussions of definitions and applications of genomics, proteomics and glycomics. Issues important to tissue processing, sample collection, limitations of techniques and special ethical issues related to storage of samples will be covered. Translational researchers will present 'real-life' examples of application of these technologies and students will be required to develop an 'omics' approach to a relevant translational research question pertinent to their own field of study.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2725 - TRANSLATIONAL RESEARCH PRACTICUM

Minimum Credits: 1

Maximum Credits: 3

The major objective of the Translational Research Practicum is to obtain individualized laboratory-based training and acquire proficiency in scientific methodology, experimental design, data presentation, and analysis tailored to achieve pre-defined goals within the scope of the student's thesis work. The Translational Research Practicum must define a translatable component originating from the laboratory training (i.e., application of laboratory-based methodologies/techniques, gain proficiency with pre-clinical studies) with the ultimate goal of addressing questions pertaining to human studies. This work is usually conducted within the research mentor's laboratory.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2729 - IDEA 2 IMPACT

Minimum Credits: 1

Maximum Credits: 1

This practical course guides academic researchers step by step through the experience of developing an entrepreneurial idea. It is designed for early-career scientists (e.g., MDs, PhDs, fellows, medical students, faculty, post docs) who are new to entrepreneurship and commercialization, but interested in translating research into practical applications. Each week, participants will focus on one discrete stage of the translational process as they identify a problem, analyze stakeholders, define a solution, describe its benefits, research the competition, articulate differentiators, and create an action plan. The course will be taught in a hybrid format, with self-paced, online modules to provide participants with key concepts and information, and class meetings where they present specific deliverables, receive feedback from colleagues, and engage in focused discussion. On the last day of class, participants will present their fully formed idea to an invited audience.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

CLRES 2730 - FROM BENCHTOP TO BEDSIDE

Minimum Credits: 3

Maximum Credits: 3

This 12-week course, commonly known as B2B, is offered by the Innovation Institute, which encourages and supports innovation and entrepreneurship across campus to all faculty, staff and students. More information on B2B can be found on the Innovation Institute website. B2B is designed to give research scientists, clinicians, graduate students, and other interested parties the basic information necessary to assess the business potential of basic science research discoveries. The B2B course will help scientists develop additional focused information, including proof of concept and validation experiments, that increase the value of the technology and reduce the investment risk. B2B will also provide insight into how intellectual property and other differentiators can create a barrier to entry for the competition. The course will cover the fundamentals of investment from the private sector to help finance the climb over regulatory hurdles and meet critical developmental milestones. The course is designed to give graduate students, research scientists, faculty and clinicians the basic information necessary to assess the commercial potential of basic science discoveries.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2750 - SEMINAR IN HEALTH SYSTEMS LEADERSHIP

Minimum Credits: 1.5

Maximum Credits: 1.5

This course will consist of a series of case-based examinations of specific managerial and leadership problems and decisions that have faced local health systems leaders in Western Pennsylvania. Health care reimbursement, licensing and accreditation, and measuring health care quality has become both more complicated and more important as pressures to reduce expenses and improve quality increase. Simultaneously, there has been a steady increase in the number of clinicians who have assumed managerial positions, such as medical directors of clinical units, directors of quality measurement and improvement programs, utilization review and many others, as well as the appearance of clinicians in the "C-suite" of many hospitals and health care organizations. Utilizing adjunct faculty who are currently (or very recently have been) executive leaders in health systems, this course will examine a series of collaborations, problems, conflicts and solutions that developed between health system administrators and clinical leadership in health care organizations in the Western PA area. The mechanics of the course will be a series of cases, based on an actual recent issue in health care management in which the senior adjunct faculty member was involved. Students (individually or in groups) will evaluate the case, prepare a response, and make a short presentation of their "solution" to the problem to the health system executive and clinical leader involved in that case. An interactive discussion will follow.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 2800 - FUNDAMENTALS IN CLINICAL TRIALS

Minimum Credits: 1

Maximum Credits: 1

Fundamentals in clinical trials course will provide information on the first three phases (phases i-iii) of drug development and fundamental components of randomized clinical trials. A majority of lectures will focus on aspects of phase iii parallel group designs with discussions on topics including developing research questions and defining endpoints, recruitment, randomization, blinding, data management and quality, monitoring, study closeout, and presentation/interpretation of results. The student will be introduced to the good clinical practice guidelines and the principles of planning and implementing clinical research protocols including: ethical issues and regulatory imperatives designed to protect human subjects in clinical research, adverse event reporting, protocol/proposal development, and publications. We will use manuscripts on clinical trials and protocols of completed studies to facilitate learning of concepts discussed in class. It is highly recommended that you have taken ANOVA and logistic regression courses before taking this course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: [CLRES 2005 and (CLRES 2020 or BIOST 2041)] or [MEDEDU 2005 and (MEDEDU 2020 or BIOST 2041)]; PLAN: Medical Education (ACM, MS), Clinical Research (ACM, MS), or Clinical Translational Science (PHD)

CLRES 2810 - STATISTICAL METHODS AND ISSUES IN CLINICAL TRIALS

Minimum Credits: 1

Maximum Credits: 1

The course will provide in-depth information about conducting randomization, planning sample size, analyzing clinical trials (including phase I, II, and III designs), and reporting and interpreting results of studies. We will use manuscripts on clinical trials and protocols of completed studies to facilitate learning of concepts discussed in class. We highly recommend that students take analysis of variance (ANOVA) and logistic regression courses before taking this course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: [CLRES 2005 and (CLRES 2020 or BIOST 2041) and CLRES 2800] or [MEDEDU 2005 and (MEDEDU 2020 or BIOST 2041) and CLRES 2800]; PLAN: Medical Education (ACM, MS), Clinical Research (ACM, MS), or Clinical Translational Science (PHD)

CLRES 2820 - SPECIAL TOPICS IN CLINICAL TRIALS

Minimum Credits: 1

Maximum Credits: 1

The special topics course will provide information on the different types of clinical trials beyond the phase III superiority parallel group design. We will use manuscripts on special types of clinical trials to facilitate learning of concepts discussed in class. We highly recommend that students take

analysis of variance (ANOVA) and logistic regression courses before taking this course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: [CLRES 2005 and (CLRES 2020 or BIOST 2041) and CLRES 2800 and CLRES 2810] or [MEDEDU 2005 and (MEDEDU 2020 or BIOST 2041) and CLRES 2800 and CLRES 2810]; PLAN: Med Education (ACM, MS), Clinical Research (ACM, MS), or Clin Translational Sci (PHD)

CLRES 2981 - EPIDEMIOLOGY OF AGING-METHODS

Minimum Credits: 2

Maximum Credits: 2

This course will introduce the methodological aspects of epidemiologic research in the field of aging and to critically evaluate research in older adults. The course will focus on: demography, study design, sampling, recruitment, retention, measurement of key variables and special populations. Students will write a critical review of a published article and comment on proposed future directions for epidemiologic studies addressing these questions in older populations. Throughout the course, a Problem Solving Learning Method will be applied by prompting the students to solve pragmatic issues. Examples include: How to measure a specific outcome? What type of chronic health conditions may be related to the research question? How to operationalize specific measures of interest (e.g.: how to create a composite score for co-morbidity assessment?). The course has been formulated to provide the students with the building blocks of the epidemiological study of aging. By the end of the course, the students will be able to critically evaluate various components of a study to further address the research questions in aging populations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

CLRES 3010 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 3

Independent or directed research course for the Ph.D. in clinical and translational science.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

CLRES 3020 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

This course provides the student an opportunity to carry out a specific project in any area of interest in clinical and translational science.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Clinical and Translational Sci

CLRES 3040 - PHD DISSERTATION RESEARCH

Minimum Credits: 1

Maximum Credits: 14

Dissertation research credits towards Ph.D. in clinical and translational science.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: Clinical and Translational Sci

CLRES 3140 - INTRODUCTION TO TRANSLATIONAL RESEARCH IN HEALTH SCIENCES

Minimum Credits: 2

Maximum Credits: 2

Course will provide students with a comprehensive survey of the processes involved in translating research discoveries into practices that promote health and prevent disease. The specific topics to be covered include five goals: 1) Introduce students to the NIH roadmap and to discuss the conceptual framework for multidisciplinary and interdisciplinary research. 2) Provide perspectives on objectives outlined at the national level in healthy people 2010/2020 and at the global level by organizations such as the world health organization. 3) Provide an understanding of the models of translational research. 4) Introduce students to the methods of clinical and translational research. 5) Interpret and explain the drug and therapeutic development process. Also, topics include the implementation of new therapies as standards of care and the application of innovative preventive services. Various research methodologies, including those encompassed in the drug development process will be discussed. Course will offer lectures via electronic media and will use a collaborative learning approach to classroom activities.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

Comm Science and Disorders

CSD 2000 - RESEARCH & THESIS MASTER'S DEGR

Minimum Credits: 1

Maximum Credits: 6

After successful completion of the master's level comprehensive examination, students may elect to become master of science candidates. A thesis is required for the MS. Degree. During the planning, execution, writing, and defense of the thesis, the student may register for thesis credits under the supervision of thesis committee chair person.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

CSD 2020 - AUDIOLOGICAL ASSMNT SLP STUDENTS

Minimum Credits: 1

Maximum Credits: 1

Students will learn basic audiologic assessment techniques, interpretation of test findings and investigate the impact of hearing loss on communication.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2021 - CLINICAL PROCEDURES LAB 1-1

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

CSD 2022 - CLINICAL PROCEDURES LAB 2-2

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

CSD 2038 - PHYSIOLOGICAL AND PSYCHOLOGICAL ACOUSTICS

Minimum Credits: 3

Maximum Credits: 3

Clinical diagnostic tests and our general understanding of how the auditory system works find their bases in physiological and psychological acoustics. The former includes the functional anatomical, neurophysiological, and electrophysiological parameters/measures of auditory function, and the latter embraces the sensory psychology and psychophysics of audition and auditory capabilities. While touched upon briefly in other courses, this course provides concentrated treatments of these areas with the goal of helping the student to better understand test methods.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2039 - MOTOR SPEECH DISORDERS

Minimum Credits: 3

Maximum Credits: 3

This course will provide the student with an understanding of the nature of dysarthria and apraxia of speech. Material will include anatomy and pathophysiology, common neurologic diseases, structure and function of the speech production mechanism, instrumental assessment, diagnosis and prognosis, and development of treatment goals.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2040 - AUDIOLOGICAL ASSESSMENT

Minimum Credits: 3

Maximum Credits: 3

Basic orientation to audiology for speech pathology majors. Introduction to audiological concepts and audiometry including pure-tone audiometry, speech audiometry, impedance and hearing screening.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2041 - MANAGEMENT OF HEARING LOSS

Minimum Credits: 3

Maximum Credits: 3

Audiologists and Speech-Language Pathologists provide therapeutic, consultative, and referral services for adults with hearing loss. This course provides students with the foundation and technical skills to offer these services. Specifically, the areas of hearing assistance technology, evidence based auditory rehabilitation and related legislation will be covered, in the context of patient and family centered care.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2042 - AUDIOLOGICAL ASSESSMENT LAB

Minimum Credits: 1

Maximum Credits: 1

Lab for Audiological Assessment.

Academic Career: Graduate

Course Component: Credit Laboratory

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2043 - FUNDAMENTALS OF SPEECH-LANGUAGE PATHOLOGY FOR AUDIOLOGISTS

Minimum Credits: 1

Maximum Credits: 1

The purpose of this course is to provide audiology students with an understanding of the nature of speech, language, cognition and swallowing disorders across the lifespan. Students will acquire a basic understanding of the diagnosis and treatment of these disorders by speech-language pathologists, and the role of audiologists in early identification and referral. Students also will develop the resources and skills necessary to more effectively evaluate and adapt their communication strategies during audiological assessment, treatment and counseling, in order to ensure the highest quality of service delivery for patients and their families.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

CSD 2044 - DIFFERENTIAL DIAGNOSIS

Minimum Credits: 4

Maximum Credits: 4

Introduction to immittance audiometry, traditional special tests for diagnosing cochlear and retrocochlear site of lesion, non-organic hearing loss, and evaluation of central auditory disorders.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2045 - PHYSIOLOGICAL ASSESSMENT

Minimum Credits: 3

Maximum Credits: 3

Study of auditory evoked potentials with emphasis on the auditory brainstem responses (ABR). Use of ABR in audio logic and neurologic diagnosis.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2046 - PEDIATRIC EVALUATION

Minimum Credits: 3

Maximum Credits: 3

The mission of this course is to familiarize students with factors associated with heavy loss in infants and children as well as the application of audiology diagnostic procedures with this population.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2047 - AMPLIFICATION 1

Minimum Credits: 3

Maximum Credits: 3

This course provides an initial look at hearing aid evaluation, selection, validation, and orientation. Students will discuss historic as well as current topics in hearing aid selection and validation techniques.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2048 - SOUND AND VIBRATION: MEASUREMENT AND MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

This course presents basic principles in the operation and configuration of instrumentation and related concepts of signal production and analysis. For sound and vibration measurements, a special focus of interest will be the measurement and management of noise and its adverse auditory and nonauditory effects.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2049 - AGING AUDITORY SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

The development of the auditory system across the lifespan will be investigated. Changes due to aging will be discussed in terms of their impact on diagnostic and rehabilitative audiology. This course takes a seminar format.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2051 - CLINICAL PROCEDURES LAB 1-2

Minimum Credits: 1

Maximum Credits: 1

Laboratory experience covering clinical procedures addressed in concurrent academic classes. Students will be given the opportunity for hands-on practice across the breadth of clinical audiology procedures.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

CSD 2052 - CLINICAL PROCEDURES LAB 2-3

Minimum Credits: 1

Maximum Credits: 1

Laboratory experience covering clinical procedures addresses in concurrent academic classes. Students will be given the opportunity for hands-on practice across the breadth of clinical audiology procedures.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

CSD 2053 - CLINICAL PROCEDURES LAB 2-1

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

CSD 2054 - IMPLANTABLE HEARING DEVICES

Minimum Credits: 3

Maximum Credits: 3

This course will explore non-traditional amplification solutions that are emerging or established technologies for implantable hearing devices. Topics will include such devices as cochlear implants to newer implantable bone conduction devices. Theoretical and practical considerations of these communication solutions will be discussed. Students will leave the course with a working knowledge of the development and current status of these devices, patient candidacy, and clinical considerations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

CSD 2055 - PEDIATRIC AUDIOLOGIC REHABILITATION

Minimum Credits: 3

Maximum Credits: 3

This course is for students interested in the treatment of infants and children with hearing loss. The course focuses on the speech, language, and auditory characteristics of infants and children with hearing loss, their rehabilitative needs, and the effectiveness of various types of treatment approaches.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2056 - AUDIOLOGY PRACTICUM NETWORK - AUD

Minimum Credits: 1

Maximum Credits: 6

University supervised observational and clinical practicum experience in diagnostic and rehabilitative aspects of audiology. Experience will be obtained within the speech and hearing clinic network of the department of communication disorders.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Comm Science and Disorders(MA, MS) or Speech-Language Pathology (CSD)

CSD 2057 - AUDIOLOGY PRACTICUM OUTPLACEMENT

Minimum Credits: 1

Maximum Credits: 6

Supervised observational and clinical practicum experience in diagnostic and rehabilitative aspects of audiology. Experience may be obtained within the university speech and hearing clinic network or in community clinic facilities associated with the department.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Communication Science and Disorders MA, Communication Science and Disorders MS, Audiology

CSD 2059 - AUDIOLOGY PRACTICUM NETWORK - SLP

Minimum Credits: 1

Maximum Credits: 6

University supervised observational and clinical practicum experience in diagnostic and rehabilitative aspects of audiology. Experience will be obtained within the speech and hearing clinic network of the department of communication disorders.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

CSD 2060 - PROSEMINAR - MA

Minimum Credits: 0

Maximum Credits: 0

Variable content. Speakers from the communication department, other areas of the university and the general professional community present issues of concern to speech pathologists and audiologists.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2062 - INTRODUCTION TO CLINICIAN-CLIENT COMMUNICATIONS

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Audiology (AUD) or Speech-Language Pathology (CSD) or SBPLAN: Audiology (Comm Science and Disorders-MA, or MS) or Speech-Language Pathology (Comm Science and Disorders-MA or MS)

CSD 2063 - DEVELOPING CLINICIAN-CLIENT COMMUNICATIONS

Minimum Credits: 1

Maximum Credits: 1

This course builds upon CSD 2062 and is designed to develop the graduate student's knowledge and skills in clinician-client communications.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

CSD 2064 - INTRO CLINICAL DECISION-MAKING

Minimum Credits: 3

Maximum Credits: 3

This course prepares students for their first clinical practicum, by orienting them to the principles and procedures underlying assessment, remediation and documentation activities.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2065 - SPEECH PRACTICUM NETWORK

Minimum Credits: 1

Maximum Credits: 3

Student clinicians assess clients presented with various communication disorders, under supervision of certified speech-language pathologists in the university speech and hearing clinic.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Comm Science and Disorders(MA, MS) or Speech-Language Pathology (CSD)

CSD 2066 - SPEECH PRACTICUM OUTPLACEMENT

Minimum Credits: 1

Maximum Credits: 9

Student clinicians provide intervention to communicatively impaired clients, under supervision of certified speech language pathologists, in the university speech and hearing clinic.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Comm Science and Disorders(MA, MS) or Speech-Language Pathology (CSD)

CSD 2067 - CLINIC PRACTICE IN SCHOOLS

Minimum Credits: 1

Maximum Credits: 6

Student clinicians provide clinical services to communicatively impaired children in school settings, under supervision of certified speech-language pathologists.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Comm Science and Disorders(MA, MS) or Speech-Language Pathology (CSD)

CSD 2068 - SPEECH PRACTICUM NETWORK - AUD

Minimum Credits: 1

Maximum Credits: 3

Student clinicians assess clients presented with various communication disorders, under supervision of certified speech-language pathologists in the University speech and hearing clinic.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

CSD 2069 - SLP MASTERS COMPREHENSIVE

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Comm Science and Disorders(MA, MS) or Speech-Language Pathology (CSD)

CSD 2070 - ARTICULATION AND PHONOLOGICAL DISORDERS

Minimum Credits: 3

Maximum Credits: 3

Students learn the principles and procedures needed to identify, evaluate and remediate articulation and phonological disorders.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2071 - CHILD LANGUAGE DISORDERS 1

Minimum Credits: 3

Maximum Credits: 3

This course will advance students' knowledge of models of normal and impaired language development. Students will learn to evaluate the underlying bases, the merits, the limitations of, and the empirical support for various approaches to the evaluation and management of childhood language disorders.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2072 - FLUENCY DISORDERS

Minimum Credits: 3

Maximum Credits: 3

An introduction survey of basic information about stuttering. It includes theories of causation, diagnostic procedures, measurement procedures, dynamics and correlates to stuttering as clinical management procedures.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2073 - VOICE DISORDERS

Minimum Credits: 3

Maximum Credits: 3

This course covers information regarding the nature and causes of common pathologies affecting voice, voice measurement, and treatment approaches for voice disorders. Traditional as well as non-traditional approaches are emphasized. The course uses a problem-based learning methodology, in which students are required to adopt critical thinking in solving clinical problems based on material covered in the course.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2074 - CLEFT PALATE

Minimum Credits: 3

Maximum Credits: 3

An overview of communication problems associated with palatal clefting and interdisciplinary treatment including embryology, anatomy, classification, neonatal problems, hearing, surgery, speech, and social, mental, and emotional development.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2075 - APHASIA

Minimum Credits: 3

Maximum Credits: 3

This course provides an introduction to the nature, appraisal, differential diagnosis, and management of aphasia, a neurologically-based communication disorder.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2076 - DYSPHAGIA

Minimum Credits: 3

Maximum Credits: 3

Principles and practices necessary to provide counseling, evaluation and treatment to clients with alaryngeal speech and/or swallowing disorders.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2077 - AUGMENTATIVE COMMUNICATION

Minimum Credits: 3

Maximum Credits: 3

Serving the needs of nonspeaking individuals by augmenting their residual communication skills or by providing alternate systems of communication is the focus of this course. Considered in the course are the history of augmentative communication, the evaluation and assessment of nonspeakers, the fitting of nonspeakers with augmentative communication devices, the training of nonspeakers who have been fitted with devices, and the team approach to meeting the needs of nonspeakers. Implementation is by lecture, discussion, and demonstration.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2078 - PHYSICS, PHYSIOLOGY AND PSYCHOLOGY OF SOUND

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

CSD 2081 - RESEARCH STRATEGIES AND TACTICS

Minimum Credits: 3

Maximum Credits: 3

This course will advance students' knowledge of scientific approaches to the study of communicative processes and disorders. Students will learn a variety of strategies that guide scientific inquiry, and will examine tactics for implementing those strategies. This course will teach students skills needed to be wise consumers and potential producers of research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2082 - PROFESSIONAL ISSUES 1

Minimum Credits: 1

Maximum Credits: 1

Students address practical and current issues necessary for ethical and informed professional services in the field of speech-language pathology and audiology.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2083 - PROFESSIONAL ISSUES 2

Minimum Credits: 1

Maximum Credits: 1

Students address practical and current professional issues, including interprofessional practice and intercultural competence, in preparation for employment and professional practice in the field of speech-language pathology.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

CSD 2101 - STATISTICAL METHODS IN CLINICAL RESEARCH 1

Minimum Credits: 3

Maximum Credits: 3

This is the first of a two-course series for health career professionals who will make use of statistical methods in research projects or in interpreting literature. The first course will provide an introduction to descriptive and inferential statistics. Topics covered include measurement, frequency distributions, histograms, bar graphs, stem-and-leaf displays, boxplots, scatterplots, measures of central tendency, measures of variability, point estimation, interval estimation, sampling distributions, one and two sample t-tests of hypotheses for means as well as an introduction to non-parametric tests.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

CSD 2102 - STATISTICAL METHODS CLINICAL RESEARCH 2

Minimum Credits: 3

Maximum Credits: 3

This is the second of a two-course series for students in the health professions who will make use of statistical methods in research projects or when interpreting literature. Topics covered include one and two-way analysis of variance, analysis of covariance, correlation, simple linear regression, multiple regression, and logistical regression, regression diagnostics, confounding and effect modification and model selection. Students will develop analytic skills through the use of clinical datasets where they will learn to analyze data and explain their findings.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: CSD 2101; PROG: SHRS

CSD 2110 - NEUROSCIENCE OF COMMUNICATION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2120 - PRINCIPLES OF AUDIOLOGY FOR SPEECH-LANGUAGE PATHOLOGISTS

Minimum Credits: 1

Maximum Credits: 1

The purpose of this course is to provide Speech-Language Pathology students with a foundation for understanding the impact of hearing loss on speech, language, cognition and swallowing. Students will develop the knowledge and skills necessary for preventing hearing loss, screening and appropriately referring for hearing loss, interpreting and providing counseling of audiologic reports, conducting listening checks and trouble-shooting hearing technology, and appropriately adapting clinical procedures and home environments for patients with hearing loss, as defined within the Scope of Practice for SLPs.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

CSD 2130 - NEUROGENIC LANGUAGE AND COGNITIVE COMMUNICATION DISORDERS 1

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

CSD 2162 - COUNSELING FOR COMMUNICATION DISORDERS

Minimum Credits: 2

Maximum Credits: 2

This course will provide an introduction to counseling for individuals with communication, balance and swallowing disorders and their families, consistent with the defined Scopes of Practice for Audiology and Speech-Language Pathology. Student will develop essential counseling skills, acquire knowledge of key approaches and frameworks, and learn best practices for referral and coordination of care with mental health professionals.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

CSD 2230 - NEUROGENIC LANGUAGE AND COGNITIVE COMMUNICATION DISORDERS 2

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

CSD 2250 - CHILD LANGUAGE DISORDERS 2

Minimum Credits: 3

Maximum Credits: 3

This course concerns advanced topics in the etiology, diagnosis, and remediation of developmental and acquired language disorders in children.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2251 - VESTIBULAR ASSESSMENT AND REHABILITATION

Minimum Credits: 3

Maximum Credits: 3

Evaluation of the functioning of the vestibular system and its associated neural pathways. Special attention is given to differentiation of peripheral and central vestibular disorders.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2252 - ADVANCED PHYSIOLOGICAL ASSESSMENT

Minimum Credits: 3

Maximum Credits: 3

Lectures and discussions on advanced topics in auditory evoked potentials including auditory brainstem response, middle latency and late evoked potentials.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2275 - COGNITIVE COMMUNICATIVE DISORDERS

Minimum Credits: 3

Maximum Credits: 3

This course will address the nature, assessment, and management of cognitive and communicative disorders in three populations: adults with right hemisphere brain damage, traumatic brain injury, and dementing conditions. In the first portion of the class, students will become familiar with current concepts, models, and measures of cognitive functions that are associated with, or potentially underlie, the neurologic communication

disorders in these three populations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2451 - AUDIOLOGY MASTERS COMPREHENSIVE

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

CSD 2454 - AMPLIFICATION 2

Minimum Credits: 3

Maximum Credits: 3

This course allows for in depth discussion of topics related to hearing aid evaluation, fitting, and selection and signal processing. This course takes a seminar format.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2456 - SPEECH PERCEPTION ACROSS THE LIFESPAN

Minimum Credits: 3

Maximum Credits: 3

This seminar focuses on the development and potential decline of speech perception across the life span. The relationships between speech perception and audition, vision, speech production, cognitive function, language, and literacy will be explored for typically developing and aging populations. The implications of hearing loss and auditory therapies and technologies on speech perception will be explored, as well as common clinical tests of speech perception.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2479 - SEMINAR IN SPEECH-LANGUAGE PATHOLOGY

Minimum Credits: 1

Maximum Credits: 3

Content varies across the spectrum of speech and language disorders. Each term has a special and specific focus. Students view the literature and present and discuss specific topics of interest.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Speech-Language Pathology (CSD) or SBPLAN: Speech-Language Pathology (Comm Science and Disorders-MA) or Speech-Language Pathology (Comm Science and Disorders-MS)

CSD 2500 - MEDICAL SPEECH-LANGUAGE PATHOLOGY 3

Minimum Credits: 1

Maximum Credits: 3

The course is designed to enhance the skill and knowledge base of medical speech language pathology. Topics include, but are not limited to, pathophysiology of neurogenic communication and swallowing disorders, tracheotomy management, neurological assessment and advanced applied

neuroscience, pediatric feeding assessment and management, structure and function of respiratory and digestive systems, and medical ethics. Active participant learning is essential and performance is judged based on regular participation.

Academic Career: Graduate

Course Component: Credit Laboratory

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2501 - SPEC TOPC COM DISORDERS PROFSSNL

Minimum Credits: 1

Maximum Credits: 4

Course to provide continuing educ and skill development for professionals in communication disorders. Designed to address continuing education needs, and/or mandates of respective licensing & professional certification bodies. Topic areas may include, but not limited, augmentative communication, autism, literacy & language development, motor speech disorders, neurogenic speech/language disorders, dysphagia, audiology & aural rehab, in a variety of clinical populations across the life span. Emphasis placed on current clinical research in the content areas presented.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Speech-Language Pathology (CSD) or SBPLAN: Speech-Language Pathology (Comm Science and Disorders-MA) or Speech-Language Pathology (Comm Science and Disorders-MS)

CSD 2503 - APPLIED AERODIGESTIVE PHYSIOLOGY 1

Minimum Credits: 3

Maximum Credits: 3

These courses are designed to provide advanced study of the physiological processes involved in speech production and swallowing. Clinical methods used to measure speech production and swallowing physiology will be addressed. Instrumentation will be used to give students hands-on experience in the acquisition, measurement and interpretation of acoustic and physiologic data.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Comm Science and Disorders (PHD) or Speech-Language Pathology (CSD)

CSD 2504 - APPLIED AERODIGESTIVE PHYSIOLOGY 2

Minimum Credits: 2

Maximum Credits: 2

These courses are designed to provide advanced study of the physiological processes involved in speech production and swallowing. Clinical methods used to measure speech production and swallowing physiology will be addressed. Instrumentation will be used to give students hands-on experience in the acquisition, measurement and interpretation of acoustic and physiologic data.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Comm Science and Disorders (PHD) or Speech-Language Pathology (CSD)

CSD 2505 - PROFESSIONAL WRITING 1

Minimum Credits: 1

Maximum Credits: 1

This course will be composed of two 1-credit didactic classes on the art of succinct professional writing. The nature of "the readership" will be examined and how writing style must be modified to suit a specific audience. Assessment will be based on the production of several items including a scientific abstract for conference peer review, an administrative work such as an evidence based business plan for specific service development, and an information leaflet for careers (lay language use). Some of these may require submission to an outside body if appropriate. The third credit in this series will be a scholarly work in which the student will be mentored by a departmental faculty member on the development of a specific project. . It is a requirement that this scholarly component be submitted to an outside institution for peer review. Class waivers will be considered on an individual basis, provided the student can demonstrate writing skills consistent with the outcomes of this course.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Comm Science and Disorders(MA, MS) or Speech-Language Pathology (CSD)

CSD 2506 - PROFESSIONAL WRITING 2

Minimum Credits: 1

Maximum Credits: 1

This course will be composed of two 1-credit didactic classes on the art of succinct professional writing. The nature of "the readership" will be examined and how writing style must be modified to suit a specific audience. Assessment will be based on the production of several items including a scientific abstract for conference peer review, an administrative work such as an evidence based business plan for specific service development, and an information leaflet for careers (lay language use). Some of these may require submission to an outside body if appropriate. The third credit in this series will be a scholarly work in which the student will be mentored by a departmental faculty member on the development of a specific project. . It is a requirement that this scholarly component be submitted to an outside institution for peer review. Class waivers will be considered on an individual basis, provided the student can demonstrate writing skills consistent with the outcomes of this course.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Comm Science and Disorders(MA, MS) or Speech-Language Pathology (CSD)

CSD 2507 - PROFESSIONAL WRITING 3

Minimum Credits: 1

Maximum Credits: 1

This course will be composed of two 1-credit didactic classes on the art of succinct professional writing. The nature of "the readership" will be examined and how writing style must be modified to suit a specific audience. Assessment will be based on the production of several items including a scientific abstract for conference peer review, an administrative work such as an evidence based business plan for specific service development, and an information leaflet for careers (lay language use). Some of these may require submission to an outside body if appropriate. The third credit in this series will be a scholarly work in which the student will be mentored by a departmental faculty member on the development of a specific project. . It is a requirement that this scholarly component be submitted to an outside institution for peer review. Class waivers will be considered on an individual basis, provided the student can demonstrate writing skills consistent with the outcomes of this course.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Comm Science and Disorders(MA, MS) or Speech-Language Pathology (CSD)

CSD 2508 - RESEARCH AND CLINICAL FORUM

Minimum Credits: 0

Maximum Credits: 0

This component encourages residents (and clinical fellows) to attend clinical and research meetings offered by CSD/Pitt/UPMC/VA etc. to gain experience of the various aspects of clinical and research fields relevant to the discipline of communication science and disorders. (Residents and clinical fellows) will attend 4 documented events per semester from the full range of activities available throughout the University of Pittsburgh and its associated medical center's extensive network of institutional and regional clinical, research, and scientific educational offerings.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2509 - HEAD AND NECK ANATOMY

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2510 - COMPLEX DECISIONS

Minimum Credits: 3

Maximum Credits: 3

A problem based learning format will be used to explore situations encountered in medical speech-language pathology. Problems relevant to an array of theoretical, diagnostic and management issues will be presented in a format whereby students will assume complete responsibility for collecting, analyzing, interpreting and summarizing findings with class members.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2511 - ORAL DISSEMINATION SKILLS

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2512 - HEAD AND NECK ANATOMY LAB FOR CLINICAL DOCTORATE IN MEDICAL SPEECH LANGUAGE PATHOLOGY

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Credit Laboratory

Grade Component: Grad Letter Grade

CSD 2513 - NON SLP CLINICAL ROTATIONS

Minimum Credits: 1

Maximum Credits: 7

This course provides the csc.d student with the opportunity to develop theoretical and clinical knowledge and skills through observation, discussion, and participation with other health professionals via the completion of three 10-week half-time clinical rotations. These experiences may include such disciplines as physical medicine and rehabilitation, neurology, and other related clinical services.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad SN Basis

Course Requirements: PLAN: Comm Science and Disorders(MA, MS) or Speech-Language Pathology (CSD)

CSD 2514 - SCHOOL BASED SERVICE DELIVERY

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

CSD 2515 - HUMAN PHYSIOLOGY FOR THE MEDICAL SLP

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

CSD 2516 - MEDICAL SPEECH-LANGUAGE PATHOLOGY 1

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CSD 2517 - MEDICAL SPEECH-LANGUAGE PATHOLOGY 2

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

CSD 2520 - MENTORED CLINICAL INTERNSHIP

Minimum Credits: 1
Maximum Credits: 6
The focus of these internship assignments is to further develop, refine and enhance the CScD student's knowledge, skills and abilities as they pertain to the assessment and management of communication and swallowing disorders in the context of their weekly caseload. Mentoring will be facilitated through weekly interactions with designated faculty members.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad SN Basis
Course Requirements: PLAN: Comm Science and Disorders(MA, MS) or Speech-Language Pathology (CSD)

CSD 2521 - CLINICAL EDUCATION 1

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2522 - CLINICAL EDUCATION 2

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2523 - CLINICAL EDUCATION 3

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2524 - CLINICAL CASE EDUCATION

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

CSD 2572 - COMPREHENSIVE EXAMS

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Comm Science and Disorders(MA, MS) or Speech-Language Pathology (CSD)

CSD 2600 - INTER-PROFESSIONAL ROTATION

Minimum Credits: 1
Maximum Credits: 1
This course includes a clinical rotation where students accompany physicians engaged in clinical examination, diagnosis, and treatment of otology/vestibular patients. Students meet with medical residents in otology conferences and grand rounds. This course exposes students to basic ear anatomy and surgical procedures.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2601 - SUPERVISION

Minimum Credits: 1
Maximum Credits: 1
Students will explore activities associated with supervising students through readings and examples presented in class. This course provides future professionals with tools to be effective audiology supervisors. Material is presented in a manner to convince students that supervising future practitioners is a professional responsibility.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2602 - EDUCATIONAL AUDIOLOGY

Minimum Credits: 2
Maximum Credits: 2
This course takes a lifespan approach to educational audiology. Laws, working within the educational environment and with other educators, developmental needs, room acoustics, and technology will be explored in this course.
Academic Career: Graduate
Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2603 - HUMAN GENETICS FOR HEARING AND SPEECH DISORDERS

Minimum Credits: 2

Maximum Credits: 2

An examination of the mechanisms involved in producing genetic variation in humans and the medical/clinical aspects of genetic variation and disease. Students will learn genetics terminology, patterns of inheritance, DNA/RNA structure and transcription and translation, characteristics of major human syndromic and non-syndromic hearing loss and communication disorders. We will discuss the ethical, legal and social issues associated with our growing knowledge of human genetics and the potential for misuse.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

CSD 2652 - ADVANCED CLINICAL SEMINAR 3-1

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

CSD 2654 - PRACTICE MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

Students will investigate the professional, legal, and ethical issues related to practice management. In-depth exposure and critical discussion will be focused on professional issues that impact licensure, occupational codes, and reimbursement. Students will understand CMS and other government agencies that impact how they manage their audio logy practices. Billing as it relates to CPT codes, ICD-9 CM codes, third party payment, etc. will be discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Audiology (AUDIO-AUD; MACAUD-SP; MSCAUD-SP) or Comm Science and Disorders (PHD)

CSD 2655 - ADVANCED CLINICAL SEMINAR 4-1

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

CSD 2656 - ADV AUDLGY CLN PRACTICE-NETWORK

Minimum Credits: 1

Maximum Credits: 4

Third year audiology students engage in advanced clinical practicum under the supervision of university faculty. Practicum activities target the development of independence in higher level clinical skills such as clinical decision making, diagnostic and treatment planning, case management, and professional oral and written communication skills.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2657 - ADVANCED CLINICAL SEMINAR 3-3

Minimum Credits: 1

Maximum Credits: 1

This course provides advanced students with a forum for discussion of advanced clinical topics through case-based learning.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

CSD 2658 - ADVANCED CLINICAL SEMINAR 4-3

Minimum Credits: 1

Maximum Credits: 1

This course provides advanced students with a forum for discussion of advanced clinical topics through case-based learning. Participants will access the course via the chat function on course web.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Attributes: World Wide Web

CSD 2659 - AUDIOLOGY EXTERNSHIP

Minimum Credits: 1

Maximum Credits: 9

Consists of full-time supervised work at sites offering diagnostic and rehabilitative audiology within and outside the Pittsburgh region. Students are expected to gain at least 2000 hours of clinical activity through the internship.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad HSU Basis

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 2660 - ADVANCED CLINICAL SEMINAR 4-2

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

CSD 2661 - ADVANCED CLINICAL SEMINAR 3-2

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

CSD 2902 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

Under the direct supervision of a faculty member, the student carries out specific research (library or experimental) pertinent to the student's and/or faculty member's interests.

Academic Career: Graduate

Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

CSD 2970 - TEACHING PRACTICUM

Minimum Credits: 1

Maximum Credits: 3

Student is supervised in gaining experience in various aspects of university classroom instruction, including preparation of materials, lecturing and discussion, test construction and evaluation and student evaluation.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad SN Basis

CSD 2971 - RESEARCH PRACTICUM

Minimum Credits: 1

Maximum Credits: 6

This variable credit experience provides opportunities for students to be involved in research studies under the supervision of faculty members.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad SN Basis

CSD 2972 - EXAMINATION

Minimum Credits: 1

Maximum Credits: 3

Examination credit registration gives official registration status to a student who will be taking an examination but who may not be registered for any other courses.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

CSD 2973 - PRACTICUM IN CLINIC SUPERVISION

Minimum Credits: 1

Maximum Credits: 3

This course provides advanced graduate students with the opportunity to obtain experience supervising first year masters students. The advanced students, in turn, will work in consultation with the director or the assistant director of the university speech-language and hearing clinic.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Comm Science and Disorders (CSD-MA; CSD-MS; CSD-PhD; SLPATH-CSD)

CSD 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 9

Independent study credits are taken without supervision by students who propose projects that complement their academic goals, and projects whose substance is not covered in the division's regular course offerings.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

CSD 3000 - DISSERTATION RESEARCH PHD DEGREE

Minimum Credits: 1

Maximum Credits: 9

Students will formulate, design, propose, carry out, analyze, interpret, and write up an approved research project, under the direction of a dissertation committee, and in particular the chairperson.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

CSD 3048 - PHD SEMINAR

Minimum Credits: 3

Maximum Credits: 3

The seminar will focus on professional concerns such as the scientific method, research design and evaluation, effective scientific writing and presentation, funding sources, and the grant writing process. Among the options for a final product are a research proposal, or a publishable paper.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 3049 - PH.D. SEMINAR IN AUDIOLOGY

Minimum Credits: 3

Maximum Credits: 3

Audiology Ph.D. students will participate in this seminar series.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

CSD 3060 - PHD PROSEMINAR

Minimum Credits: 0

Maximum Credits: 0

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Comm Science and Disorders (PHD) or Speech-Language Pathology (CSD) or Audiology (AUD)

CSD 3479 - RESEARCH SEMINAR IN SPEECH AND LANGUAGE PATHOLOGY

Minimum Credits: 3

Maximum Credits: 3

Content varies across the spectrum of research issues in speech and language disorders. Each term has a special and specific focus. Students will review research literature and present and discuss specific topics of interest.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Comm Science and Disorders (PHD) or Audiology (AUD) or Speech-Language Pathology (CSD)

CSD 3902 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

Students will explore theoretical or applied questions related to their area of interest by analyzing relevant literature under the direction of an appropriate faculty advisor.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

Course Requirements: PLAN: Comm Science and Disorders (PHD) or Audiology (AUD) or Speech-Language Pathology (CSD)

CSD 3971 - RESEARCH PRACTICUM FOR PHD STUDENTS

Minimum Credits: 1

Maximum Credits: 9

A prerequisite to CSD 3000; doctoral students are involved in research projects under the supervision of faculty members.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad SN Basis

Course Requirements: PLAN: Comm Science and Disorders (PHD) or Audiology (AUD) or Speech-Language Pathology (CSD)

Communication: Rhet & Comm

COMMRC 2000 - THESIS FOR MASTERS DEGREE

Minimum Credits: 1

Maximum Credits: 6

After successful completion of the master's level comprehensive examinations, students may elect to write a master's thesis.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

COMMRC 2014 - ARGUMENTATION

Minimum Credits: 3

Maximum Credits: 3

This course interrogates argument as a product, process, and method of inquiry, using a variety of theoretical approaches as points of departure, including pragma-dialectics, speech act theory, controversy studies, informal logic, visual communication, and forensics, as well as critical perspectives such as invitational rhetoric and feminist argumentation theory.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

COMMRC 2201 - RHETORICAL CRITICISM

Minimum Credits: 3

Maximum Credits: 3

This course is focused on the history and practice of rhetorical criticism in America during the twentieth century. The student writes several in-depth criticisms of a significant message designed to influence belief and action.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

COMMRC 2202 - HISTORICAL METHODS IN RHETORIC

Minimum Credits: 3

Maximum Credits: 3

This course explores the various rhetorical functions that traditional histories of rhetoric serve and introduces students to recent theories of historiography and the rhetorics of historiography.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

COMMRC 2203 - SEMNR IN PHILOSOPHY AND RHETORIC

Minimum Credits: 3

Maximum Credits: 3

This seminar concerns itself with the conflict between philosophy and rhetoric. The conflict will be considered both historically and critically. We will ask: how did the conflict come about? What important changes did it undergo in subsequent centuries? How does it exist today?

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

COMMRC 2212 - VISUAL RHETORIC

Minimum Credits: 3

Maximum Credits: 3

This seminar concentrates on scholarship concerning visual rhetoric and its various synonyms, primarily produced in the United States during the last few decades. Through classroom exercises, readings, and writings, graduate students will become familiar with various practices of message analysis and evaluation pertaining to pictorial persuasion. Seminar participants prepare and present original research concerning visual rhetoric, including the formulation of research questions, developing an appropriate literature review, and, ultimately, inventing sustained argumentation for a thesis concerning the rhetoric of pictorial works.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

COMMRC 2215 - RHETORIC AND HUMAN RIGHTS

Minimum Credits: 3

Maximum Credits: 3

This graduate course focuses on key concepts which are useful for describing, analyzing, and interpreting significant public texts and symbols concerning human rights controversies domestically and internationally. The central objective is to strengthen the seminar participants' awareness of qualitative techniques for interpretive and critical studies of public advocacy about human rights. It concentrates on 20th-century controversies within the US concerning "hate" or bias crimes. Considerations of race, sexuality, gender, sex, and economic class will be interwoven throughout the materials and discussions.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

COMMRC 2218 - CONTEMPORARY RHETORICAL THEORY

Minimum Credits: 3

Maximum Credits: 3

Study of selected theorists from roughly the last fifty years who explicitly thematize rhetoric or whose work helps to shape the intellectual landscape for thinking about rhetoric. Key theorists would include Kenneth Burke, Chaim Perelman, Michael McGee, Celeste Condit, Michel Foucault, Martha Nussbaum, Michael Billing, Richard Weaver, Jeanne Fahnestock, Thomas Farrell, Lloyd Bitzer, and Stephen Toulmin. Specific content will vary. Short response papers and one longer research paper required.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

COMMRC 2220 - READINGS IN CRITICAL THEORY

Minimum Credits: 3

Maximum Credits: 3

Readings in critical theory concerns contemporary discourses about ideology, rhetoric, cultural institutions, power/ knowledge, desire and the subject. Each year a different area or topic is chosen.

Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad LG/SNC Basis

COMMRC 2226 - MEDIA AND CULTURAL STUDIES

Minimum Credits: 3

Maximum Credits: 3

This course traces the history and development of british cultural studies and the role it has played in redefining the study of media in Britain, the US, and Australia. The course examines cultural studies as both a methodology and a political stance by studying its theoretical struggles with Marxism, structuralism, semiotics, social science research, and ethnographic techniques.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

COMMRC 2245 - SEMINAR IN CLASSICAL RHETORIC

Minimum Credits: 3

Maximum Credits: 3

This seminar concerns itself with the origin and early development of rhetoric. The focus is on the traditions of the Greek and roman cultures. Particular attention goes to the sophistical, Platonic, Isocratean, Aristotelian and Ciceronian traditions. Consideration is given to the cultural context from which these traditions emerged.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

COMMRC 2285 - SCIENCE AND ITS RHETORIC

Minimum Credits: 3

Maximum Credits: 3

This seminar will explore the following questions: what role, if any, do rhetorical interpretations play in the discourse of science? Can the acceptance of scientific ideas be exhaustively explained in terms of epistemic criteria alone, or is there always necessarily recourse to rhetorical topoi? What role does rhetoric play in the internal dialogues of science, and how is rhetoric mobilized when science addresses its lay audience? These questions will be explored through exemplary cases chosen from both the natural and the human sciences.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

COMMRC 2296 - PROSEMINAR

Minimum Credits: 3

Maximum Credits: 3

Introduction to graduate study in communication. Required for all new graduate students.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

COMMRC 2298 - RESEARCH COLLOQUIUM

Minimum Credits: 0

Maximum Credits: 0

The research colloquium provides a forum in which graduate students, faculty, and invited lecturers present research in progress.

Academic Career: Graduate

Course Component: Colloquium

Grade Component: No Grade Required

COMMRC 2902 - DIRECTED STUDY FOR MA STUDENTS

Minimum Credits: 3

Maximum Credits: 3

This course, for individual instruction under a research faculty member, must be within an identifiable area of study in the fields of rhetoric and/or communication. Topics vary. May be taken only once. Open only to students yet to take ma comprehensive examinations.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

COMMRC 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 9

Independent study is taken without supervision by students who propose projects that complement their academic goals, and projects whose substance is not covered in the division's regular course offerings. Topics vary.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

COMMRC 3000 - DISSERTATION RESEARCH PHD DEGREE

Minimum Credits: 1

Maximum Credits: 12

The student will propose and design a research project and then carry out that project through research and writing. The project must be approved by a dissertation committee and executed under the direction of the chair of the committee.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

COMMRC 3001 - PROSPECTUS RESEARCH

Minimum Credits: 3

Maximum Credits: 3

Under individual guidance of a designated research faculty member, students design, propose, and execute a research and writing project related to their prospective dissertation topic. May be used for prospectus preparation.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

COMMRC 3002 - PROFESSIONAL DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

Under individual guidance of a designated research faculty member, students design, propose, and execute a major professional development activity (e.g., Article, conference paper, or grant proposal) or related set of them, not necessarily related to their dissertation topic.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

COMMRC 3306 - SEM IN RHETORIC AND CULTURE

Minimum Credits: 3

Maximum Credits: 3

This course examines the role rhetoric plays in the formation of culture, reading some interdisciplinary texts (rhetorical, philosophical, historical,

literary) which represent the intellectual elite of a specific time period. These texts will furnish us with an occasion to inquire into the ways in which intellectuals mobilize rhetoric to perpetuate or transform existing socio-political formations: the kinds of cultural self-understanding shaping their discourse and the kinds of spaces their discourse opens to their audiences. Topics vary.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

COMMRC 3314 - SEMINAR IN PUBLIC ARGUMENT

Minimum Credits: 3

Maximum Credits: 3

This is an advanced course dealing with specialized topics in the employment of argument in the public sphere. Textual analysis will serve as the primary mode of analysis for discussing the way policy issues are considered in the public realm.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

COMMRC 3316 - SEMINAR ON RHETORIC OF SOCIAL MOVEMENTS

Minimum Credits: 3

Maximum Credits: 3

Social movements have been perennial subjects of rhetorical inquiry. What are social movements? How and why do movements form, grow, and dissipate? Can approaches to rhetorical inquiry traditionally reserved for the analysis of lone speakers and single texts shed useful light on the process through which movements attempt to persuade various audiences? This seminar considers the manner in which early social movement scholars in the field of rhetoric grappled with these and other controversial questions. After developing working knowledge of the rhetorical tradition of social movement scholarship, students will engage other theoretical viewpoints from fields such as sociology and political science to illuminate aspects of movement activity that may be less apparent from within the rhetorical horizon. Consideration of specific case studies will anchor such explorations, and the pedagogical approach guiding such study will privilege direct engagement with movement actors. The goals of the course are to provide students with a grasp on the tradition of social movement inquiry in the field of rhetoric, familiarize them with fruitful interdisciplinary perspectives on movement study, and stimulate reflexive awareness of their own status as agents in the field of social action.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

COMMRC 3317 - SEMINAR IN RHETORICAL THEORY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

COMMRC 3326 - SEMINAR IN MEDIA STUDIES

Minimum Credits: 3

Maximum Credits: 3

This seminar is designed to familiarize students with some of the core issues being debated within contemporary media studies. A number of theoretical perspectives will be incorporated, and topics will vary.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Global Studies

COMMRC 3384 - TEACHING PRACTICUM

Minimum Credits: 3

Maximum Credits: 3

This course focuses on principles and methods for teaching public speaking. It covers such matters as syllabus design; diversity and inclusion in the classroom; lecture preparation and presentation; small and larger group discussions; speech assignments, evaluation and feedback; general classroom management; and techniques for referring troubled students to counseling; and surveys the instructional team approach to teaching large lecture courses and recitations.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

COMMRC 3902 - DIRECTED STUDY FOR PHD STUDENTS

Minimum Credits: 3

Maximum Credits: 3

This course, for individual instruction under a research faculty member, must be within an identifiable area of study in the fields of rhetoric and/or communication. Topics vary. May be taken only twice. Open only to students yet to defend their Ph.D. comprehensive examinations.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Community Dentistry

CDENT 2113 - DENTAL RESEARCH METHODOLOGY 1

Minimum Credits: 2

Maximum Credits: 2

The focus of this course will be applied and, as such, students will be required to employ statistical software packages for the analysis of dentally relevant data files. Students will be encouraged to develop, collect, encode and analyze their own data sets. Particular emphasis will be placed on analysis of variance techniques involving repeated measures and factorial designs. The interpretation of computer printouts will be paramount. A very brief introduction to the concept of multivariate analysis will also be presented.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

CDENT 2114 - DENTAL RESEARCH METHODOLOGY 2

Minimum Credits: 2

Maximum Credits: 2

Course familiarizes students with concepts and methods of research design and measurement in dental medicine. Various systems employed for classifying types of research are presented, including biological and behavioral science approaches. Particular emphasis will be placed on proper design of clinical trials, research paradigms, scientific writing, and methods that can be employed to control for sources of extraneous variance. As a result, students will understand how clinical research becomes a foundation for clinical practice, be able to critically review dental research literature.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

CDENT 2183 - SCIENTIFIC WRITING

Minimum Credits: 1

Maximum Credits: 1

The component parts of the research paper will be presented and the differences between writing for the thesis or dissertation and a journal manuscript will be presented.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

CDENT 2900 - INDEPENDENT STUDY

Minimum Credits: 2

Maximum Credits: 2

This course will provide the opportunity for dental residents to pursue the independent study of topics of interest in Dental Public Health.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad HSU Basis

CDENT 5111 - DATA INTERPRETATION

Minimum Credits: 1

Maximum Credits: 1

The primary emphasis of this course is to give students an understanding of statistical issues as a basis for interpreting the dental literature. Emphasis is placed on understanding how research designs and statistical analysis of research articles relate to the conclusions that can be drawn.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad Letter Grade

CDENT 5114 - CARIOLOGY

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad Letter Grade

CDENT 5116 - EVIDENCE BASED DENTISTRY

Minimum Credits: 2

Maximum Credits: 2

In this course, students will be introduced to concepts of Evidence-Based Dentistry (EBD) as a foundation for developing high-quality evidence-based treatment decisions. The course presents quantitative thinking concepts (biostatistics) with an emphasis on developing the skills required to become an evidence-based practitioner (including critical thinking, asking clinical questions, searching for relevant evidence, assessing quality of evidence, using evidence to assist in clinical decision-making). Students will have an opportunity for hands-on experience in searching online literature for evidence. Assessing evidence quality and its relation to clinical care will be addressed. This course includes small group practice (using Process Oriented Guided Inquiry Learning (POGIL) groups in most sessions), lectures, and class discussions.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad Letter Grade

CDENT 5117 - PROFESSIONALISM IN DENTAL MEDICINE

Minimum Credits: 2

Maximum Credits: 2

In this course, students will be provided with foundational knowledge in professionalism, including ethical, legal, social and cultural factors in oral health and disease prevention. The goal of the course is to prepare students for clinical dental practice by introducing principles of ethics and professional behavior that are essential to providing the highest level of oral health care in a clinical setting and throughout a career in dentistry. Concepts that are introduced in this course will be reinforced and expanded upon in the Health Promotion and Disease Prevention course series, which is also offered in the first year predoctoral curriculum. This course includes lectures, small group discussions, in-class and homework assignments.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad Letter Grade

CDENT 5145 - HEALTH PROMOTION AND DISEASE PREVENTION 2

Minimum Credits: 2

Maximum Credits: 2

In this course, students will prepare for their first clinical experience in the Adolescent Clinic in the summer term. Students explore concepts in health promotion and disease prevention and behavioral principles related to clinical practice. Students continue to examine the nature of oral health and disease. All of these concepts are developed and reinforced through the use of readings, online and in-class exercises, pre-clinical and clinical assignments, and oral and written presentation of a case that requires integration of the concepts and effective demonstration of the skills as they apply to patient care. The goals of the course are to prepare the student for clinical dental practice by introducing important concepts and developing skills required for the provision of effective dental care; to introduce students to ethical and behavioral principles related to clinical practice; and to provide students with their first exposure to the nature of oral health and disease.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

CDENT 5146 - CARIOLOGY

Minimum Credits: 1

Maximum Credits: 1

In this didactic course, students will be introduced to current concepts of the etiology, epidemiology, and clinical prevention and management strategies of dental caries. Students will be provided with actual clinical experience in diagnosing caries in subsequent courses. Successful completion of this course will provide students with the foundational knowledge for prevention and conservative management of caries appropriate for the general dental practitioner. The course includes lecture and small group Process Oriented Guided Inquiry Learning (POGIL) activities aimed at providing an in-depth understanding of the disease of dental caries. Several guest lectures are planned. Rationale: Caries is the most prevalent disease of children and one of the most prevalent diseases at all ages. The majority of dentists spend the majority of their patient contact time addressing caries-associated problems. Having an in-depth understanding of caries etiology, prevention, and management strategies is the foundation for ethical and appropriate patient care. This course provides for a contemporary understanding of these issues and reflects currently updated approaches to caries prevention and management (such as those now being disseminated under the title of: The International Caries Classification and Management System).

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF with +/- Values

CDENT 5173 - HEALTH PROMOTION AND DISEASE PREVENTION 3

Minimum Credits: 1.5

Maximum Credits: 1.5

In this course, students will work with peers, adolescent and/or young adult patients in a clinical setting where they will focus on developing practical skills related to risk assessment, oral disease prevention, and health promotion. This course is the capstone experience of the first year of the dental curriculum, preparing students to enter the second year by applying the foundational skills acquired in health promotion and disease prevention. This course includes a variety of activities and assignments such as lectures, in-class discussions, journaling, providing clinical care as doctor and assistant, clinical record management, quizzes, readings, and self-evaluation of clinical communication. The goals of the course goals are to prepare students for clinical dental practice by applying important concepts and developing skills required for the provision of effective dental care; to introduce students to ethical and behavioral principles related to clinical practice; and to provide students with their first exposure to the nature of oral health and disease in patients.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

CDENT 5280 - CARIOLOGY AND MANAGEMENT OF CARIES

Minimum Credits: 2

Maximum Credits: 2

This course will present instruction in the management of caries. Topics covered include remineralization, provisional resin restorations and fluoride treatment. The design of cavity preparations for root caries will be discussed.

Academic Career: Dental Medicine

Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

CDENT 5281 - SCOPE 1

Minimum Credits: 3

Maximum Credits: 3

The SCOPE community service program is designed to help cultivate health care professionals who are caring, socially responsible and capable of behaving as patient advocates in all practice environments. The SCOPE I service-learning model helps to enable 1) development of relationships and interactions with others, 2) the defining of community, and 3) the maintenance of a balance between personal and professional life. It also aims at developing student cultural competence, communication skills, and enabling a sense of giving back to the community as a crucial part of professional development. Course goals include the following: creating an atmosphere of community-minded oral-health professionals; creating more empathic, personally committed dentists; and improving the willingness of students to treat underserved and at-risk patients.

Academic Career: Dental Medicine

Course Component: Seminar

Grade Component: Grad HSU Basis

CDENT 5282 - CLINICAL APPLICATION OF PROBLEM-SOLVING SKILLS

Minimum Credits: 1

Maximum Credits: 1

This course is designed to support the continued development of evidence-based and critical thinking skills applied to clinical decision-making. The course is designed for 2nd year predoctoral students and supports the theme for the year (diagnosis and treatment planning) by guiding students in the process of applying evidence to support clinical decisions. The course will build and reinforce student understanding of the basic principles of clinical and translational research (i.e., how such research is conducted, critically evaluated, applied to clinical practice, disseminated and shared with patients). The course is taught as a Process Oriented Guided Inquiry Learning (POGIL) series. (POGIL is a student-centered strategy with students working in small groups with individual roles to ensure that all students are engaged in the process.) The course is designed to repeat and build upon information and skills developed from the Evidence Based Dentistry Course and the Oral Diagnosis and Treatment Planning Course. Information acquired during Oral Pathology, Oral Histology and Head and Neck Anatomy may be applied (repeated) during class. The goals of the course are to prepare students for clinical dental practice by further developing their ability to identify clinical problems and plan for clinical care; to provide students an opportunity to further develop skills for the practice of evidence based dentistry; practice intellectual breadth by thinking with an open mind, recognizing and evaluation assumptions, implications, and consequences; and to develop the ability to communicate professionally and work as a team member.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

CDENT 5342 - INTRODUCTION TO BEHAVIORAL DENTISTRY

Minimum Credits: 1

Maximum Credits: 1

Introduction to behavioral dentistry is designed to guide students in increasing awareness of the behavioral component of oral health care, increasing commitment to the biopsychosocial model, and strengthening the behavioral skills necessary to provide oral health care.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF with +/- Values

CDENT 5440 - SCOPE 2

Minimum Credits: 3

Maximum Credits: 3

This course is open to third and fourth year dental students and is structured to: 1) foster civic and social responsibility; 2) foster a sense of caring for others; 3) focus on family and patient centered care; and 4) identify community needs and provide care to these populations. Each participant must participate in five days (40 hours) of clinical dentistry at a SDM related community facility, maintain a reflective journal regarding their community clinical experience, attend community health forums presented by the SOM and public health seminars given by either the SDM's department of community dentistry, or public health related seminars given by other members of the schools of the health professions.

Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

CDENT 5900 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 3

This independent externship is for a senior dental student who seeks a dental school approved rotation which is individually prescribed to address a particular interest the student wants to pursue within dentistry. The program which is often tailored to one aspect of dentistry allows enrichment to the student's education which none of our established programs in school or externships provide.

Academic Career: Dental Medicine

Course Component: Independent Study

Grade Component: Grad HSU Basis

CDENT 5910 - LITERATURE AND FILM TO UNDERSTAND PATIENT-PRACTITIONER EXPERIENCES

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Dental Medicine

Course Component: Seminar

Grade Component: Grad HSU Basis

CDENT 5916 - CONTEMPORARY ISSUES IN DENTAL PUBLIC HEALTH

Minimum Credits: 2

Maximum Credits: 2

This course is for students wishing to expand their knowledge of the current issues in dental public health. Students will be given directed reading assignments and will search the literature for information on current and controversial topics in dentistry so that group discussions, debates and presentations may successfully be done in class. Topics covered may include: new oral health care delivery and management models, prevention and primary care systems, and dental health services research. Emphasis on evidence-based methodology is highlighted.

Academic Career: Dental Medicine

Course Component: Seminar

Grade Component: Grad HSU Basis

CDENT 5942 - IMPROVISATION FOR CLINICIANS

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad HSU Basis

CDENT 5951 - READINGS IN DENTAL PUBLIC HEALTH

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Dental Medicine

Course Component: Seminar

Grade Component: Grad HSU Basis

CDENT 5952 - DENTAL INFORMATICS RESEARCH

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

Community Org and Soc Admin

SWCOSA 2040 - GRANT PROPOSAL WRITING

Minimum Credits: 3

Maximum Credits: 3

Provides students with some insight into the operation of several primary sources of funds for social welfare programs.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: (SWCOSA 2084 or 2088) (MIN GRADE 'B-' for Listed Courses)

SWCOSA 2053 - COMMUNICATIONS AND PUBLIC RELATIONS

Minimum Credits: 3

Maximum Credits: 3

Effective communications and public relations with the community at large are essential to the health and stability of all human services organizations. This course will examine the importance of all human services organizations to promote a positive public image, ensure public accessibility, and thereby accountability, and build a broad base of community support. Student will learn how to identify and respond effectively to the communication needs of all. Students will also explore ways to raise public awareness about compelling human services issues & tap available resources.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWCOSA 2084 or 2088 (MIN GRADE 'B-' for Listed Courses)

SWCOSA 2054 - LEADERSHIP

Minimum Credits: 3

Maximum Credits: 3

This course examines theories about leadership and provides students with feedback on their own leadership styles. Leadership skills are defined and applied. Teams, as one context for demonstrating leadership, are explored in depth and methods for recognizing and managing group dynamics are introduced. The course combines theory with practical application. It is highly participative and students are expected to join in a wide range of exercises and simulations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: SWCOSA 2084 or 2088 (MIN GRADE 'B-' for Listed Courses)

SWCOSA 2084 - INTRODUCTION TO SOCIAL ADMINISTRATION

Minimum Credits: 3

Maximum Credits: 3

This course seeks to train professionals to develop, manage and lead community service organizations that address human service needs and revitalize communities. This course will address the social work leadership and management competencies as defined by the national association for social work managers, which include: 1) contemporary social and public policies; 2) advocacy; 3) public/community relations and marketing; 4) governance; 5) planning; 6) program development and management; 7) financial development; 8) evaluation; 9) human resource management; 10) staff development. This social administration course will provide an overview of the context, knowledge and skills for human service leadership and management roles, as well as a macro framework for systems and organizational theories key to social administration and organizational management and leadership as they apply in both nonprofit and for-profit settings. Social work values will provide a critical framework for leadership and mission in human service organizations and will draw upon the social work code of ethics as it guides macro systems and

organizations. This course will mainly focus on leadership of human service organizations and will present an overview of leadership roles and issues in personal, professional and organizational contexts. Students will also examine the following topics and issues as important to this social administration: human service systems, regulations and funding; communications and facilitation skills; starting and running a nonprofit organization; alliance, partnerships and collaborations; risk assessment and management; evidence-based practice, outcomes and benchmarking; external environmental issues shaping the human service sector. Students will produce an organizational assessment, analysis, and strategic planning field project to demonstrate their understanding and application of competencies in social administration.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWBEH 2063 and SWWEL 2081 and SWGEN 2098; CREQ: SWRES 2021; SBPLAN: COSA (Social Work-MS)

SWCOSA 2086 - HUMAN RESOURCE/SUPERVISION AND FINANCIAL MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

This skill elective focuses upon the techniques, processes, methods and resources employed by supervisors, managers and other administrators to assure the highest quality social services are delivered in the most effective manner. Historical roots and trends; organizational and administrative theories; and research findings and conclusion provide the foundation for examining current supervisory and personnel management practices and financial management. Practical applications are included to enhance competency-based for mid-level human service management learning in this course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWCOSA 2084 or 2088; Minimum grade of B-

SWCOSA 2087 - SPECIAL TOPICS

Minimum Credits: 1

Maximum Credits: 3

Given the changing nature of social work practice, the MSW program occasionally offers courses in new and/or unique content areas. When offered, this course is designed to provide skill and knowledge content not covered in other community organization and social administration skill courses

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Social Work students only.

SWCOSA 2088 - COMMUNITY ORGANIZING AND PLANNING

Minimum Credits: 3

Maximum Credits: 3

This course seeks to train professionals to develop, manage and lead community service organizations that address human service needs and revitalize communities. This course will provide a framework of systems, power, and inter-organizational network theories, and will define communities in terms of issues, identity and place. Social work values of social and economic justice, participation, democratic practices, social inclusion, empowerment and capacity building will serve as a foundation for this course. This course will explore models of community organizing, including: locality development, social planning and social action, as well as transformative, participatory, feminist, community building and power-based models. Students will examine consensus, campaign, and contests strategies and tactics relative to these models and the techniques for recruiting and mobilizing citizens and constituencies to address social issues and build on local assets. In addition, students will learn: 1) frameworks and tools for assessment, analysis and planning; 2) development of human, social, and economic capital; 3) community capacity building for leadership, organizational, and partnership development; 4) settings of community practice, including unions, environmental, community and faith-based organizations, community development corporations, collaborations and coalitions, enabling and intermediary organizations, and policy and social action groups; 5) roles and skills in community organizing; 6) concepts and issues related to urban communities, including racism, poverty, neighborhood/commercial revitalization, workforce development, housing, and crime. Students will produce a major field project to demonstrate community assessment, analysis and action planning competencies and frameworks learned in class.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWGEN 2098 and SWBEH 2063 and SWWEL 2081; CREQ: SWRES 2021; SBPLAN: COSA (Social Work-MS)

SWCOSA 2090 - WORKING WITH GROUP AND INTERGROUP RELATIONS: FACILITATION/NEGOTIATION/MEDIATION

Minimum Credits: 3

Maximum Credits: 3

Organizers and administrators must be able to work with a range of group processes and interpersonal relationships in community and organizational practice. This course focuses on enhancing student knowledge and skills of group dynamics and processes, as well as the individual relationship management that can be challenging for macro practice. It will also provide a social work values and ethical context for practicing these skills. Three over-arching skill areas will comprise the knowledge and practice base of this modular course: 1) facilitation of task group processes of all types and sizes, 2) negotiating and bargaining, 3) mediation, including conflict mediation and resolution.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWCOSA 2084 or 2088 (MIN GRADE 'B-' for Listed Courses)

SWCOSA 2092 - ORGANIZING FOR COMMUNITY CHANGE: ISSUE, LABOR AND POLITICAL ORGANIZING

Minimum Credits: 3

Maximum Credits: 3

This course will prepare students for community organizing strategies and tactics that support social change and advocacy across timely social and economic justice issues; promote labor and union organizing; or empower political action and political office.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWCOSA 2084 or 2088 (MIN GRADE 'B-' for Listed Courses)

SWCOSA 2096 - COMMUNITY PLANNING AND DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

This course will introduce the student to a community participation approach to local economic development carried out by a nonprofit organization. It would focus on the practical steps for putting together nonprofit housing developments and commercial and industrial business enterprises under participation conditions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWCOSA 2084 or 2088 (MIN GRADE 'B-' for Listed Courses)

SWCOSA 2097 - DIRECTED STUDY - COSA

Minimum Credits: 1

Maximum Credits: 3

This course is designed for those students who are interested in exploring a specific administration and/or policy issue of their choice. The course is appropriate for students with a new and developing interest area or for the student prepared to do advanced work. The course assumes the student's capacity for independent work under the guidance of a faculty member with extensive knowledge and experience in the subject area.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

SWCOSA 2099 - FIELD WORK

Minimum Credits: 1

Maximum Credits: 8

The field practicum emphasizes the integration and application of social work values, knowledge and skills in practice settings. Placements are in

community service delivery systems and are individualized to combine the student's choice of concentration area, certification program and specialized skill interest.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad SN Basis

Course Requirements: PREQ: SWGEN 2099; SBPLAN: COSA (Social Work-MSW)

Computational Biology

CMPBIO 2010 - SEMINAR IN COMPUTATIONAL BIOLOGY

Minimum Credits: 1

Maximum Credits: 1

Seminar series of the joint Pitt-CMU Ph.D. program in computational biology. Nationally and internationally recognized researchers in the field of computational biology present scientific findings. Students meet informally with each speaker to discuss key areas of computational biology, including: computational structural biology, computational genomics, cellular and systems modeling, bio image informatics, and computational neurobiology.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

CMPBIO 2015 - COMPUTATIONAL IMAGING FOR SPATIAL SYSTEMS BIOLOGY

Minimum Credits: 3

Maximum Credits: 3

The recent explosion of next-generation, high-content, high-throughput spatial imaging technologies for intact tissues measuring protein expressions, DNA and RNA probes for investigating systems biology challenges has attracted the interest of NIH and other international agencies in funding precision medicine efforts, including Human Tumor Atlas Network (HTAN), Immuno-Oncology Translation Network (IOTN), Human BioMolecular Atlas Program (HuBMAP), Human Cell Atlas (HCA) and Human Protein Atlas (HPA). In this course, we will study these spatial imaging technologies in greater depth, from low-resolution, spatially barcoded approaches for spatial transcriptomics to high-resolution in situ approaches for imaging proteins, DNA and RNA (CODEX, MIBI, IMC-CyTOF, Seq-FISH, MERFISH) expressions. We will focus on several key aspects of these technologies requiring evaluation and benchmarking in the context of spatial approaches: validation of reagents; comparison to gold-standard methods; comparison between related techniques; and relation to analyses on dissociated cells. We will discuss the technologies in terms of: tissue preparation and reagent validation, imaging development and optimization, and computational inference to allow for high-resolution systems biology analysis of large tissues sections. We will include experimental hands-on lectures using in-house hyperplexed immunofluorescence imaging apparatus. Prerequisites: No biological background is expected. The assignments will cover the necessary biology. Experience in programming and some software engineering is preferred. Knowledge of probability, statistics, linear algebra and algorithms will be useful. Prior introduction to machine learning and imaging is a bonus. Strong interest in cancer imaging informatics is a plus. The class is open to senior year undergraduates and graduate students.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

CMPBIO 2020 - GENE EXPRSN REGLN DATA ALGRTHM

Minimum Credits: 3

Maximum Credits: 3

This course is a graduate level course designed primarily for those students who want to learn about the computational methods and tools that are used in the analysis of promoter regions and transcription regulation data. Students with a biological background and knowledge of introductory level statistics can participate as well as students of quantitative background. The course will primarily focus on the methods that are used for the identification of transcription factor binding sites in the promoter regions of the genes. Both sequence-based and structure-based methods will be discussed. Various technologies for data collection will also be presented, including DNA arrays, SELEX, CHIP, and their derivatives.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CMPBIO 2025 - INTRODUCTION TO BIOINFORMATICS PROGRAMMING IN PYTHON

Minimum Credits: 3

Maximum Credits: 3

This course will introduce students to a selection of popular python packages used in bioinformatics and computational and systems biology. Students will be graded on programming assignments. Each assignment will explore a different sub-discipline of computational biology and introduce students to a new python package. Optional recitations will be available for students with programming and will assist in the development of basic programming skills. The course is designed for first-year graduate students in the corresponding fields of study. There will be a 1-hour lecture a week with time allocated for two 1-hour recitations. Both the lecture and recitations need to be scheduled in a computer lab (such as our classroom).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

CMPBIO 2030 - INTRODUCTION TO COMPUTATIONAL STRUCTURAL BIOLOGY

Minimum Credits: 4

Maximum Credits: 4

This course will introduce students to computational structural biology, primarily relying on physical and chemical principles, as well as associated computational approaches. The course is a core class for both (a) the joint program in computational biology and (b) the molecular biophysics program. The course will cover biomolecular structure, statistical mechanical phenomenon in biophysics, simulation of biomolecular behavior, and key applications of computations in the field of structural biology. Specific topics: probability theory, statistical mechanics and thermodynamics, simulation methods, electrostatic phenomena, biochemical kinetics, binding, coarse-grained modeling, computations for structure determination, drug design.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CMPBIO 2035 - COMPUTATIONAL STRUCTURAL BIOLOGY 2

Minimum Credits: 3

Maximum Credits: 3

The aim of computational structural biology is to understand the function of biological macromolecules such as proteins and nucleic acids in terms of fundamental physical forces. An important goal, for example, is to predict the 3d structure of proteins based on sequence data, to predict the structural organization of protein-protein and protein-DNA clusters, and to study the role of dynamics in molecular function (e.g., In enzymatic reactions). These studies are important in rational drug design. A great deal of progress has been made in the last 30 years, where sophisticated models and techniques have been developed consisting of quantum and statistical mechanics, simulation theory, electrostatics, etc. However, the challenges are still enormous. The objective of this course is to provide the student with a deeper understanding of the above disciplines as related to biological systems, which will enable him/her to participate in a state-of-the-art research. The course will cover some topics in irreversible thermodynamics (e.g., The fluctuation-dissipation theorem, Onsager relations), complementary material in statistical mechanics (phase transitions), simulation theory as applied to polymer chains and proteins (Rosenblatt, dimerization, scanning, multicanonical and its derivatives), free energy and potential of mean force (e.g., Jarzynski), continuum electrostatics (Laplace, poisson, and poisson-boltzmann equations, born formula, generalized born treatments), kinetics, and quantum mechanics. Most of the material will be presented in lectures by the course instructor, with the balance being presented by expert guest lecturers.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CMPBIO 2040 - CELLULAR AND SYSTEMS MODELING

Minimum Credits: 3

Maximum Credits: 3

A graduate-level introduction into mathematical modeling and analysis of biological systems on the cellular and other levels. This condensed and broad course conveys the unity of the modeling methodology in biology. It spans a range of perspectives derived from the different disciplines from which this new area of research originated: biology, mathematics, engineering, and computer science. The systems covered include quantitative physiology, quantitative cell biology, biological networks, dynamic systems, cell mechanics, and systems modeling of critical illness. The

quantitative physiology topics to be covered include hemodynamics, musculoskeletal systems, endocrinology, neuroendocrinology, gastrointestinal/renal, transport phenomena, and pathophysiological conditions. Quantitative cell biology topics surveyed are mathematical models of the cytoskeleton dynamics, intracellular transport, cell locomotion, spatially-distributed models of cell signaling, approaches to whole-cell modeling, and role of modeling in cell-biological research. Models of cellular mechanics will also be addressed. Mathematics of dynamic systems is presented in application to enzyme reactions, bistability in cellular signaling, programmed cell death, and the mechanisms behind the circadian and cell-division rhythms. Biological network theory is presented as it applies to metabolism, protein interactions, regulation of gene expression, and reverse engineering of the biological systems. Theoretical aspects of application of systems modeling to clinical research are also presented on an example of quantitative systems approach to inflammation, sepsis, and trauma. In addition, the course will survey computational methods and models that are broadly useful across the various system types examined. These will include random walk models, master equations, and continuous and discrete models of chemistry within the cell. Finally, the course will include a presentation of general discrete and continuous models broadly useful in cell and systems modeling as well as computational methods for optimization and parameter tuning on such models. Across the entire range of topics, the universality of the systems modeling methodology and its role in biomedical research are emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CMPBIO 2045 - SPECIAL TOPICS IN COMPUTATIONAL BIOLOGY

Minimum Credits: 4

Maximum Credits: 4

This course will focus on advanced methods for modeling and reasoning about the dynamics of biological systems. Emphasis will be placed on emerging techniques that complement those based on differential equations and machine learning. Examples include: rule-based modeling, process algebras, hybrid systems, as well as applications of model checking and type theory. Students will be asked to present and provide written summaries of recent papers, and to complete a course project of their own design.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

CMPBIO 2050 - LABORATORY METHODS FOR COMPUTATIONAL BIOLOGY

Minimum Credits: 2

Maximum Credits: 2

Computational biologists frequently focus on analyzing and modeling large amounts of biological data, often from high-throughput assays or diverse sources. It is therefore critical that students training in computational biology be familiar with the paradigms and methods of experimentation and measurement that lead to the production of these data. This one-semester laboratory course gives students a deeper appreciation of the principles and challenges of biological experimentation. Students learn a range of topics, including experimental design, structural biology, next generation sequencing, genomics, proteomics, bio imaging, and high-content screening. Class sessions are primarily devoted to designing and performing experiments in the lab using the above techniques. Students are required to keep a detailed laboratory notebook of their experiments and summarize their resulting data in written abstracts and oral presentations given in class-hosted lab meetings. With an emphasis on the basics of experimentation and broad views of multiple cutting-edge and high-throughput techniques, this course is appropriate for students who have never taken a traditional undergraduate biology lab course, as well as those who have and are looking for introductory training in more advanced approaches. Touches upon a range of topics, including structural biology, genomics, proteomics, and bio imaging a different laboratory method is covered each week, in the lab of a host faculty member who uses that method. The theory and practical aspects of each method are covered during a lecture session prior to each lab session. Students are required to submit a short lab report each week, summarizing the goals of the experiment, the critical steps and sources of error, and the analysis of the resulting data. With an emphasis on instrumentation and high-throughput data collection, this course is appropriate for students who have never taken a traditional undergraduate biology lab course, as well as those who have.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CMPBIO 2055 - QUANTITATIVE ELEMENTS OF CELL FORM AND MOVEMENT

Minimum Credits: 2

Maximum Credits: 2

This course covers the basic as well as certain selected topics pertaining to the Physico-chemical origins of architecture and motility of biological cells. It is aimed at graduate students pursuing degrees in various fields of biology (and also in mathematics, physics, chemistry, or engineering), who have taken university-level courses in mathematics, physics, and chemistry. This course material draws upon the variety of quantitative disciplines

but maintains a biological perspective. Physical properties and chemical kinetics that determine the structure and function of the cytoskeleton (the assembly of non-covalent polymers at the base of the cellular architecture) will be covered, as will the Physico-chemical mechanisms of motility driven by biological force-generating macromolecules. The didactic material will be presented from the perspective of a practical researcher, and the problem sets will emphasize developing a sense of what makes for a good research strategy.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CMPBIO 2060 - CURRENT TOPICS IN COMPUTATIONAL BIOLOGY

Minimum Credits: 1

Maximum Credits: 1

This course will offer an overview of faculty research in computational biology, a field of tremendous growth and excitement. It will also offer a sampling of current literature in this field, as well as an opportunity for students to develop and practice their presentation skills. The course will meet once a week, and will follow a seminar-style format, with a PowerPoint presentation, followed by a question-and-answer session. To familiarize students with alternative presentation formats, and to allow for more flexibility, the course may also include one or more webinar/teleconference sessions. Throughout the semester, students will take turns serving as introducer, presenter, and moderator of question-and-answer sessions. The topics covered in this course will be in line with the five specialization areas of the joint CMU-Pitt Ph.D. program in computational biology: computational genomics, computational, structural biology, cellular and systems modeling, bio image informatics, and computational neurobiology. The initial meeting will feature an icebreaker exercise and a refresher on professional presentation skills.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

CMPBIO 2065 - SCALABLE MACHINE LEARNING FOR BIG DATA BIOLOGY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

CMPBIO 2070 - COMPUTATIONAL GENOMICS

Minimum Credits: 3

Maximum Credits: 3

Dramatic advances in experimental technology and computational analysis are fundamentally transforming the basic nature and goal of biological research. The emergence of new frontiers in biology, such as evolutionary genomics and systems biology is demanding new methodologies that can confront quantitative issues of substantial computational and mathematical sophistication. In this course we will discuss classical approaches and latest methodological advances in the context of the following biological problems: 1) computational genomics, focusing on gene finding, motifs detection and sequence evolution. 2) Medical and populational genetics, focusing on polymorphism analysis, linkage analysis, pedigree and genetic demography, 3) analysis of high throughput biological data, such as gene expression data, focusing on issues ranging from data acquisition to pattern recognition and classification. 4) Molecular and regulatory evolution, focusing on phylogenetic inference and regulatory network evolution, and 5) systems biology, concerning how to combine sequence, expression and other biological data sources to infer the structure and function of different systems in the cell. From the computational side this course focuses on modern machine learning methodologies for computational problems in molecular biology and genetics, including probabilistic modeling, inference and learning algorithms, pattern recognition, data integration, time series analysis, active learning, etc.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CMPBIO 2075 - MOLECULAR EVOLUTION

Minimum Credits: 3

Maximum Credits: 3

Sequencing technology is continually progressing, and genome sequences from different species and populations continue to become available in

increasing numbers. Such data allows questions about molecular evolution to be addressed in new and exciting ways. This course introduces students to the evolutionary analysis of DNA and amino acid sequences. Lectures on theory will be accompanied by practical instruction in the use of contemporary computational methods and software. Topics include: population genetics of selection and mutation, models of sequence evolution, phylogenetic models, analysis of multiple sequence alignments for rates and patterns of divergence, inference of natural selection, and co-evolution between proteins. Emphasis is placed on quantitative modeling and the biological principles underlying observed patterns of molecular evolution. Interested students should have a basic grasp of molecular biology and calculus.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CMPBIO 2080 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

This course provides the student an opportunity to carry out a specific laboratory project in any area of interest in computational biology.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

CMPBIO 2085 - COMPUTATIONAL BIOLOGY INTERNSHIP

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad SN Basis

CMPBIO 2090 - MS THESIS RESEARCH

Minimum Credits: 1

Maximum Credits: 14

A directed research project which results in a thesis for a master's degree.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

CMPBIO 3090 - PHD DISSERTATION RESEARCH

Minimum Credits: 1

Maximum Credits: 14

After advancement to candidacy for the Ph.D. degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: Computational Biology (PHD)

MSCBIO 2010 - SEMINAR IN COMPUTATIONAL BIOLOGY

Minimum Credits: 1

Maximum Credits: 1

Seminar series of the joint Pitt-CMU Ph.D. program in computational biology. Nationally and internationally recognized researchers in the field of computational biology present scientific findings. Students meet informally with each speaker to discuss key areas of computational biology, including: computational structural biology, computational genomics, cellular and systems modeling, bio image informatics, and computational neurobiology.

Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad SN Basis

MSCBIO 2015 - COMPUTATIONAL IMAGING FOR SPATIAL SYSTEMS BIOLOGY

Minimum Credits: 3

Maximum Credits: 3

The recent explosion of next-generation, high-content, high-throughput spatial imaging technologies for intact tissues measuring protein expressions, DNA and RNA probes for investigating systems biology challenges has attracted the interest of NIH and other international agencies in funding precision medicine efforts, including Human Tumor Atlas Network (HTAN), Immuno-Oncology Translation Network (IOTN), Human BioMolecular Atlas Program (HuBMAP), Human Cell Atlas (HCA) and Human Protein Atlas (HPA). In this course, we will study these spatial imaging technologies in greater depth, from low-resolution, spatially barcoded approaches for spatial transcriptomics to high-resolution in situ approaches for imaging proteins, DNA and RNA (CODEX, MIBI, IMC-CyTOF, Seq-FISH, MERFISH) expressions. We will focus on several key aspects of these technologies requiring evaluation and benchmarking in the context of spatial approaches: validation of reagents; comparison to gold-standard methods; comparison between related techniques; and relation to analyses on dissociated cells. We will discuss the technologies in terms of: tissue preparation and reagent validation, imaging development and optimization, and computational inference to allow for high-resolution systems biology analysis of large tissues sections. We will include experimental hands-on lectures using in-house hyperplexed immunofluorescence imaging apparatus. Prerequisites: No biological background is expected. The assignments will cover the necessary biology. Experience in programming and some software engineering is preferred. Knowledge of probability, statistics, linear algebra and algorithms will be useful. Prior introduction to machine learning and imaging is a bonus. Strong interest in cancer imaging informatics is a plus. The class is open to senior year undergraduates and graduate students.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MSCBIO 2020 - GENE EXPRESSION REGULATION: DATA AND ALGORITHMS

Minimum Credits: 3

Maximum Credits: 3

This course is a graduate level course designed primarily for those students who want to learn about the computational methods and tools that are used in the analysis of promoter regions and transcription regulation data. Students with a biological background and knowledge of introductory level statistics can participate as well as students of quantitative background. The course will primarily focus on the methods that are used for the identification of transcription factor binding sites in the promoter regions of the genes. Both sequence-based and structure-based methods will be discussed. Various technologies for data collection will also be presented, including DNA arrays, SELEX, chip, and their derivatives.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSCBIO 2025 - INTRODUCTION TO BIOINFORMATICS PROGRAMMING IN PYTHON

Minimum Credits: 3

Maximum Credits: 3

This course will introduce students to a selection of popular python packages used in bioinformatics and computational and systems biology. Students will be graded on programming assignments. Each assignment will explore a different sub-discipline of computational biology and introduce students to a new python package. Optional recitations will be available for students with programming and will assist in the development of basic programming skills. The course is designed for first-year graduate students in the corresponding fields of study. There will be a 1-hour lecture a week with time allocated for two 1-hour recitations. Both the lecture and recitations need to be scheduled in a computer lab (such as our classroom).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MSCBIO 2030 - INTRODUCTION TO COMPUTATIONAL STRUCTURAL BIOLOGY

Minimum Credits: 4

Maximum Credits: 4

This course will introduce students to computational structural biology, primarily relying on physical and chemical principles, as well as associated computational approaches. The course is a core class for both (a) the joint program in computational biology and (b) the molecular biophysics program. The course will cover biomolecular structure, statistical mechanical phenomenon in biophysics, simulation of biomolecular behavior, and key applications of computations in the field of structural biology. Specific topics: probability theory, statistical mechanics and thermodynamics, simulation methods, electrostatic phenomena, biochemical kinetics, binding, coarse-grained modeling, computations for structure determination, drug design.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSCBIO 2035 - COMPUTATIONAL STRUCTURAL BIOLOGY 2

Minimum Credits: 3

Maximum Credits: 3

The aim of computational structural biology is to understand the function of biological macromolecules such as proteins and nucleic acids in terms of fundamental physical forces. An important goal, for example, is to predict the 3D structure of proteins based on sequence data, to predict the structural organization of protein-protein and protein-DNA clusters, and to study the role of dynamics in molecular function (e.g., In enzymatic reactions). These studies are important in rational drug design. A great deal of progress has been made in the last 30 years, where sophisticated models and techniques have been developed consisting of quantum and statistical mechanics, simulation theory, electrostatics, etc. However, the challenges are still enormous. The objective of this course is to provide the student with a deeper understanding of the above disciplines as related to biological systems, which will enable him/her to participate in a state-of-the-art research. The course will cover some topics in irreversible thermodynamics (e.g., The fluctuation-dissipation theorem, Onsager relations), complementary material in statistical mechanics (phase transitions), simulation theory as applied to polymer chains and proteins (Rosenblatt, dimerization, scanning, multicanonical and its derivatives), free energy and potential of mean force (e.g., Jarzynski), continuum electrostatics (laplace, poisson, and poisson-boltzmann equations, born formula, generalized born treatments), kinetics, and quantum mechanics. Most of the material will be presented in lectures by the course instructor, with the balance being presented by expert guest lecturers.

Academic Career: Graduate

Course Component: Lecture

Grade Component: LG/SNC Elective Basis

MSCBIO 2040 - CELLULAR AND SYSTEMS MODELING

Minimum Credits: 3

Maximum Credits: 3

A graduate-level introduction into mathematical modeling and analysis of biological systems on the cellular and other levels. This condensed and broad course conveys the unity of the modeling methodology in biology. It spans a range of perspectives derived from the different disciplines from which this new area of research originated: biology, mathematics, engineering, and computer science. The systems covered include quantitative physiology, quantitative cell biology, biological networks, dynamic systems, cell mechanics, and systems modeling of critical illness. The quantitative physiology topics to be covered include hemodynamics, musculoskeletal systems, endocrinology, neuroendocrinology, gastrointestinal/renal, transport phenomena, and pathophysiological conditions. Quantitative cell biology topics surveyed are mathematical models of the cytoskeleton dynamics, intracellular transport, cell locomotion, spatially-distributed models of cell signaling, approaches to whole-cell modeling, and role of modeling in cell-biological research. Models of cellular mechanics will also be addressed. Mathematics of dynamic systems is presented in application to enzyme reactions, bistability in cellular signaling, programmed cell death, and the mechanisms behind the circadian and cell-division rhythms. Biological network theory is presented as it applies to metabolism, protein interactions, regulation of gene expression, and reverse engineering of the biological systems. Theoretical aspects of application of systems modeling to clinical research are also presented on an example of quantitative systems approach to inflammation, sepsis, and trauma. In addition, the course will survey computational methods and models that are broadly useful across the various system types examined. These will include random walk models, master equations, and continuous and discrete models of chemistry within the cell. Finally, the course will include a presentation of general discrete and continuous models broadly useful in cell and systems modeling as well as computational methods for optimization and parameter tuning on such models. Across the entire range of topics, the universality of the systems modeling methodology and its role in biomedical research are emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSCBIO 2045 - SPECIAL TOPICS IN COMPUTATIONAL BIOLOGY

Minimum Credits: 4

Maximum Credits: 4

This course will focus on advanced methods for modeling and reasoning about the dynamics of biological systems. Emphasis will be placed on emerging techniques that complement those based on differential equations and machine learning. Examples include: rule-based modeling, process algebras, hybrid systems, as well as applications of model checking and type theory. Students will be asked to present and provide written summaries of recent papers, and to complete a course project of their own design.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

MSCBIO 2050 - LABORATORY METHODS FOR COMPUTATIONAL BIOLOGY

Minimum Credits: 2

Maximum Credits: 2

Computational biologists frequently focus on analyzing and modeling large amounts of biological data, often from high-throughput assays or diverse sources. It is therefore critical that students training in computational biology be familiar with the paradigms and methods of experimentation and measurement that lead to the production of these data. This one-semester laboratory course gives students a deeper appreciation of the principles and challenges of biological experimentation. Students learn a range of topics, including experimental design, structural biology, next generation sequencing, genomics, proteomics, bio imaging, and high-content screening. Class sessions are primarily devoted to designing and performing experiments in the lab using the above techniques. Students are required to keep a detailed laboratory notebook of their experiments and summarize their resulting data in written abstracts and oral presentations given in class-hosted lab meetings. With an emphasis on the basics of experimentation and broad views of multiple cutting-edge and high-throughput techniques, this course is appropriate for students who have never taken a traditional undergraduate biology lab course, as well as those who have and are looking for introductory training in more advanced approaches. Touches upon a range of topics, including structural biology, genomics, proteomics, and bio imaging a different laboratory method is covered each week, in the lab of a host faculty member who uses that method. The theory and practical aspects of each method are covered during a lecture session prior to each lab session. Students are required to submit a short lab report each week, summarizing the goals of the experiment, the critical steps and sources of error, and the analysis of the resulting data. With an emphasis on instrumentation and high-throughput data collection, this course is appropriate for students who have never taken a traditional undergraduate biology lab course, as well as those who have.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSCBIO 2055 - QUANTITATIVE ELEMENTS OF CELL FORM AND MOVEMENT

Minimum Credits: 2

Maximum Credits: 2

This course covers the basic as well as certain selected topics pertaining to the physicochemical origins of architecture and motility of biological cells. It is aimed at graduate students pursuing degrees in various fields of biology (and also in mathematics, physics, chemistry, or engineering), who have taken university-level courses in mathematics, physics, and chemistry. This course material draws upon the variety of quantitative disciplines but maintains a biological perspective. Physical properties and chemical kinetics that determine the structure and function of the cytoskeleton (the assembly of non-covalent polymers at the base of the cellular architecture) will be covered, as will the physicochemical mechanisms of motility driven by biological force-generating macromolecules. The final grade will be based on homework problems and on a closed-book exam. The didactic material will be presented from the perspective of a practical researcher, and the problem sets will emphasize developing a sense of what makes for a good research strategy.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSCBIO 2060 - CURRENT TOPICS IN COMPUTATIONAL BIOLOGY

Minimum Credits: 1

Maximum Credits: 1

This course will offer an overview of faculty research in computational biology, a field of tremendous growth and excitement. It will also offer a sampling of current literature in this field, as well as an opportunity for students to develop and practice their presentation skills. The course will meet once a week, and will follow a seminar-style format, with a PowerPoint presentation, followed by a question-and-answer session. To familiarize students with alternative presentation formats, and to allow for more flexibility, the course may also include one or more webinar/teleconference sessions. Throughout the semester, students will take turns serving as introducer, presenter, and moderator of question-and-answer sessions. The

topics covered in this course will be in line with the five specialization areas of the joint CMU-Pitt Ph.D. program in computational biology: computational genomics, computational, structural biology, cellular and systems modeling, bio image informatics, and computational neurobiology. The initial meeting will feature an icebreaker exercise and a refresher on professional presentation skills.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

MSCBIO 2065 - SCALABLE MACHINE LEARNING FOR BIG DATA BIOLOGY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MSCBIO 2070 - COMPUTATIONAL GENOMICS

Minimum Credits: 3

Maximum Credits: 3

Dramatic advances in experimental technology and computational analysis are fundamentally transforming the basic nature and goal of biological research. The emergence of new frontiers in biology, such as evolutionary genomics and systems biology is demanding new methodologies that can confront quantitative issues of substantial computational and mathematical sophistication. In this course we will discuss classical approaches and latest methodological advances in the context of the following biological problems: 1) computational genomics, focusing on gene finding, motifs detection and sequence evolution. 2) Medical and populational genetics, focusing on polymorphism analysis, linkage analysis, pedigree and genetic demography, 3) analysis of high throughput biological data, such as gene expression data, focusing on issues ranging from data acquisition to pattern recognition and classification. 4) Molecular and regulatory evolution, focusing on phylogenetic inference and regulatory network evolution, and 5) systems biology, concerning how to combine sequence, expression and other biological data sources to infer the structure and function of different systems in the cell. From the computational side this course focuses on modern machine learning methodologies for computational problems in molecular biology and genetics, including probabilistic modeling, inference and learning algorithms, pattern recognition, data integration, time series analysis, active learning, etc.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSCBIO 2075 - MOLECULAR EVOLUTION

Minimum Credits: 3

Maximum Credits: 3

Sequencing technology is continually progressing, and genome sequences from different species and populations continue to become available in increasing numbers. Such data allows questions about molecular evolution to be addressed in new and exciting ways. This course introduces students to the evolutionary analysis of DNA and amino acid sequences. Lectures on theory will be accompanied by practical instruction in the use of contemporary computational methods and software. Topics include: population genetics of selection and mutation, models of sequence evolution, phylogenetic models, analysis of multiple sequence alignments for rates and patterns of divergence, inference of natural selection, and co-evolution between proteins. Emphasis is placed on quantitative modeling and the biological principles underlying observed patterns of molecular evolution. Interested students should have a basic grasp of molecular biology and calculus.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSCBIO 2080 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

This course provides the student an opportunity to carry out a specific laboratory project in any area of interest in computational biology.

Academic Career: Graduate

Course Component: Directed Studies
Grade Component: Grad SN Basis

MSCBIO 2085 - COMPUTATIONAL BIOLOGY INTERNSHIP

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad SN Basis

MSCBIO 2090 - MS THESIS RESEARCH

Minimum Credits: 1
Maximum Credits: 14
A directed research project which results in a thesis for a master's degree.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

MSCBIO 3090 - PHD DISSERTATION RESEARCH

Minimum Credits: 1
Maximum Credits: 14
After advancement to candidacy for the Ph.D. degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

Computer Engineering - Arts and Sciences

COEA 2000 - MS THESIS RESEARCH

Minimum Credits: 1
Maximum Credits: 6
Master's thesis research.
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Computer Engineering (MS or PHD)

COEA 2900 - GRADUATE INTERNSHIP

Minimum Credits: 1
Maximum Credits: 3
A professional internship may be taken at any time during the course of graduate study. Ph.D. students may take this course up to two times for credit, MS students may take it at most once.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad SN Basis
Course Requirements: PLAN: Computer Engineering (MS or PHD)

COEA 2902 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

Directed study.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

Course Requirements: PLAN: Computer Engineering (MS or PHD)

COEA 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 9

This course involves study which is approved by the faculty adviser but carried out independently by student.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

Course Requirements: PLAN: Computer Engineering (MS or PHD)

COEA 3000 - RESEARCH AND DISSERTATION: PHD

Minimum Credits: 1

Maximum Credits: 9

Research and dissertation Ph.D.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: Computer Engineering (MS or PHD)

COEA 3893 - GRADUATE SEMINAR

Minimum Credits: 1

Maximum Credits: 1

A weekly series of presentations by engineers and scientists, visiting researchers, faculty, and graduate students.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

Course Requirements: PLAN: Computer Engineering (MS or PHD)

Computer Engineering - Engineering

COEE 2000 - MS THESIS RESEARCH

Minimum Credits: 1

Maximum Credits: 6

Master's thesis research.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: Computer Engineering (MCO or PHD)

COEE 2120 - HARDWARE DESIGN METHODOLOGIES 1

Minimum Credits: 3

Maximum Credits: 3

This course teaches hardware design processes through use of industry tools. Students use graphical tools to design, simulate and synthesize designs

using hardware description languages (e.g. VHDL/Verilog). High-level design and problem decomposition are also taught. Optimization, simulation and synthesis of combinatorial functions, data paths, and finite state machines are covered in depth. Architecture encapsulation and reuse through 'Intellectual Property' (IP) modules is described and covered in detail. Students will work individually and as a part of a team to create, simulate, model, document, and test IP models.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

COEE 2160 - EMBEDDED COMPUTER SYSTEM DESIGN

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

COEE 2192 - INTRODUCTION TO VLSI DESIGN

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

COEE 2195 - SPECIAL TOPICS: COMPUTERS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

COEE 2900 - GRADUATE INTERNSHIP

Minimum Credits: 1

Maximum Credits: 3

A professional internship may be taken at any time during the course of graduate study. Ph.D. students may take this course up to two times for credit, MS students may take it at most once.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad SN Basis

Course Requirements: PLAN: Computer Engineering (MCO or PHD)

COEE 2902 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

Directed study.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Computer Engineering (MCO or PHD)

COEE 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 9

This course involves study which is approved by the faculty adviser but carried out independently by student.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

Course Requirements: PLAN: Computer Engineering (MCO or PHD)

COEE 3000 - RESEARCH AND DISSERTATION: PHD

Minimum Credits: 1

Maximum Credits: 9

Research and dissertation Ph.D.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: Computer Engineering (MCO or PHD)

COEE 3893 - GRADUATE SEMINAR

Minimum Credits: 1

Maximum Credits: 1

A weekly series of presentations by engineers and scientists, visiting researchers, faculty, and graduate students.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

Course Requirements: PLAN: Computer Engineering (MCO or PHD)

Computer Science

CS 0401 - INTERMEDIATE PROGRAMMING USING JAVA

Minimum Credits: 4

Maximum Credits: 4

This course is a rigorous introduction to the fundamental concepts and techniques of computer programming using the java programming language.

This is a first course for students who intend to major in computer science.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: LG/SNC Elective Basis

CS 0441 - DISCRETE STRUCTURES FOR CS

Minimum Credits: 3

Maximum Credits: 3

The purpose of this course is to understand and use (abstract) discrete structures that are backbones of computer science. In particular, this class is meant to introduce logic, proofs, sets, relations, functions, counting, and probability, with an emphasis on applications in computer science.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: LG/SNC Elective Basis

Course Requirements: CREQ: MATH 0220 or 0230 or 0235

CS 0445 - DATA STRUCTURES

Minimum Credits: 3

Maximum Credits: 3

This course emphasizes the study of the basic data structures of computer science (stacks, queues, trees, lists) and their implementations using the java language included in this study are programming techniques which use recursion, reference variables, and dynamic memory allocation. Students in this course are also introduced to various searching and sorting methods and also expected to develop an intuitive understanding of the complexity of these algorithms.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: LG/SNC Elective Basis

Course Requirements: PREQ: CS 0401 (MIN GRADE 'C')

CS 0447 - COMPUTER ORGANIZATION AND ASSEMBLY LANGUAGE

Minimum Credits: 3

Maximum Credits: 3

The purpose of this course is to study the components of computing systems common to most computer architectures. In particular, this class is meant to introduce data representation, types of processors, memory types and hierarchy, and device drivers. The students will learn MIPS assembly language, the design of arithmetic and logic units, and basic designs for RISC processors.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: LG/SNC Elective Basis

Course Requirements: CREQ: CS 0445

CS 1510 - ALGORITHM DESIGN

Minimum Credits: 3

Maximum Credits: 3

This course will cover methods and strategies that are useful for the design of nonnumeric algorithms. Students are expected to design their own algorithms.

Academic Career: UGRD

Course Component: Lecture

Grade Component: LG/SNC

Course Requirements: PREQ: [(CS 1501 or COE 1501) and CS 1502] or (CS 0458 and CS 1710); MIN GRADE 'C' FOR ALL COURSES LISTED

CS 1511 - INTRODUCTION TO THEORY OF COMPUTATION

Minimum Credits: 3

Maximum Credits: 3

Understanding the theory of computation provides deeper insights into various topics in computer science. This is an introductory level theory course. The aim of this course is to study the power (or lack of it) of various models of computation. Topics to be covered include: automata, formal languages, computability, and computational complexity.

Academic Career: UGRD

Course Component: Lecture

Grade Component: LG/SNC

Course Requirements: PREQ: CS 1502 or 1710; (MIN GRADE 'C' FOR ALL COURSES LISTED)

CS 1520 - PROGRAMMING LANGUAGE FOR WEB APPLICATIONS

Minimum Credits: 3

Maximum Credits: 3

Various programming paradigms will be studied using java and scripting languages. The use of java in programming web based applications, network applications, and the use of the extensive java libraries will be studied. The programming paradigm of building software by gluing components will be explored through the use of scripting languages such as perl and JavaScript. Applications include developing guis and internet programming.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: LG/SNC Elective Basis

Course Requirements: PREQ: CS 0445 or COE 0445; (MIN GRADE 'C'); PROG: Dietrich Sch Arts and Sciences or Sch Computing and Information

CS 1550 - INTRODUCTION TO OPERATING SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

An introduction to basic concepts of operating systems, common to most computer systems, which interfaces the machine with upper-level programs. This course will introduce processes as processing unit, process management, concurrency, communication, memory management and protection, and file systems.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: LG/SNC Elective Basis

Course Requirements: PREQ: (CS 0447 or COE 0447) and (CS 0449 or COE 0449) or (0456 and 1750); MIN GRADE 'C' FOR ALL COURSES LISTED; PROG: Dietrich Sch Arts and Sciences or Sch Computing and Information

CS 1621 - STRUCTURE PROGRAMMING LANGUAGES

Minimum Credits: 3

Maximum Credits: 3

An analytical examination of modern high-level programming language structures; including design specification and implementation. Advanced forms of data types, expressions, and control primitives. Relationship of storage management techniques and language design.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: LG/SNC Elective Basis

Course Requirements: PREQ: CS (0441 and 0445) or (0406 and 0455); (MIN GRADE 'C' FOR ALL COURSES LISTED)

CS 1651 - ADVANCED SYSTEMS SOFTWARE

Minimum Credits: 3

Maximum Credits: 3

To discuss in depth some advanced features of fundamental importance in the design of operating systems. The subjects discussed include interprocess communication, real-time scheduling, advanced file systems, security and protection mechanisms. The objective of the course is to provide an understanding of these advanced issues, as well as to bring awareness of the known solutions to these problems and to the limitations of these solutions.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: LG/SNC Elective Basis

Course Requirements: PREQ: CS 1550 or 1312 or 1792; (MIN GRADE 'C' FOR ALL COURSES LISTED)

CS 2000 - MS THESIS RESEARCH

Minimum Credits: 1

Maximum Credits: 6

Master's thesis research.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

CS 2001 - RESEARCH TOPICS/COMPUTER SCIENCE

Minimum Credits: 3

Maximum Credits: 3

This course introduces the students to the research being conducted in the computer science department. Active, state-of-the-art research topics will be covered.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

CS 2002 - RESEARCH EXPERIENCE/COMPUTER SCI

Minimum Credits: 3

Maximum Credits: 3

In this course, each student will perform exploratory research topics covered in CS 2001. The research will be supervised and directed by faculty members working in the area of the topic chosen by the student.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: CS 2001

CS 2003 - COMPUTER SCIENCE COLLOQUIUM

Minimum Credits: 1

Maximum Credits: 1

The computer science colloquium is offered as a one unit graduate class, with a satisfactory/no credit (S/NC) grading option. The aim of this weekly meeting is to discuss the most recent advances in computer science.

Academic Career: Graduate

Course Component: Colloquium

Grade Component: Grad SN Basis

Course Requirements: PREQ: CS 2001 and 2002; PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering (COEAS-PHD; COEAS-MS)

CS 2012 - ALGORITHM DESIGN

Minimum Credits: 3

Maximum Credits: 3

This course will cover methods and strategies that are useful for the design of nonnumeric algorithms. Students are expected to design their own algorithms.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering (COEAS-PHD; COEAS-MS; COEENG-PHD; COEENG-MCO)

CS 2045 - INTRODUCTION TO HIGH PERFORMANCE COMPUTING SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

This course is an introduction to the architecture of and software techniques for parallel and high performance computing systems. The content includes fundamental aspects of vector processing, shared-memory and distributed-memory systems. Students will be expected to complete a number of projects demonstrating specific applications in parallel processing paradigms.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CS 2053 - APPLIED CRYPTOGRAPHY AND NETWORK SECURITY

Minimum Credits: 3

Maximum Credits: 3

This course will provide the necessary conceptual background and hands-on experience to understand the most common cryptographic algorithms and protocols and how to use them to secure computers networks and distributed applications. Topics include: cryptographic algorithms for data confidentiality, authentication, and integrity, user authentication methods (secure tokens and biometrics), internet security protocols, security in local

area networks, firewalls, and intrusion detection systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering (COEAS-PHD; COEAS-MS; COEENG-PHD; COEENG-MCO)

CS 2055 - DATABASE MANAGEMENT SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

The objective of this course is to provide an in-depth knowledge of database systems design. Thus, the emphasis is on how to model one's own data and how to use available database management systems effectively. Towards this end, the relational and the object-relational models are discussed in great detail and object-oriented and other data models are also presented. Commercial database management systems are examined and students get practical experience through the use of such systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering (COEAS-PHD; COEAS-MS; COEENG-PHD; COEENG-MCO)

CS 2056 - INTRODUCTION TO DATA SCIENCE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Computer Science or Computer Engineering

CS 2074 - INTRODUCTION TO COMPUTER VISION

Minimum Credits: 3

Maximum Credits: 3

In this class, students will learn the basics of modern computer vision. The course will cover topics such as image filtering, edge detection, feature extraction, description and matching, grouping and clustering, object detection, activity recognition, and recognition with a human in the loop.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering (COEAS-PHD; COEAS-MS; COEENG-PHD; COEENG-MCO)

CS 2110 - THEORY OF COMPUTATION

Minimum Credits: 3

Maximum Credits: 3

This course deals with computability theory, automata theory and formal languages. Various models of computation will be examined, their relations to each other and their properties will be studied. Topics include models for computable functions and church's thesis, models for recognizers and their relation to formal grammars, algorithmically solvable and unsolvable problems, and the complexity of computations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering (COEAS-PHD; COEAS-MS; COEENG-PHD; COEENG-MCO)

CS 2150 - DESIGN & ANALYSIS OF ALGORITHMS

Minimum Credits: 3

Maximum Credits: 3

This course deals with the analysis of algorithms and the relevance of such analysis to the design of efficient algorithms. The derivation of results that are primarily of theoretical significance shares importance with the practical task of designing efficient algorithms. Topics covered: searching and sorting, graph algorithms, arithmetic, np-completeness, and lower bound techniques.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering (COEAS-PHD; COEAS-MS; COEENG-PHD; COEENG-MCO)

CS 2210 - COMPILER DESIGN

Minimum Credits: 3

Maximum Credits: 3

The design and implementation of current high level languages. Emphasis is placed on the structure of compilers. Lexical, syntax and semantic analysis as well as target code generation and register allocation. Storage management techniques for recursive and retentive control structures. Formal specification techniques.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering (COEAS-PHD; COEAS-MS; COEENG-PHD; COEENG-MCO)

CS 2310 - SOFTWARE ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

This course will examine the software engineering process in general, the considerations for large software projects in particular, and then will focus on the conversion of software specifications into production code. Topics will include modern design methods, safety-critical software, verification and validation, testing theory and methods, reengineering of legacy software.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering (COEAS-PHD; COEAS-MS; COEENG-PHD; COEENG-MCO)

CS 2410 - COMPUTER ARCHITECTURE

Minimum Credits: 3

Maximum Credits: 3

A study of the hardware structure of computer systems and subsystems. Topics include: processor architecture, parallelism and pipelining, cache and main memory organization, i/o controllers and i/o processors, and interconnection structures.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering (COEAS-PHD; COEAS-MS; COEENG-PHD; COEENG-MCO)

CS 2510 - COMPUTER OPERATING SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

An in-depth study of the control abstractions in modern operating systems and the issues involved in efficient implementation of those abstractions. Topics will include concurrency and its control, memory management, resource management, and structure of distributed and parallel operating systems. These topics will be developed through the lectures, assigned readings from the literature, and an examination of actual operating systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering (COEAS-PHD; COEAS-MS; COEENG-PHD; COEENG-MCO)

CS 2520 - WIDE AREA NETWORKS

Minimum Credits: 3

Maximum Credits: 3

The course provides an understanding of the basic principles of broadband networks. It will introduce protocols suitable for broadband networks, with emphasis on atm. Other technologies, such as frame relay and smds, will be discussed. The course will also address important design issues for high speed networks including characterizations of (a) network traffic and its implications on network design, and (b) application performance objectives, traffic policing, and congestion control algorithms that can meet those diverse objectives.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering (COEAS-PHD; COEAS-MS; COEENG-PHD; COEENG-MCO)

CS 2530 - COMPUTER AND NETWORK SECURITY

Minimum Credits: 3

Maximum Credits: 3

The goal of the proposed course is to provide our graduate students the necessary background and hands on experience to do well in systems research or advanced development with an emphasis on security. The instructor will lecture on cryptographic algorithms for data confidentiality, authentication, and integrity, security protocols for the internet and local area networks, firewalls, intrusion detection systems, defense against denial of service attacks, user authentication methods, cryptographic file systems, secure email stenography and usable security.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CS 2550 - PRINCIPLES OF DATABASE SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

The main objective of this course is to provide an in-depth knowledge of database management systems design. Topics covered at length are concurrency control including concurrency on structured data, recovery and query optimization. Some important aspects of distributed databases are discussed, including distributed concurrency control and fault tolerance.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering (COEAS-PHD; COEAS-MS; COEENG-PHD; COEENG-MCO)

CS 2610 - INTERFACE DESIGN & EVALUATION

Minimum Credits: 3

Maximum Credits: 3

This course covers methodology for the modeling, specification, design, measurement, and evaluation of Human-Computer Interfaces (HCI). Included topics are: interaction models and modes, conceptual/logical/physical interface structures, objectively measurable interface patterns, and criteria for interface evaluation. HCI relationships to software engineering and artificial intelligence are highlighted.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering (COEAS-PHD; COEAS-MS; COEENG-PHD; COEENG-MCO)

CS 2620 - INTERDISCIPLINARY MODELING AND VISUALIZATION

Minimum Credits: 3

Maximum Credits: 3

This course discusses computer graphics, modeling and visualization techniques used to solve scientific problems. Focus falls on identifying scientific problems, proposing solutions involving graphical modeling and visualization, and designing, implementing, and evaluating the solutions. Examples include interactive software systems, quantitative analysis tools, or new applications of existing visualizations methods.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering (COEAS-PHD; COEAS-MS; COEENG-PHD; COEENG-MCO)

CS 2710 - FOUNDATIONS OF ARTIFICIAL INTELLIGENCE

Minimum Credits: 3

Maximum Credits: 3

This course covers the foundational techniques in artificial intelligence, including: problem definition and analysis, heuristic search, adversarial search, knowledge representation, planning and constraint satisfaction, and methods for reasoning under uncertainty. Attention will be given to the roles of these techniques in the design of intelligent agents.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering (COEAS-PHD; COEAS-MS; COEENG-PHD; COEENG-MCO)

CS 2731 - INTRODUCTION TO NATURAL LANGUAGE PROCESSING

Minimum Credits: 3

Maximum Credits: 3

This course provides an introduction to the field of Natural Language Processing (NLP) - the creation of computer programs that can understand, generate, and learn natural language. Natural language understanding will be used as a vehicle to introduce the three major subfields of NLP: syntax, semantics, and pragmatics. The course will introduce both knowledge-based and statistical methods for NLP, and will illustrate the use of such methods in a variety of application areas.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering (COEAS-PHD; COEAS-MS; COEENG-PHD; COEENG-MCO)

CS 2750 - MACHINE LEARNING

Minimum Credits: 3

Maximum Credits: 3

This course will give an overview of many techniques and algorithms in machine learning, beginning with topics such as linear and logistic regression, multi-layer neural networks and ending up with more recent topics such as boosting and support vector machines. The basic ideas and intuition behind modern machine learning methods, as well as, a more formal understanding of how and why they work will be covered. Students will have an opportunity to experiment with various machine learning techniques or apply them to a selected problem or domain in the context of a term project.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Computer Science (CS-PHD; CS-MS; CSMSBS-MS) or Computer Engineering (COEAS-PHD; COEAS-MS; COEENG-PHD; COEENG-MCO)

CS 2770 - COMPUTER VISION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Computer Science or Computer Engineering

CS 2900 - GRADUATE INTERNSHIP

Minimum Credits: 1

Maximum Credits: 1

A professional internship may be taken at any time during the course of graduate study. Ph.D. students may take this course up to two times for credit, MS students may take it at most once.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad SN Basis

CS 2905 - COMPUTER SCIENCE COOPERATIVE PROGRAM

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad HSU Basis

CS 2910 - MS PROJECT

Minimum Credits: 1

Maximum Credits: 3

A project under the supervision of a faculty member or a group of faculty members.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

CS 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 9

This course involves study which is approved by the faculty adviser but carried out independently by student.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

CS 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1

Maximum Credits: 9

Any adjunct or full member of the graduate faculty of the department may direct doctoral dissertations.

Academic Career: Graduate

Course Component: Thesis Research
Grade Component: Grad SN Basis

CS 3150 - ADV TOPCS DSGN & ANALYS ALGORTHM

Minimum Credits: 3

Maximum Credits: 3

This course covers recent results in the design and analysis of algorithms. The contents change from term to term.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: CS 2150

CS 3210 - ADV TOPICS PROGRAMMING LANGUAGES

Minimum Credits: 3

Maximum Credits: 3

Advanced program representations & program analysis techniques for compilers, optimizers, software tools & parallel systems. Analysis techniques include advanced register allocation algorithms, data flow frameworks & techniques, optimizing algorithms & slicing techniques. Program representations include various types of dependence graphs & static single assignment. Analyses & code improving transformations for various types of parallel architectures including VLIW, superscalar, shared memory & distributed memory machines. Current research topics in prog languages.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: CS 2210

CS 3220 - COMPILING TECHNQS/PARALLEL SYMS

Minimum Credits: 3

Maximum Credits: 3

This course will study techniques used in the design of parallelizing compilers. Techniques for computing dependencies and program representations suitable for parallelizing software will be presented. Topics will include detection of fine and coarse parallelism, program transformations and scheduling techniques to exploit parallelism, on shared and distributed memory architectures, and techniques for debugging parallel software.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: CS 2210

CS 3410 - ADV TOPICS COMPUTER ARCHITECTURE

Minimum Credits: 3

Maximum Credits: 3

This course will survey current topics in computer architecture.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: CS 2410

CS 3510 - ADV TOPICS IN OPERATING SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

An in-depth study of specific topics of modern operative systems, the theory behind them, and their implementation. Topics may include advanced concepts in distributed systems, multimedia systems, file systems, resource management, distributed shared memory, among others.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: CS 2510

CS 3521 - ADV TOPCS SENSING/UBIQUITOUS TEC

Minimum Credits: 3

Maximum Credits: 3

This course will focus on the fundamental issues related to designing and analyzing sensor networks and applications. Topics include but are not limited to: driving applications for sensor nets; wireless networking issues; directed diffusion, aggregation, and data dissemination; power aware routing computing and communication; hardware and software platform and tools.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: CS 2520 or TELCOM 2321

CS 3525 - ADVANCED TOPICS IN SUCURITY AND PRIVACY

Minimum Credits: 3

Maximum Credits: 3

This course covers current research topics in computer security and privacy. The topics covered will change from term to term.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

CS 3530 - ADV TOPCS DISTBD & REAL-TIME SYS

Minimum Credits: 3

Maximum Credits: 3

This course will introduce the students to the foundations of real-time systems. The emphasis is on understanding predictability and resource management, at the level of the processor, network, memory, disks, i/o devices, etc. Fault tolerance is another main emphasis of the course, since it is a requirement for real-time behavior. Specific real-time fault-tolerant schemes will be discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CS 3550 - ADV TOPICS IN MANAGEMENT OF DATA

Minimum Credits: 3

Maximum Credits: 3

The course is devoted to a reevaluation of traditional database techniques and the examination of emerging approaches for the reliable and efficient data management in large distributed systems. Examples of such systems include multi databases, mobile and multimedia databases, and advanced OS and AI. Topics include object management, workflows and extended transactions, semantics-based concurrency control and recovery, active and real-time database techniques. The concepts will be examined within the context of a state-of-the-art system.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CS 3551 - ADV TOPICS IN DISTBD INFOR SYS

Minimum Credits: 3

Maximum Credits: 3

This course focuses on emerging technologies for large scale, distributed information systems. Topics to be examined include data and information modeling, heterogeneous data integration, data distribution, caching and replication, web databases, distributed query processing and searching, multimodal access, quality of data, content networks, and pervasive data management.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: CS 2510 and 2550

CS 3570 - ADVANCED TOPICS IN USER INTERFACE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

CS 3580 - SEM: ADV TOPC PARALLEL COMPUTING

Minimum Credits: 3

Maximum Credits: 3

Different topics related to parallel and systolic computations will be covered at various levels of details. Example of such topics are: architectures of parallel processors and VLSI computational networks, languages and programming environments for parallel systems, the design and analysis of parallel and systolic algorithms, reconfigurable and data driven processor arrays, complexity measures of VLSI computations, and the application of parallel processors to supercomputing.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

CS 3650 - VISUAL LANGUAGES AND PROGRAMMING

Minimum Credits: 3

Maximum Credits: 3

This course covers the fundamentals of visual language theory, iconic and symbolic representations, parsing techniques, semantics and pragmatics of visual languages, visual programming systems, visual querying systems, visual information systems and knowledge-based visualization.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

CS 3710 - ADV TOPICS ARTIFICIAL INTELLIGENCE

Minimum Credits: 3

Maximum Credits: 3

This course will survey current topics in artificial intelligence.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: CS 2710

CS 3720 - ADVANCED TOPICS IN INTERNET OF THINGS

Minimum Credits: 3

Maximum Credits: 3

A practical course in expert systems involving discussions of fundamentals of building expert systems, discussion of open problems, and designing and building a prototype expert system.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

CS 3730 - ADV TOPICS NATURAL LANGUAGE PROCESSING

Minimum Credits: 3

Maximum Credits: 3

Natural language processing (NLP) is primarily concerned with creating computer programs that interact with human languages. The objective of this course is to continue the studies of natural language processing (NLP), to explore selected topics among syntax, semantics, and pragmatics more deeply, and to discuss recent advances in (NLP).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: CS 2731

CS 3750 - ADV TOPICS IN MACHINE LEARNING

Minimum Credits: 3

Maximum Credits: 3

This course will survey advanced topics in machine learning, for example, inductive learning, reinforcement learning, and neural network learning.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: CS 2750

CS 3790 - PATTERN RECOGNITION

Minimum Credits: 3

Maximum Credits: 3

Emphasis on machine pattern analysis and recognition; decision-theoretic and discriminant approach; parameter estimation and supervised learning; non-parametric methods; unsupervised learning; clustering; image processing; scene analysis, heuristic and syntactic approaches.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

CS 3900 - PHD DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

The course may involve a project under the supervision of a faculty member.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad HSU Basis

Critical Care Medicine

CCM 5430 - CRITICAL CARE MEDICINE

Minimum Credits: 0

Maximum Credits: 0

The goal of this elective is to provide a multi-disciplinary experience in care of the critically ill. Rounds conducted each morning result in a plan of treatment for each day. The medical student will participate in all aspects of care of the patients in ICU. Emphasis is placed on bedside titration of care. Recognition and appropriate treatment of respiratory failure, arrhythmias, and hyperalimantation are emphasized. The student participates in cardiopulmonary resuscitations. Students participate in night call.

Academic Career: Medical School

Course Component: Clinical

Grade Component: Grad LG/SU5

Course Attributes: School of Medicine Year 4

CCM 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0
Maximum Credits: 0
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

CCM 5840 - CRITICAL CARE MEDICINE RESEARCH

Minimum Credits: 0
Maximum Credits: 0
These electives provide opportunities to learn basic research methodology, including approach to experimental design, protocol development, data analysis and evaluation of results. Student participates in ongoing research in the lab and on patients. Opportunities for research in resuscitation high frequency jet ventilation, patient monitoring, hemorheology, brain pathophysiology, and pharmacology of anesthesia-related drugs are available. Many other topics are also possible.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

CCM 5899 - INDEPENDENT STUDY IN CRITICAL CARE MEDICINE

Minimum Credits: 0
Maximum Credits: 0
The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.
Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U

CCM 5900 - EXTRAMURAL CRITICAL CARE MEDICINE

Minimum Credits: 0
Maximum Credits: 0
A clinical experience in critical care medicine may be arranged at an institution other than the University of Pittsburgh school of medicine. Arrangements must be made in accordance with the process set out in the UPSOM catalog with all appropriate approvals to be received before the course may be added to the student's schedule for credit.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

Cross-Disciplinary Dental Education

DMED 5110 - FOUNDATIONS OF PERSON-CENTERED CARE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

DMED 5111 - FOUNDATIONS OF PERSON-CENTERED CARE (BIOMEDICAL MASTERS PROGRAM)

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

DMED 5112 - PRINCIPLES OF PROFESSIONAL PRACTICE

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DMED 5140 - CARIOLOGY AND CARIES MANAGEMENT 1

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

DMED 5141 - CARIOLOGY AND CARIES MANAGEMENT 1 LAB

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: ABCF

DMED 5142 - FOUNDATIONS OF PERSON-CENTERED CARE 2

Minimum Credits: 2
Maximum Credits: 2
In this course, students will build upon foundational knowledge of person-centered care, including social and cultural factors in oral health, interpersonal communication skills, disease prevention, and evidence-based care.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

DMED 5143 - PRINCIPLES OF PROFESSIONAL PRACTICE 2

Minimum Credits: 2
Maximum Credits: 2
The primary goal of the Principles of Professional Practice course series is to teach students how essential practice management concepts contribute to the development and maintenance of a successful professional dental practice. This first- and second-year course series will focus on integrating the new student practitioner into their first practice, which begins with their clinical exposure at the School of Dental Medicine. Corollaries will be made from School practice-to-practice opportunities as an entry-level dental professional. Concepts that are introduced in this course series will be reinforced and expanded upon in the Successful Practice Management course series, which is offered in the third- and fourth-years of the predoctoral curriculum. Course material will be presented through lectures, in-class discussions, and assignments that relate to the clinical application of presented topics.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DMED 5170 - CARIOLOGY AND CARIES MANAGEMENT 2

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

DMED 5171 - CARIOLOGY AND CARIES MANAGEMENT 2 LAB

Minimum Credits: 1.5

Maximum Credits: 1.5

Academic Career: Dental Medicine

Course Component: Practicum

Grade Component: ABCF

DMED 5172 - APPLICATIONS OF PERSON-CENTERED CARE

Minimum Credits: 2

Maximum Credits: 2

In this course, students will work with peers in a clinical setting where they will focus on developing practical skills related to risk assessment, head and neck examination, dental examination, gingival examination, oral disease prevention, and health promotion. This course is the capstone experience of the first year of the dental curriculum, preparing students to enter the second year by applying the foundational skills acquired in Foundations of Person-Centered Care 1 and 2, as well as other courses, such as Caries Management, Practice Management, Periodontics 1, Periodontal Instrumentation, and Head and Neck Anatomy.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

DMED 5212 - APPLICATIONS OF PROFESSIONAL PRACTICE 1

Minimum Credits: 2

Maximum Credits: 2

This course will build on concepts taught on the first year predoctoral program.

Academic Career: Graduate

Course Component: Lecture

Grade Component: ABCF

DMED 5243 - APPLICATIONS OF PROFESSIONAL PRACTICE 2

Minimum Credits: 2

Maximum Credits: 2

This course will build on concepts learned in the second year fall term.

Academic Career: Graduate

Course Component: Lecture

Grade Component: ABCF

Cultural Studies

CLST 2006 - SPECIAL TOPICS

Minimum Credits: 3

Maximum Credits: 3

This course entails the exploration of a special topic chosen by the instructor.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

CLST 2009 - DIRECTED STUDIES

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

CLST 2050 - CULTURAL STUDIES COMMON SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This annual seminar focuses on a single topic crossing disciplinary and departmental boundaries. Cultural studies faculty with a broad range of research interests participate in weekly talks and discussions.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Cultural Studies

Dental Anesthesiology

DSANE 2114 - PATH AND MANAGEMENT OF MEDICAL EMERGENCY

Minimum Credits: 2
Maximum Credits: 2
This course covers the prevention, recognition, and treatment of medical emergencies that can occur in the dental setting. Differential diagnosis is presented according to the presenting signs and symptomatology. Emphasis is placed on the proper office protocol during an emergency, including the assembly of an emergency drug kit. Experience with IV and IM techniques is included.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

DSANE 2242 - PRINCIPLES OF ANESTHESIA

Minimum Credits: 2
Maximum Credits: 2
This is the second course in a series of three didactic courses dealing with the philosophy and methods of pain and anxiety control in dentistry.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

DSANE 2243 - POST-DOCTORAL MODERATE SEDATION CLINIC

Minimum Credits: 2
Maximum Credits: 2
This course is designed to integrate with the didactic course series dealing with the philosophy and methods of pain and anxiety control in dentistry. In this clinical course, under the supervision of the anesthesia faculty, students will select and administer the various pain and anxiety control techniques learned in the classroom.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

DSANE 2250 - INTRODUCTION TO POSTDOCTORAL MODERATE SEDATION

Minimum Credits: 2

Maximum Credits: 2

This course is designed to provide the information needed by the graduate resident to enter the clinical setting to administer intravenous sedation. Basic anesthetic information will be presented including pharmacology, physiology, venopuncture, airway management, and monitoring. The residents will have fundamental knowledge of the concepts of intravenous sedation that will carry them in to the clinic in the following courses.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

DSANE 2260 - POST-DOCTORAL MODERATE SEDATION 1

Minimum Credits: 2

Maximum Credits: 2

The course will foster an appreciation for the important role of pain and anxiety control in dentistry. The resident will demonstrate proficiency in technical aspects of nitrous oxide anxiolysis, conscious sedation, patient management, and the pharmacologic use of medications. All aspects of anesthesia will be undertaken in the clinic. The resident will experience hands-on management of intravenous sedation from pre-operative evaluation to discharge.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

DSANE 2270 - POST-DOCTORAL MODERATE SEDATION 2

Minimum Credits: 2

Maximum Credits: 2

The course will foster an appreciation for the important role of pain and anxiety control in dentistry. The resident will demonstrate proficiency in technical aspects of nitrous oxide anxiolysis, conscious sedation, patient management, and the pharmacologic use of medications. All aspects of anesthesia will be undertaken in the clinic. The resident will experience hands-on management of intravenous sedation from pre-operative evaluation to discharge.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

DSANE 2400 - INTRODUCTION TO ADVANCED ANESTHESIOLOGY 1

Minimum Credits: 1

Maximum Credits: 1

This course introduces advanced techniques in anesthesiology that apply to the dental anesthesiology resident/student entering the initial segment of advanced, post-doctoral training. This didactic instruction is to provide preliminary instruction concerning hospital and out-patient based anesthesiology that will prepare the student/resident for advanced anesthesiology beyond the pre-doctoral level.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

DSANE 2500 - INTRODUCTION TO DENTAL ANESTHESIOLOGY 2

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

DSANE 5241 - ANESTHESIA 1: LOCAL ANESTHESIA

Minimum Credits: 2

Maximum Credits: 2

A comprehensive course on local anesthesia. Topics include theories of pain, medicolegal considerations, pharmacology of local anesthetics and vasoconstrictors; techniques of local anesthetic administration, armamentarium, complications, and alternative techniques.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

DSANE 5245 - LOCAL ANESTHESIA TECHNIQUE LAB

Minimum Credits: 0

Maximum Credits: 0

Academic Career: Dental Medicine

Course Component: Practicum

Grade Component: Grad HSU Basis

DSANE 5247 - ADVANCED LOCAL ANESTHESIA TECHNIQUE LAB

Minimum Credits: 0

Maximum Credits: 0

This course will foster an appreciation for the important role of local anesthesia in dentistry. The student will demonstrate proficiency in the technical aspects of local anesthetic administration, with particular attention to advanced techniques of local anesthetic administration.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

DSANE 5272 - ANESTHESIA 2: MEDICAL EMERGENCIES

Minimum Credits: 1

Maximum Credits: 1

In this course, students are provided with information pertaining to the prevention, recognition, and treatment of selected medical emergencies occurring in the dental office. Emphasis is placed on patient evaluation and prevention. Emergency drugs and equipment are specified, as well as clinical their application. Lifesaving management of the medically compromised patient is incorporated into the dental treatment plan. Course lectures will include concepts endorsed by the American Dental Association and introduce the student to resources available through the Journal of the American Dental Association. This course will offer foundational knowledge in emergency medicine which will enable the student to assess and manage patients experiencing a medical emergency in the dental office.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

DSANE 5275 - MEDICAL EMERGENCIES LAB

Minimum Credits: 0

Maximum Credits: 0

Academic Career: Dental Medicine

Course Component: Practicum

Grade Component: Grad HSU Basis

DSANE 5311 - PATIENT MANAGEMENT: ENTERAL SEDATION

Minimum Credits: 1

Maximum Credits: 1

In this course, students will be expected to meet the educational requirements for predoctoral dental students set forth in the October, 2007 the American Dental Association's Guidelines for Teaching Pain Control and Sedation to Dentists and Dental Students. In combination with course material presented in pharmacology, physiology, and clinical medicine, satisfactory completion of this course, along with subsequent clinical exposures, will place the student in compliance with the ADA guidelines for enteral sedation. This course includes lectures and class discussions.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

DSANE 5313 - ANESTHESIA 3: PAIN AND ANXIETY CONTROL

Minimum Credits: 1

Maximum Credits: 1

In this course, students will be presented with methods of pharmacologic management of pain and anxiety. It is presented as essentially two separate sections: 1) anxiety control with nitrous oxide sedation and 2) pain control with analgesic. Anxiety control encompasses current pharmacologic management in anxiety control for dentistry. This section of the course focuses on the techniques that a general practice dentist can provide in an office setting. The methods of anxiety reduction and sedation that will be presented were selected on the basis of efficacy and safety. Inhalation sedation (nitrous oxide) techniques are covered in depth. Sedation and general anesthesia with respect to the role of the dental anesthesiologist is described. Pediatric management techniques are not covered. Pain control encompasses an introduction to prescription writing and establishes prescribing protocols for both non-steroidal anti-inflammatory and opioid analgesics. Often pain medications are prescribed to the dental patient in an empirical sense; the goal of this portion of the course is to impart a clinical rationale for prescribing pain medications. A method is established so that the student can make a therapeutic choice based on the needs of the patient and contemporary dental practice. A focus is placed with respect to drug diversion and responsible opiate prescribing. Atypical analgesics for oral-facial neuropathic pain will also be presented. This course includes lectures and class discussions.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

DSANE 5315 - NITROUS OXIDE LAB

Minimum Credits: 0

Maximum Credits: 0

In this course, students will reinforce the knowledge of nitrous oxide gained didactically by engaging in hands-on use of the machines and self-experience of the medication, if desired, in a small group educational setting. This course will serve to assess preclinical competence in order to allow students to progress to the administration of nitrous oxide to dental patients. This course includes small group lab sessions.

Academic Career: Dental Medicine

Course Component: Practicum

Grade Component: Grad HSU Basis

DSANE 5317 - ADVANCED LOCAL ANESTHESIA TECH LAB

Minimum Credits: 0

Maximum Credits: 0

In this course, students will gain an appreciation for the important role of local anesthesia in dentistry. Students will develop and practice techniques in advanced and alternative delivery of local anesthesia. This course also evaluates competency in the standard technique of administering local anesthesia. This course includes one lecture and two small group lab sessions.

Academic Career: Dental Medicine

Course Component: Practicum

Grade Component: Grad HSU Basis

DSANE 5342 - CLINICAL MEDICINE

Minimum Credits: 1

Maximum Credits: 1

This course in clinical medicine is directed to first professional dental students. Utilizing a combination of dental and medical faculty, the course will provide a better understanding of some common medical conditions and its current treatment, preparing students with the basics in providing dental care to the growing population of aging patients with complex medical conditions in conjunction with their physician colleagues.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

DSANE 5344 - MEDICAL EMERGENCIES - WISER CENTER

Minimum Credits: 0

Maximum Credits: 0

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

DSANE 5345 - NITROUS OXIDE SEDATION LAB

Minimum Credits: 0

Maximum Credits: 0

Academic Career: DMED

Course Component: Practicum

Grade Component: Grad HSU Basis

DSANE 5375 - NITIOUS OXIDE SEDATION LAB

Minimum Credits: 0

Maximum Credits: 0

Academic Career: DMED

Course Component: Practicum

Grade Component: Grad HSU Basis

DSANE 5810 - RESEARCH & WRITING IN DENTAL ANESTHESIOLOGY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Dental Medicine

Course Component: Directed Studies

Grade Component: Grad HSU Basis

DSANE 5811 - PRINCIPLES OF CARDIOLOGY IN ANESTHESIA

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Dental Medicine

Course Component: Directed Studies

Grade Component: Grad HSU Basis

DSANE 5812 - PRINCIPLES OF PULMONOLOGY IN ANESTHESIA

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad HSU Basis

DSANE 5900 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 3

An individualized program of advanced studies in anesthesia.

Academic Career: Dental Medicine

Course Component: Independent Study
Grade Component: Grad HSU Basis

DSANE 5912 - CLINICAL ANESTHESIOLOGY 2

Minimum Credits: 1
Maximum Credits: 1

This is a one year undergraduate dental course dealing with the philosophy and methods of pain and anxiety control in dentistry. Concepts of pain and anxiety, as well as, the principles of their psychologic and pharmacologic modifications are explored. Modalities ranging from non-drug and regional analgesic to enteral and parenteral sedative medication techniques are administered by the student under the supervision of the anesthesia faculty. The advantages, disadvantages, and complications associated with these techniques are compared.

Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DSANE 5914 - DRUG INTERACTIONS

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DSANE 5943 - CLINICAL ANESTHESIOLOGY 3

Minimum Credits: 4
Maximum Credits: 4

This is a one year undergraduate dental course dealing with the philosophy and methods of pain and anxiety control in dentistry. Concepts of pain and anxiety, as well as, the principles of their psychologic and pharmacologic modifications are explored. Modalities ranging from non-drug and regional analgesic to enteral and parenteral sedative medication techniques are administered by the student under the supervision of the anesthesia faculty. The advantages, disadvantages, and complications associated with these techniques are compared.

Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DSANE 5971 - CLINICAL ANESTHESIOLOGY 1

Minimum Credits: 1
Maximum Credits: 1

This is a one year undergraduate dental course dealing with the philosophy and methods of pain and anxiety control in dentistry. Concepts of pain and anxiety, as well as, the principles of their psychologic and pharmacologic modifications are explored. Modalities ranging from non-drug and regional analgesic to enteral and parenteral sedative medication techniques are administered by the student under the supervision of the anesthesia faculty. The advantages, disadvantages, and complication associated with these techniques are compared.

Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

Dental Microbiology

DSMIC 5941 - IMMUNOLOGY ORAL FACIAL COMPLEX

Minimum Credits: 1
Maximum Credits: 1

This course uses literature reviews, student presentation, discussions and demonstrations to review the role of microorganisms and host immune responses in the pathogenesis of caries, periodontal diseases and periapical infections. Microbial and immunological factors affecting bone formation,

tooth transplantation, bone implants, and the dental management of patients with allergies, autoimmune diseases and immunodeficiency disorders will also be discussed.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Dental Physiology

DSPHL 2243 - SCIENTIFIC BASIS FOR CLINICAL THERAPEUTICS

Minimum Credits: 1

Maximum Credits: 1

The basis for dental therapeutics is presented in this graduate course. The course emphasizes the elements of controlled trials by critiquing published articles relevant to dental therapeutics. Pharmacologic agents of interest include local anesthetics, nonsteroidal anti-inflammatory analgesic drugs, opioid analgesics, sedatives/hypnotics and antibiotics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Dental Medicine

DENT 2001 - FULL-TIME GRADUATE DENTAL MEDICINE STUDY

Minimum Credits: 0

Maximum Credits: 0

Students who are working full-time in a school of dental medicine graduate program may register for this course.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

DENT 2019 - GRADUATE PATIENT CARE

Minimum Credits: 0

Maximum Credits: 0

This course will provide patient care opportunities in a clinical setting under direct faculty supervision. Treatment procedures will include all aspects of dentistry.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

DENT 2049 - GRADUATE PATIENT CARE

Minimum Credits: 0

Maximum Credits: 0

This course will provide patient care opportunities in a clinical setting under direct faculty supervision. Treatment procedures will include all aspects of dentistry.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad LG/SNC Basis

DENT 2119 - GRADUATE PROSTHODONTICS PATIENT CARE

Minimum Credits: 0

Maximum Credits: 0

This course serves to provide patient care opportunities in a clinical setting under direct faculty supervision. Treatment procedures will include all aspects of prosthodontics.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

DENT 2130 - APPLIED HEAD AND NECK ANATOMY

Minimum Credits: 1

Maximum Credits: 1

This course is designed to introduce graduate students in clinical specialties to applied (surgical) head and neck anatomy. The course is comprised of didactic and dissection components, in addition to required readings. The dissection portion is planned to meet the specific needs of the various clinical specialties.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

DENT 2150 - ETHICS IN THE DENTAL SPECIALTIES

Minimum Credits: 0.5

Maximum Credits: 0.5

The Ethics in the Dental Specialties course is designed to provide the first year advanced education student with a review of the general principles of ethics and the application of ethical principles in the interactions between general dentists, dental specialists and the patients whose care they share.

The students will be provided the opportunity to identify and work through ethical dilemmas specifically involving their chosen dental specialty.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

DENT 2201 - MASTERS RESEARCH 1

Minimum Credits: 1

Maximum Credits: 3

The master's research course series is designed to provide guidance, structure and support to the graduate student in the advanced education programs at the SDM in their course of study toward fulfilling the research requirement for a master of dental science degree. The school's associate dean of research, the student's research mentor and the student will identify a research topic, form a research committee, complete a literature review and research proposal, gain SRC and IRB approval, complete data collection, analyze data and submit a final thesis and scientific paper for peer review.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

DENT 2202 - MASTERS RESEARCH 2

Minimum Credits: 1

Maximum Credits: 3

The master's research course series is designed to provide guidance, structure and support to the graduate student in the advanced education programs at the SDM in their course of study toward fulfilling the research requirement for a master of dental science degree. The school's associate dean of research, the student's research mentor and the student will identify a research topic, form a research committee, complete a literature review and research proposal, gain SRC and IRB approval, complete data collection, analyze data and submit a final thesis and scientific paper for peer review.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

DENT 2203 - MASTERS RESEARCH 3

Minimum Credits: 1

Maximum Credits: 3

The master's research course series is designed to provide guidance, structure and support to the graduate student in the advanced education programs at the SDM in their course of study toward fulfilling the research requirement for a master of dental science degree. The school's associate dean of research, the student's research mentor and the student will identify a research topic, form a research committee, complete a literature review and research proposal, gain SRC and IRB approval, complete data collection, analyze data and submit a final thesis and scientific paper for peer review.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

DENT 2204 - MASTERS RESEARCH 4

Minimum Credits: 1

Maximum Credits: 3

The master's research course series is designed to provide guidance, structure and support to the graduate student in the advanced education programs at the SDM in their course of study toward fulfilling the research requirement for a master of dental science degree. The school's associate dean of research, the student's research mentor and the student will identify a research topic, form a research committee, complete a literature review and research proposal, gain SRC and IRB approval, complete data collection, analyze data, and submit a final thesis and scientific paper for peer review.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

DENT 2205 - MASTERS RESEARCH 5

Minimum Credits: 1

Maximum Credits: 3

The master's research course series is designed to provide guidance, structure and support to the graduate student in the advanced education programs at the SDM in their course of study toward fulfilling the research requirement for a master of dental science degree. The school's associate dean of research, the student's research mentor and the student will identify a research topic, form a research committee, complete a literature review and research proposal, gain SRC and IRB approval, complete data collection, analyze data and submit a final thesis and scientific paper for peer review.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

DENT 2206 - MASTERS RESEARCH 6

Minimum Credits: 1

Maximum Credits: 3

The master's research course series is designed to provide guidance, structure and support to the graduate student in the advanced education programs at the SDM in their course of study toward fulfilling the research requirement for a master of dental science degree. The school's associate dean of research, the student's research mentor and the student will identify a research topic, form a research committee, complete a literature review and research proposal, gain SRC and IRB approval, complete data collection, analyze data and submit a final thesis and scientific paper for peer review.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

DENT 2207 - MASTERS RESEARCH 7

Minimum Credits: 1

Maximum Credits: 3

The master's research course series is designed to provide guidance, structure and support to the graduate student in the advanced education programs at the SDM in their course of study toward fulfilling the research requirement for a master of dental science degree. The school's associate dean of research, the student's research mentor and the student will identify a research topic, form a research committee, complete a literature review and research proposal, gain SRC and IRB approval, complete data collection, analyze data and submit a final thesis and scientific paper for peer review.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

DENT 2917 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 3

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

DENT 2947 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 3

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

DENT 3111 - INTRODUCTION TO TRANSLATIONAL RESEARCH IN THE HEALTH SCIENCES

Minimum Credits: 2

Maximum Credits: 2

Course will provide students with a comprehensive survey of the processes involved in translating research discoveries into practices that promote health and prevent disease. The specific topics to be covered include five goals: 1) Introduce students to the NIH roadmap and to discuss the conceptual framework for multidisciplinary and interdisciplinary research. 2) Provide perspectives on objectives outlined at the national level in healthy people 2010/2020 and at the global level by organizations such as the world health organization. 3) Provide an understanding of the models of translational research. 4) Introduce students to the methods of clinical and translational research. 5) Interpret and explain the drug and therapeutic development process. Also, topics include the implementation of new therapies as standards of care and the application of innovative preventive services. Various research methodologies, including those encompassed in the drug development process will be discussed. Course will offer lectures via electronic media and will use a collaborative learning approach to classroom activities.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

DENT 3142 - INTRODUCTON TO TRANSLATIONAL RESEARCH

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

DENT 5000 - FULL-TIME DENTAL MEDICINE STUDY

Minimum Credits: 0

Maximum Credits: 0

Students who are working full-time for their doctor of dental medicine degree may register for this course.

Academic Career: Dental Medicine

Course Component: Directed Studies

Grade Component: Grad HSU Basis

DENT 5001 - PART TIME DENTAL MEDICINE STUDY

Minimum Credits: 1

Maximum Credits: 8

Academic Career: Dental Medicine

Course Component: Directed Studies
Grade Component: Grad HSU Basis

DENT 5002 - QUALITIES OF A GENERAL DENTIST

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DENT 5115 - HEALTH PROMOTION AND DISEASE PREVENTION 1

Minimum Credits: 1
Maximum Credits: 1
In this course, students will prepare for clinical dental practice by being introduced to important concepts and developing skills required for the provision of effective dental care. Students are introduced to communication skills and behavioral principles related to clinical practice through the health history interview. Students are also provided with their initial clinical exposure to the nature of oral health and disease. All of these concepts are developed and reinforced through the use of readings, pre-clinical, and clinical assignments that require integration of the concepts and effective demonstration of these skills as they apply to patient care. In addition, students will practice conducting a health history interview with a standardized patient. This course includes lecture, class discussion, small group exercises in the pre-clinical and clinical settings, and standardized patient sessions.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DENT 5118 - QUALITIES OF A GENERAL DENTIST 1

Minimum Credits: 1
Maximum Credits: 1
This course will follow student progression each term in the non-technique sensitive behaviors that the faculty members of the University of Pittsburgh School of Dental Medicine (SDM) deem are essential qualities to becoming a successful general dentist. As the student advances through the four years of the curriculum, SDM faculty will evaluate the students ability to demonstrate the knowledge, skills, and values in the outlined categories that represent expected professional behaviors. This assessed conduct will include all actions displayed in all locations within the school as well as in all external curricular locations. In addition to the areas listed above, this series of courses will include evaluating the students adherence to all SDM directives and/or University guidelines, requirements, policies and procedures.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DENT 5146 - CARIOLOGY 2

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad Letter Grade

DENT 5148 - QUALITIES OF A GENERAL DENTIST 2

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DENT 5173 - HEALTH PROMOTION AND DISEASE PREVENTION 3

Minimum Credits: 2

Maximum Credits: 2

This is the third of a three course series which collectively helps to prepare the student for clinical dental practice by introducing important concepts and developing skills required for the provision of effective dental care. Students explore concepts in health promotion and disease prevention, ethical and behavioral principles related to clinical practice and are also provided with a foundation in evidence-based dentistry. Students continue to examine the nature of oral health and disease. All of these concepts are developed and reinforced through the use of readings, pre-clinical and clinical assignments and case presentations that require integration of the concepts and effective demonstration of the skills as they apply to patient care.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad Letter Grade

DENT 5178 - QUALITIES OF A GENERAL DENTIST 3

Minimum Credits: 1

Maximum Credits: 1

This course will follow student progression each term in the non-technique sensitive behaviors that the faculty members of the University of Pittsburgh School of Dental Medicine (SDM) deem are essential qualities to becoming a successful general dentist. As the student advances through the four years of the curriculum, SDM faculty will evaluate the students ability to demonstrate the knowledge, skills, and values in the outlined categories that represent expected professional behaviors. This assessed conduct will include all actions displayed in all locations within the school as well as in all external curricular locations. In addition to the areas listed above, this series of courses will include evaluating the students adherence to all SDM directives and/or University guidelines, requirements, policies and procedures.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

DENT 5211 - DIAGNOSIS AND TREATMENT PLANNING 1

Minimum Credits: 1

Maximum Credits: 1

This course parallels the curricular theme of the second year, providing the opportunity to acquire and practice basic clinical skills and to prepare students to conduct comprehensive patient evaluations. Topics include: obtaining and interpreting medical, dental and medication histories; assessing the patient's health status; and assessing risk. The course will utilize previously acquired knowledge related to the examination of oral, dental and periodontal structures. Students will apply knowledge from their periodontology courses to diagnose gingivitis and periodontitis. Students will continue to develop their skills in oral disease prevention and health promotion. This course includes lecture, clinical assignments with an upperclassman, and case-based learning activities.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

DENT 5218 - QUALITIES OF A GENERAL DENTIST 4

Minimum Credits: 1

Maximum Credits: 1

This course will follow student progression each term in the non-technique sensitive behaviors that the faculty members of the University of Pittsburgh School of Dental Medicine (SDM) deem are essential qualities to becoming a successful general dentist. As the student advances through the four years of the curriculum, SDM faculty will evaluate the students ability to demonstrate the knowledge, skills, and values in the outlined categories that represent expected professional behaviors. This assessed conduct will include all actions displayed in all locations within the school as well as in all external curricular locations. In addition to the areas listed above, this series of courses will include evaluating the students adherence to all SDM directives and/or University guidelines, requirements, policies and procedures.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

DENT 5242 - DIAGNOSIS AND TREATMENT PLANNING 2

Minimum Credits: 1

Maximum Credits: 1

This course will provide the second year dental student with the ability to successfully perform in the primary care clinic. Specifically, the student will become competent in addressing the patient's chief complaint with consideration to the following: medical history/physical status determination, soft tissue examination, radiologic interpretation and appropriate treatment planning.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

DENT 5248 - QUALITIES OF A GENERAL DENTIST 5

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

DENT 5278 - QUALITIES OF A GENERAL DENTIST 6

Minimum Credits: 1

Maximum Credits: 1

This course will follow student progression each term in the non-technique sensitive behaviors that the faculty members of the University of Pittsburgh School of Dental Medicine (SDM) deem are essential qualities to becoming a successful general dentist. As the student advances through the four years of the curriculum, SDM faculty will evaluate his/her progression in the behaviors that demonstrate the students knowledge, skills, and values in the outlined categories, to include professionalism and ethics. This assessed conduct will include all actions displayed in all locations within the school as well as in all external curricular locations. In addition to the areas listed above, this series of courses will include evaluating the students adherence to all SDM and/or University guidelines, requirements, policies, and procedures.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

DENT 5283 - DIAGNOSIS AND TREATMENT PLANNING 3

Minimum Credits: 2

Maximum Credits: 2

In this course, second year students will be provided with an opportunity to apply foundational knowledge in diagnosis and treatment planning to a patient case. The student will work as part of a group to assess, diagnose, treatment plan and present a case to faculty and peers. Students will work within their group to write a written case report. After faculty review of the case report, each group of students will present their case orally during a 20-minute oral presentation. The presentation is followed by faculty questions. Students will also attend one implant conference to gain exposure to multi-disciplinary treatment planning and will then write a journal entry reflecting on this experience. Finally, the student's behavioral skills will be assessed as he/she discusses a treatment plan with a patient through the use of a standardized patient competency examination.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad HSU Basis

DENT 5310 - SPECIAL NEEDS DENTISTRY

Minimum Credits: 1

Maximum Credits: 1

In this course, students will be provided with an introduction to the arena of special needs dentistry; material presented will demonstrate the management and treatment of patients with disabilities/special needs. The primary goals of this course are to introduce the pre-doctoral dental student to common developmental and acquired disabilities, and to provide an increased understanding regarding barriers to care for individuals with disabilities. The focus of the course is to enable the student to understand the necessary parameters of care and modifications to dental treatment to best accommodate individuals with disabilities. The material presented will aid the student in assessing, planning, implementing and monitoring treatment for the patient with special needs. Speakers will include SDM faculty members, as well as guests from various disciplines within the University and external organizations. This course includes lectures, required assignments (reading and/or audio-video) and class discussions.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

DENT 5313 - ONGOING PERFORMANCE EVALUATION 1

Minimum Credits: 2

Maximum Credits: 2

As first- and second-year students, the Global Assessment (GA) program at the University of Pittsburgh School of Dental Medicine (SDM) helps provide guidance and learning opportunities for predoctoral students to grow and develop the knowledge, skills and values related to professional and ethical decision-making. The GA program utilizes a two-pronged approach: 1) The Qualities of a General Dentist (QGD) course series tracks the students ability to meet the professional and ethical expectations of developing health professionals as they progress through all terms of the four-year curriculum. 2) The Ongoing Performance Evaluation (OPE) course series tracks third- and fourth-year students ability to meet the expected clinical quality care standards, in addition to monitoring their clinical productivity as they provide services to their assigned patients outside rotations. The primary goal of the Ongoing Performance Evaluation (OPE) course series is to follow and assess student clinical progression each term in the third and fourth years of the predoctoral program. The foundation of this course recognizes that the primary goal of the predoctoral dental program is to provide a teaching and learning platform that allows the student to gain the knowledge, skills and values to competently perform as an entry-level general dentist. In doing so, the student is expected to gain clinical experience and advance through the clinical curriculum as s/he provides dental services to SDM patients. It is an expectation of the school that each student will work beyond minimal requirements and subsequent departmental competencies continuing to gain experience and knowledge each semester until graduation, thereby allowing his/her skills to improve.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad Letter Grade

DENT 5317 - SUCCESSFUL PRACTICE MANAGEMENT 1

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: ABCF

DENT 5318 - QUALITIES OF A GENERAL DENTIST 7

Minimum Credits: 1

Maximum Credits: 1

This course will follow student progression each term in the non-technique sensitive behaviors that the faculty members of the University of Pittsburgh School of Dental Medicine (SDM) deem are essential qualities to becoming a successful general dentist. As the student advances through the four years of the curriculum, SDM faculty will evaluate the students ability to demonstrate the knowledge, skills, and values in the outlined categories that represent expected professional behaviors. This assessed conduct will include all actions displayed in all locations within the school as well as in all external curricular locations. In addition to the areas listed above, this series of courses will include evaluating the students adherence to all SDM directives and/or University guidelines, requirements, policies and procedures.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

DENT 5321 - CLINICAL ORAL DIAGNOSIS AND TREATMENT PLANNING 1

Minimum Credits: 2

Maximum Credits: 2

This course will prepare the student to conduct comprehensive patient evaluations. This will include obtaining and interpreting medical, dental and medication histories, assessment of the patient's health status; and identifying indications for modifying dental treatment. Emphasis will be placed on obtaining historical information from patients, diagnostic testing and radiologic examination in the development of a differential diagnosis and a prioritized treatment plan.

Academic Career: Dental Medicine

Course Component: Clinical
Grade Component: Grad Letter Grade

DENT 5344 - SPECIAL NEEDS CLINICAL DENTISTRY 1

Minimum Credits: 2
Maximum Credits: 2
Special needs clinical dentistry 1
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad Letter Grade

DENT 5347 - SUCCESSFUL PRACTICE MANAGEMENT 2

Minimum Credits: 3
Maximum Credits: 3
The primary goal of the Successful Practice Management (SPM) course series is to teach students the value of developing effective strategies to enhance overall clinical productivity that is ethically balanced with the needs of assigned patients. In doing so, this course will follow and assess student clinical progression in their own SDM clinical practice. The course series will emphasize a business model of dental practice development focused on maximizing educational experiences for the student rather than on traditional financial-driven metrics.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: ABCF

DENT 5348 - QUALITIES OF A GENERAL DENTIST 8

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DENT 5352 - CLINICAL ORAL DIAGNOSIS AND TREATMENT PLANNING 2

Minimum Credits: 2
Maximum Credits: 2
This course will prepare the student to conduct comprehensive patient evaluations. This will include obtaining and interpreting medical, dental and medication histories, assessment of the patient's health status; and identifying indications for modifying dental treatment. Emphasis will be placed on obtaining historical information from patients, diagnostic testing and radiologic examination in the development of a differential diagnosis and a prioritized treatment plan.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad Letter Grade

DENT 5353 - ONGOING PERFORMANCE EVALUATION 2

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: ABCF

DENT 5373 - CLINICAL ATTENDANCE IN THE COMPREHENSIVE CARE MODULES 1

Minimum Credits: 1

Maximum Credits: 1

This course will develop a student that comprehends and maintains the concept of providing sound, comprehensive, ethical dental treatment to patients, while maintaining acceptable standards with regard to school policies and procedures. Thereby, through close faculty interaction this course will provide an environment for students to excel in their daily clinical abilities, board performance and preparation for individual professional endeavors.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

DENT 5377 - SUCCESSFUL PRACTICE MANAGEMENT 3

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: ABCF

DENT 5378 - QUALITIES OF A GENERAL DENTIST 9

Minimum Credits: 1

Maximum Credits: 1

This course will follow student progression each term in the non-technique sensitive behaviors that the faculty members of the University of Pittsburgh School of Dental Medicine (SDM) deem are essential qualities to becoming a successful general dentist. As the student advances through the four years of the curriculum, SDM faculty will evaluate the students ability to demonstrate the knowledge, skills, and values in the outlined categories that represent expected professional behaviors. This assessed conduct will include all actions displayed in all locations within the school as well as in all external curricular locations. In addition to the areas listed above, this series of courses will include evaluating the students adherence to all SDM directives and/or University guidelines, requirements, policies and procedures.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

DENT 5383 - CLINICAL ORAL DIAGNOSIS AND TREATMENT PLANNING 1

Minimum Credits: 2

Maximum Credits: 2

This course is designed to provide clinical experiences in the areas of oral diagnosis and treatment planning, evidence-based dentistry and the treatment of adult and geriatric patients for predoctoral dental students. By the end of the fourth year of the curriculum, students will be able to demonstrate competence in diagnosing and treatment planning, in providing evidence-based care to patients and in the treatment of adult and geriatric patients at the level of a general dentist and will participate in a variety of additional experiences to increase skills in these areas.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: ABCF

DENT 5388 - CLINICAL SPECIAL NEEDS DENTISTRY 1

Minimum Credits: 2

Maximum Credits: 2

This course is designed to provide clinical experiences in the area of special needs dentistry for pre-doctoral dental students. By the end of the third year of the curriculum, students will be able to demonstrate competence in assessing the needs of and in providing care to dental patients with special needs at the level of a general dentist and will participate in a variety of additional experiences to increase skills in caring for the patient with special needs.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: ABCF

DENT 5393 - ONGOING PERFORMANCE EVALUATION 3

Minimum Credits: 2

Maximum Credits: 2

As first- and second-year students, the Global Assessment (GA) program at the University of Pittsburgh School of Dental Medicine (SDM) helps provide guidance and learning opportunities for predoctoral students to grow and develop the knowledge, skills and values related to professional and ethical decision-making. The GA program utilizes a two-pronged approach: 1) The Qualities of a General Dentist (QGD) course series tracks the students ability to meet the professional and ethical expectations of developing health professionals as they progress through all terms of the four-year curriculum. 2) The Ongoing Performance Evaluation (OPE) course series tracks third- and fourth-year students ability to meet the expected clinical quality care standards, in addition to monitoring their clinical productivity as they provide services to their assigned patients outside rotations. The primary goal of the Ongoing Performance Evaluation (OPE) course series is to follow and assess student clinical progression each term in the third and fourth years of the predoctoral program. The foundation of this course recognizes that the primary goal of the predoctoral dental program is to provide a teaching and learning platform that allows the student to gain the knowledge, skills and values to competently perform as an entry-level general dentist. In doing so, the student is expected to gain clinical experience and advance through the clinical curriculum as s/he provides dental services to SDM patients. It is an expectation of the school that each student will work beyond minimal requirements and subsequent departmental competencies continuing to gain experience and knowledge each semester until graduation, thereby allowing his/her skills to improve.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

DENT 5413 - ONGOING PERFORMANCE EVALUATION 4

Minimum Credits: 2

Maximum Credits: 2

As first- and second-year students, the Global Assessment (GA) program at the University of Pittsburgh School of Dental Medicine (SDM) helps provide guidance and learning opportunities for predoctoral students to grow and develop the knowledge, skills and values related to professional and ethical decision-making. The GA program utilizes a two-pronged approach: 1) The Qualities of a General Dentist (QGD) course series tracks the students ability to meet the professional and ethical expectations of developing health professionals as they progress through all terms of the four-year curriculum. 2) The Ongoing Performance Evaluation (OPE) course series tracks third- and fourth-year students ability to meet the expected clinical quality care standards, in addition to monitoring their clinical productivity as they provide services to their assigned patients outside rotations. The primary goal of the Ongoing Performance Evaluation (OPE) course series is to follow and assess student clinical progression each term in the third and fourth years of the predoctoral program. The foundation of this course recognizes that the primary goal of the predoctoral dental program is to provide a teaching and learning platform that allows the student to gain the knowledge, skills and values to competently perform as an entry-level general dentist. In doing so, the student is expected to gain clinical experience and advance through the clinical curriculum as s/he provides dental services to SDM patients. It is an expectation of the school that each student will work beyond minimal requirements and subsequent departmental competencies continuing to gain experience and knowledge each semester until graduation, thereby allowing his/her skills to improve.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad Letter Grade

DENT 5414 - CLINICAL ATTENDANCE IN THE COMPREHENSIVE CARE MODULES 2

Minimum Credits: 1

Maximum Credits: 1

This course will facilitate student comprehension of concepts, providing sound, comprehensive, and ethical dental treatment to patients while maintaining acceptable standards with regard to school policies and procedures. Thereby, through close faculty interaction, this course will provide an environment for students to excel in their daily clinical abilities, board performance, and preparation for individual professional endeavors.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

DENT 5417 - SUCCESSFUL PRACTICE MANAGEMENT 4

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Dental Medicine

Course Component: Clinical
Grade Component: ABCF

DENT 5418 - QUALITIES OF A GENERAL DENTIST 10

Minimum Credits: 1

Maximum Credits: 1

This course will follow student progression each term in the non-technique sensitive behaviors that the faculty members of the University of Pittsburgh School of Dental Medicine (SDM) deem are essential qualities to becoming a successful general dentist. As the student advances through the four years of the curriculum, SDM faculty will evaluate the students ability to demonstrate the knowledge, skills, and values in the outlined categories that represent expected professional behaviors. This assessed conduct will include all actions displayed in all locations within the school as well as in all external curricular locations. In addition to the areas listed above, this series of courses will include evaluating the students adherence to all SDM directives and/or University guidelines, requirements, policies and procedures.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

DENT 5424 - CLINICAL ORAL DIAGNOSIS AND TREATMENT PLANNING 4

Minimum Credits: 2

Maximum Credits: 2

This course will prepare the student to conduct comprehensive patient evaluations. This will include obtaining and interpreting medical, dental and medication histories, assessment of the patient's health status; identifying indications for modifying dental treatment. Emphasis will be placed on obtaining historical information from patients, diagnostic testing and radiologic examination in the development of a differential diagnosis and a prioritized treatment plan.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad Letter Grade

DENT 5440 - SENIOR CASE PRESENTATION

Minimum Credits: 2

Maximum Credits: 2

This course will provide an opportunity for fourth year students to present their current patient cases to classmates and faculty for review and constructive input. Upon completion of this course the student will have developed the skills needed to comfortably discuss their cases with colleagues, specialists, physicians and other professionals.

Academic Career: Dental Medicine

Course Component: Seminar

Grade Component: Grad HSU Basis

DENT 5445 - CLINICAL ATTENDANCE IN THE COMPREHENSIVE CARE MODULES 3

Minimum Credits: 1

Maximum Credits: 1

This course will develop a student that comprehends and maintains the concept of providing sound, comprehensive, ethical dental treatment to patients, while maintaining, acceptable standards with regard to school policies and, procedures. Thereby, through close faculty interaction this course will provide an environment for students to excel in their daily clinical abilities, board performance and preparation for individual professional endeavors.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

DENT 5447 - SUCCESSFUL PRACTICE MANAGEMENT 5

Minimum Credits: 3

Maximum Credits: 3

The primary goal of the Successful Practice Management (SPM) course series is to teach students the value of developing effective strategies to enhance overall clinical productivity that is ethically balanced with the needs of assigned patients. In doing so, this course will follow and assess student clinical progression in their own SDM clinical practice. The course series will emphasize a business model of dental practice development focused on maximizing educational experiences for the student rather than on traditional financial-driven metrics.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: ABCF

DENT 5448 - QUALITIES OF A GENERAL DENTIST 11

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

DENT 5453 - ONGOING PERFORMANCE EVALUATION 5

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: ABCF

DENT 5455 - CLINICAL ORAL DIAGNOSIS AND TREATMENT PLANNING 2

Minimum Credits: 2

Maximum Credits: 2

This course will prepare the student to conduct comprehensive patient evaluations. This will include obtaining and interpreting medical, dental and medication histories, assessment of the patient's health status; and identifying indications for modifying dental treatment. Emphasis will be placed on obtaining historical information from patients, diagnostic testing and radiologic examination in the development of a differential diagnosis and a prioritized treatment plan.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: ABCF

DENT 5459 - CLINICAL SPECIAL NEEDS DENTISTRY 2

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: ABCF

DENT 5476 - CLINICAL RESPONSIBILITIES

Minimum Credits: 1

Maximum Credits: 1

This course will develop a student that comprehends and maintains the concept of providing sound, comprehensive ethical dental treatment to patients, while maintaining acceptable standards with regard to school policies and procedures. Thereby, through close faculty interaction this course will provide an environment for students to excel in their daily clinical abilities, board performance and preparation for individual professional endeavors.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

DENT 5478 - QUALITIES OF A GENERAL DENTIST 12

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

DENT 5517 - CLINICAL RESPONSIBILITIES 7

Minimum Credits: 1

Maximum Credits: 1

This course will develop a student that comprehends and maintains the concept of providing sound, comprehensive ethical dental treatment to patients, while maintaining acceptable standards with regard to school policies and procedures. Thereby, through close faculty interaction this course will provide an environment for students to excel in their daily clinical abilities, board performance and preparation for individual professional endeavors.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

DENT 5548 - CLINICAL RESPONSIBILITIES

Minimum Credits: 1

Maximum Credits: 1

This course will develop a student that comprehends and maintains the concept of providing sound, comprehensive ethical dental treatment to patients, while maintaining acceptable standards with regard to school policies and procedures. Thereby, through close faculty interaction this course will provide an environment for students to excel in their daily clinical abilities, board performance and preparation for individual professional endeavors.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

DENT 5900 - INDEPENDENT STUDY

Minimum Credits: 0

Maximum Credits: 3

This independent study course is designed for the undergraduate dental student who desires to pursue additional knowledge in specific areas of dentistry. The content of the course is specified by the student and supervising faculty. Format is designed to encourage independent student experiences with the faculty acting in an advisory capacity with limited direct interaction.

Academic Career: Dental Medicine

Course Component: Independent Study

Grade Component: Grad HSU Basis

DENT 5911 - CLINICAL DENTISTRY FOR SPECIAL NEEDS PATIENTS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

DENT 5913 - EDUCATIONAL ADMINISTRATION

Minimum Credits: 1

Maximum Credits: 3

Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

DENT 5915 - INTRODUCTION TO PEER TUTORING IN DENTAL EDUCATION

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Dental Medicine
Course Component: Directed Studies
Grade Component: Grad HSU Basis

DENT 5916 - PEER TUTORING IN DENTAL EDUCATION

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

DENT 5917 - ACCELERATED CLINICAL DENTISTRY FOR SPECIAL NEEDS PATIENT

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DENT 5920 - PRINCIPLES OF CLINICAL TEACHING

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Seminar
Grade Component: Grad HSU Basis

DENT 5921 - CLINICAL TEACHING PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

DENT 5941 - SPECIAL TOPICS IN CLINICAL DENTISTRY 1

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DENT 5947 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Dental Medicine
Course Component: Directed Studies
Grade Component: Grad HSU Basis

DENT 5977 - EDUCATIONAL RESEARCH IN DENTAL MEDICINE (R)

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

DENT 5980 - LEADERSHIP AND CAREER DEVELOPMENT IN DENTAL EDUCATION

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Dental Medicine
Course Component: Seminar
Grade Component: Grad HSU Basis

DENT 5981 - FUNDAMENTALS OF TEACHING: PRINCIPLES AND METHODS

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Dental Medicine
Course Component: Seminar
Grade Component: Grad HSU Basis

DENT 5982 - TEACHING PRACTICUM IN DENTAL EDUCATION

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

DENT 5983 - ACADEMIC CAREER TRACK CAPSTONE COURSE 1

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

DENT 5984 - ACADEMIC CAREER TRACK CAPSTONE COURSE 2

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

Dermatology

DERM 5380 - DERMATOLOGY CLERKSHIP

Minimum Credits: 0

Maximum Credits: 0

This elective emphasizes clinical dermatology. The student will participate in the outpatient clinics at Flak Clinic, Childrens Hospital and the VA Hospital. These activities will be complemented by grand rounds, kodachrome conference, dermatopathy conference, and journal club conference. There are lectures in the basic sciences.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

DERM 5420 - BASIC DERMATOLOGY

Minimum Credits: 0

Maximum Credits: 0

This elective emphasizes clinical dermatology. The student will participate in our outpatient clinics at Falk Clinic, Children's Hosp, and the VA Hosp. In addition, the student may participate with hospital consultations, clinical therapeutic trials, the pigmented lesion and melanoma program, the cutaneous ulceration and rehabilitation, and the technique of Mohm's microscopic-controlled excision of skin cancer. These activities will be complemented by weekly grand rounds, Kodachrome conf, dermatopath conf, and journal club conf. There are weekly lectures in basic sciences.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

DERM 5425 - ADVANCED DERMATOLOGY

Minimum Credits: 0

Maximum Credits: 0

Students are expected to develop skills necessary to independently complete a history and physical examination, identify required laboratory studies, develop a rationale differential diagnosis, and articulate and defend an appropriate treatment plan. The didactic portion will include regular participation in all dermatology department conferences and didactic sessions, and a weekly lecture and q and a session with the course director. Students are expected to formally present one patient at grand rounds and are encouraged to write a case report for publication. Evaluation is based on an exam given on the last day of the elective as well as clinical performance.

Academic Career: Medical School

Course Component: Clinical

Grade Component: Grad LG/SU5

Course Attributes: School of Medicine Year 4

DERM 5430 - DERMATOLOGIC AND PLASTIC SURGERY

Minimum Credits: 0

Maximum Credits: 0

This elective will split time with plastic surgery and dermatology. Such an exposure will provide the optimal learning experience in cutaneous surgery.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

DERM 5440 - DERMATOPATHOLOGY

Minimum Credits: 0

Maximum Credits: 0

Interact with dermatology and pathology residents as well as dermatopathology fellows and participate in lectures and weekly grand rounds. Participation in case review and sign out sessions. Additional slides available for optional independent study. Independently study at microscope available. Students attempt diagnosis of cases & present them to faculty. Students gain understanding of skin as a separate organ having unique pathobiologic responses. Acquire adequate diagnostic proficiency with response processes seen in dermatopathology. Final evaluation on overall performance.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

DERM 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0

Maximum Credits: 0

An individualized course of study may be arranged with the department of dermatology to fit the student's needs. The student will meet with a department faculty person to design a clinical course of study for a four-week period of time. A written proposal must be approved by the faculty member as well as the student's scheduling advisor. When approvals have been received, the school registrar will schedule the course and notify the department student coordinator.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

DERM 5810 - DERMATOLOGY RESEARCH

Minimum Credits: 0

Maximum Credits: 0

Research projects in dermatology are available to interested and motivated students. Project areas include 1) various aspects of wound healing; 2) skin microbiology; 3) biological behavior and causes of skin cancer; 4) dermal biochemistry; 5) epidermal cell biology; 6) clinical studies; 7) mycosis fun guides and immune modulation; 8) scleroderma fibroblast study; 9) pigmented lesions and cutaneous immunology. These activities will be complemented by departmental conferences. At the end of the project, the student will present a seminar on his/her results.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

DERM 5899 - INDEPENDENT STUDY DERMATOLOGY

Minimum Credits: 0

Maximum Credits: 0

The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

DERM 5900 - EXTRAMURAL DERMATOLOGY

Minimum Credits: 0

Maximum Credits: 0

A clinical experience in dermatology may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the UPSOM course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Diagnostic Sciences

DIASCI 2110 - ADVANCED ORAL PATHOLOGY 1

Minimum Credits: 2

Maximum Credits: 2

The purpose of this course in oral pathology is to provide the student a logical approach to the differential diagnosis of oral lesions. The definitive information necessary for the establishment of a final diagnosis is then provided. The course consists of a series of lectures augmented by laboratory sessions and clinical pathologic conferences.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

DIASCI 2140 - ADVANCED IMAGING

Minimum Credits: 1

Maximum Credits: 1

The course on advanced imaging reinforces the importance of right way of using technology and understanding the usage of advanced techniques like CT, MRI and ultrasound in dentistry. It also helps them to understand the digital radiography and its advantages and disadvantages over the film based technique. It helps them to choose appropriate imaging modality for treatment planning for procedures like implants. The diagnostic part of the course should help residents in describing, interpreting and developing most relevant differential diagnosis for the systemic and bone pathology that is seen on the radiographs. Literature component of the course will help them in knowing the latest research in the field and promotes ideas to develop research integrating imaging.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

DIASCI 2142 - ADVANCED ORAL PATHOLOGY 2

Minimum Credits: 1

Maximum Credits: 1

This conference provides the essential information for histologic diagnosis of oral pathologies. This individualized program provides concentrated instruction in the microscopic aspects of those oral diseases related to the specific clinical specialty in which the resident is enrolled.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

DIASCI 2191 - PATHOBIOLOGY 1

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

DIASCI 2282 - PATHOBIOLOGY 2

Minimum Credits: 2

Maximum Credits: 2

Applied pathobiology provides the venue wherein residents apply pathobiology to their field of specialization. Utilizing an investigative approach, residents identify a topic of interest and demonstrate by means of a powerpoint presentation pathobiological concepts as they apply to patient care.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

DIASCI 5141 - INTRODUCTION TO RADIOLOGY 1

Minimum Credits: 0.5

Maximum Credits: 0.5

This course introduces the basics of Radiology and students will continue to build on the concepts addressed in the Dental Anatomy, Periodontics and Cariology courses. This course offers the first-year dental student instruction in the fundamentals of theory and practice that include the following 1. A working knowledge of the dental radiological physics, and safety as they apply to dentistry 2. Understand and recognize factors affect image quality of radiographs and how to correct them. 3. Understand concepts and equipment used in digital radiography. This course includes a self-paced online component (recommended lecture completion dates and test freezing dates will be posted), and mandatory in class sessions on select topics.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

DIASCI 5170 - GENERAL AND SYSTEMIC PATHOLOGY

Minimum Credits: 5

Maximum Credits: 5

This course is organized to present the pathologic processes which underlie a variety of human disease states. Topics in general pathology include cell injury and cell death, inflammation and repair, hemodynamic disorders, neoplasia, and autoimmune, environmental, genetic, and pediatric diseases. Topics in systemic pathology include disease of vasculature, heart, kidneys, lungs, and blood. Oral implications of systemic disease are introduced. This course includes lectures and class discussions. The goal of teaching general pathology is to provide a foundation of the basic processes of disease, such as cellular pathology, inflammation and repair, fluid and hemodynamic derangements, and neoplasia. The study of metabolic deficiencies, environmental, pediatric and genetic disease processes is also included. The student should be able to understand inflammation and repair throughout the body, including the oral cavity. The goal of teaching systemic pathology to the dental student is to educate him/her in the diseases affecting specific organ systems such as cardiovascular, blood, hematopoietic, lymphoreticular and immune systems, respiratory, gastrointestinal, hepatobiliary, pancreatic, genitourinary, male reproductive, breast and female reproductive, endocrine, musculoskeletal and central and peripheral nervous systems. The student should complete the course with a fundamental knowledge of common systemic diseases. They should be able to identify how their patients diseases can affect dental treatment.

Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad Letter Grade

DIASCI 5171 - INTRODUCTION TO RADIOLOGY 2

Minimum Credits: 0.5

Maximum Credits: 0.5

In this course, students will continue to build on the concepts addressed in the Introduction to Radiology 1, Dental Anatomy, Periodontics and Cariology courses. This course offers the first-year dental students instruction in the fundamentals of theory and practice that include the following: 1. A working knowledge of the dental radiological technique, and interpretation as they apply to dentistry; 2. A pre-clinical laboratory exercise to develop practical skills in the area of dental x-ray procedures; 3. Self-instruction materials that cover normal radiographic anatomy. This course includes a self-paced online component (recommended lecture completion dates and test freezing dates will be posted), mandatory in class sessions on select topics, and a preclinical radiology technique rotation.

Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DIASCI 5211 - INTRODUCTION TO RADIOLOGY PHYSICS AND BASIC INTERPRETATION

Minimum Credits: 1

Maximum Credits: 1

In this course, students will continue to build on the concepts addressed in the Dental Anatomy, Periodontics and Cariology courses. This course

offers the second year dental student instruction in the fundamentals of theory and practice that include the following: 1) a working knowledge of the dental radiological physics, technique, safety and interpretation as they apply to dentistry; 2) a pre-clinical laboratory exercise to develop practical skills in the area of dental x-ray procedures; 3) self-instruction materials that cover normal radiographic anatomy; and 4) small group exercises in basic radiographic interpretation of caries and periodontium to serve as the foundation for future radiographic interpretation and patient care. This course includes a self-paced online component (recommended lecture completion dates and test freezing dates will be posted), small group interpretation exercises, and a preclinical radiology technique rotation. In-class sessions are available upon request for any topics that the class would like to review with the course director.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad HSU Basis

DIASCI 5212 - ORAL AND MAXILLOFACIAL PATHOLOGY

Minimum Credits: 4

Maximum Credits: 4

The practice of dentistry requires the ability to distinguish normal oral anatomy from oral abnormalities, and to determine implications for treatment. Oral and Maxillofacial Pathology is aimed at the recognition of the etiologic, clinical, radiographic, microscopic features of abnormalities, and disease processes unique to the oral perioral structures, as well as those which reflect systemic disease. Where appropriate, treatment of oral diseases will be addressed. The course integrates material learned in the basic science curriculum, including embryology, biochemistry, histology, cell biology, and physiology, and applies it to the diseased state (pathology). Where appropriate, treatment of oral diseases will be addressed. By the end of the course, you will be able to distinguish normal oral anatomy from oral abnormalities, and to determine implications for treatment, which is essential to the practice of dentistry. This course includes lectures, class discussions, and case-based learning activities.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF with +/- Values

DIASCI 5241 - RADIOLOGY, IMAGING AND INTERPRETATION 1

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

DIASCI 5319 - CLINICAL RADIOLOGY 1

Minimum Credits: 1

Maximum Credits: 1

This course is designed to allow the student to acquire the skills for performing intraoral and panoramic dental radiographic examinations. The student will demonstrate these skills first on mannequins and develop them doing radiographic examinations on patients. The student will also be taught to recognize and correct common imaging and processing errors encountered in dental radiography. The student will also be introduced to other maxillofacial imaging techniques as patient needs permit.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

DIASCI 5320 - MANAGEMENT OF DENTAL EMERGENCIES

Minimum Credits: 1

Maximum Credits: 1

In this course, students will learn the principles and procedures for the examination, diagnosis, treatment and documentation of the patient with a dental emergency. Students will be provided with numerous examples of dental emergencies that encompass the various dental disciplines. The goal of this course is to provide students with the foundational knowledge needed to properly evaluate and treat dental emergencies in an expeditious and efficient manner. Students will apply the skills acquired in this didactic course when treating patients during their clinical rotations in the Emergency Care Clinic. This knowledge and experience is intended to help the student manage their patients while in dental school, and after graduation when in a private practice setting. This course includes lectures and class discussions.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

DIASCI 5329 - EMERGENCY CLINIC ROTATION 1

Minimum Credits: 1

Maximum Credits: 1

This course will provide the third year dental student with the opportunities to evaluate, diagnose, and manage patients requiring immediate intervention.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

DIASCI 5341 - SEMINARS IN ORAL PATHOLOGY AND ORAL MEDICINE

Minimum Credits: 1

Maximum Credits: 1

This course will help students develop diagnostic and management skills as they pertain to oral and maxillofacial pathology by building on the basic knowledge acquired in systemic and oral pathology. This course will focus on the recognition, description and management of clinical and radiographic entities which is encountered by general dentists. The course format will be clinical-pathologic correlations (CPCS) seminars. The students will be provided with cases to review.

Academic Career: Dental Medicine

Course Component: Seminar

Grade Component: ABCF with +/- Values

DIASCI 5342 - PRACTICE ADMINISTRATION

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad Letter Grade

DIASCI 5359 - CLINICAL RADIOLOGY 2

Minimum Credits: 1

Maximum Credits: 1

This course is designed to allow the student to acquire the skills for performing intraoral and panoramic dental radiographic examinations. The student will demonstrate these skills first on mannequins and develop them doing radiographic examinations on patients. The student will also be taught to recognize and correct common imaging and processing errors encountered in dental radiography. The student will also be introduced to other maxillofacial imaging techniques as patient needs permit.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

DIASCI 5369 - EMERGENCY CLINIC ROTATION 2

Minimum Credits: 1

Maximum Credits: 1

This course will provide the students the opportunity to evaluate, diagnose, treat or manage patients requiring immediate intervention.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

DIASCI 5373 - RADIOLOGY, IMAGING AND INTERPRETATION 2

Minimum Credits: 1

Maximum Credits: 1

In this course, students will build on the concepts addressed in the anatomy, dental anatomy, oral surgery, oral pathology, and radiology courses taken previously. This course follows DIASCI 5241, (Radiology, Imaging and Interpretation 1), a basic interpretation course which focused on selection criteria to appropriately prescribe radiographs and the identification of the most clinically relevant radiographic pathology (including caries, periodontal conditions, cysts, tumors, systemic conditions, and fibro-osseous conditions). This course is designed to familiarize students with technological advancements in the field of radiology. Application of those advancements to the appropriate prescription of radiographs in a clinical setting will be addressed. Small group interpretation exercises will be implemented throughout the course to aid student learning. The pathology component of the cases will help students develop an understanding of the disease process and correlate disease with radiographic findings. Students will develop an understanding of the various disease processes of the head and neck and will develop skills to prescribe the appropriate imaging technique for further analysis of the disease process. This course will also serve as a review of radiographic features of intraoral pathology, basic imaging principles, and their applications for the National Board Dental Examination (NBDE) Part II. The course includes lecture, class discussions, and small group interpretation exercises.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

DIASCI 5388 - CLINICAL RADIOLOGY 3

Minimum Credits: 1

Maximum Credits: 1

The oral and maxillofacial radiology clinical rotation provides the clinical environment for students to become competent in the technical and clinical aspects of radiographic procedures. Acquisition of radiographs and critiquing will constitute the bulk of this course. In addition, students will be required to acquire at least 5 panoramic or other extra-oral radiographs by the end of the term.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

DIASCI 5389 - CLINICAL EMERGENCY 1

Minimum Credits: 2

Maximum Credits: 2

This course is designed to provide clinical experiences in the area of emergency dentistry for predoctoral dental students. By the end of the fourth year of the curriculum, students will be able to demonstrate competence in providing care to dental patients with emergent needs at the level of a general dentist and will participate in a variety of additional experiences to increase skills in caring for the patient with emergent dental needs.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: ABCF

DIASCI 5419 - EMERGENCY CLINIC ROTATION 4

Minimum Credits: 1

Maximum Credits: 1

This course will provide the fourth year dental student with additional opportunities to evaluate, diagnose, and manage patients requiring immediate intervention in a more self-guided environment.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

DIASCI 5459 - CLINICAL RADIOLOGY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Dental Medicine

Course Component: Clinical
Grade Component: Grad HSU Basis

DIASCI 5469 - CLINICAL EMERGENCY 2

Minimum Credits: 2

Maximum Credits: 2

This course will provide the student the opportunity to evaluate, diagnose, treat or manage patients requiring immediate intervention.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

DIASCI 5877 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 3

Academic Career: Dental Medicine

Course Component: Directed Studies

Grade Component: Grad HSU Basis

DIASCI 5900 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 3

This course provides the student with the opportunity to independently originate, organize and complete a scientific investigation on a topic in dentistry.

Academic Career: Dental Medicine

Course Component: Independent Study

Grade Component: Grad HSU Basis

DIASCI 5911 - DENTAL EMERGENCY SELECTIVE

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

DIASCI 5912 - DIAGNOSIS & PHARMACOLOGICAL MANAGEMENT OF OROFACIAL PAIN

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad HSU Basis

DIASCI 5916 - MEDICAL AND THERAPEUTIC CONSIDERATIONS OF GERIATRIC DENTAL PATIENTS

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad HSU Basis

DIASCI 5917 - ORAL HEAD AND NECK CANCER SELECTIVE

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DIASCI 5941 - DENTAL EMERGENCY SELECTIVE

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DIASCI 5943 - MEDICAL AND THERAPEUTIC CONSIDERATIONS OF GERIATRIC DENTAL PATIENTS

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

DIASCI 5944 - CLINICAL PATHOLOGIC CORRELATION IN ORAL AND MAXILLOFACIAL PATHOLOGY

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Seminar
Grade Component: Grad HSU Basis

DIASCI 5947 - RADIOGRAPHIC INTERPRETATION

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

DIASCI 5972 - MEDICAL AND THERAPEUTIC CONSIDERATIONS OF GERIATRIC DENTAL PATIENTS

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

Digital Studies and Methods

DSAM 3000 - DIGITAL STUDIES AND METHODS: SEMINAR

Minimum Credits: 3
Maximum Credits: 3

This seminar addresses the relationships between digital computing and the humanities and allied social sciences, both as a subject of both historical

interest and contemporary practical concern. We engage in ongoing theoretical discussions but also fully engage with what it takes to implement interpretive research in the digital environment. Students leave this class having gained a personally significant understanding of current debates in the field of digitally-oriented interpretive research as well as having built a digital project of their own. This course serves as one of the core requirements for the graduate certificate in digital studies and methods.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

DSAM 3100 - DIGITAL STUDIES AND METHODS: PRACTICUM

Minimum Credits: 3

Maximum Credits: 3

This course provides a studio-based, semi-structured learning environment in which students focus exclusively on producing and sharing their own, more advanced, work using digital computing within the context of the humanities and allied social sciences. In this practicum, the students begin to investigate more fully the particular digital tools and methods that seem most promising to their longer-term research agenda. It is designed as a collaboration with the university library system, co-led by and taught in digital scholarship services. This course serves as one of the core requirements for the graduate certificate in digital studies and methods.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

DSAM 3200 - DIGITAL STUDIES AND METHODS: CAPSTONE

Minimum Credits: 3

Maximum Credits: 3

This course, which serves as the final required course for the graduate certificate in digital studies and methods, will require three major efforts on the part of the student. First, the student will undertake (or substantially add to) a large-scale, independent research project that reflects the mindful use of digital technologies in their field of research that contributes meaningful scholarly knowledge. Second, they will produce an annotated portfolio of the work that they have done during the DSAM certificate that also includes methodological reflections on the use of digital methods in the humanities and allied social sciences. Finally, they will present this portfolio and their capstone work at the end of the term in a DSAM showcase. This course has prerequisites: both DSAM 3000 and DSAM 3100

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

DSAM 3999 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 3

This course allows students to work on individual digital projects under the direction of a faculty advisor. This course requires instructor approval and is used only in exceptional circumstances for the graduate certificate in digital studies and methods.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

East Asian Languages & Literature

EAS 2000 - RESEARCH AND THESIS MA DEGREE

Minimum Credits: 1

Maximum Credits: 6

Preparation of thesis.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis
Course Attributes: Asian Studies

EAS 2005 - SOURCES AND METHODS IN EAST ASIA

Minimum Credits: 3

Maximum Credits: 3

This course will center on how to use library materials for research on china and Japan. Students will be trained in bibliography, library techniques, and the use of text and reference works for East Asian studies. Students will also be encouraged to familiarize themselves with the range of new technologies available for advanced level research, including library databases and internet resources.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Attributes: Asian Studies

EAS 2701 - READING JAPANESE 1

Minimum Credits: 3

Maximum Credits: 3

This course represents the first part of a two-course sequence (with EAS 2702) designed specifically to deepen the student's understanding and skills in reading written Japanese. Students must have a knowledge of the characters used in Japanese to at least the 4th year level in the departmental sequence. The course will be taught in English.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Asian Studies

EAS 2702 - READING JAPANESE 2

Minimum Credits: 3

Maximum Credits: 3

A continuation of EAS 2701. Students will continue to develop reading skills by reading a variety of literature relevant to their fields of research.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Asian Studies

EAS 2902 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 6

The student undertakes a course of study under the direct supervision of a department faculty member.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Attributes: Asian Studies

EAS 2990 - INDEPENDENT STUDY

Minimum Credits: 3

Maximum Credits: 3

Individual study under the guidance of a department faculty member.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

Course Attributes: Asian Studies

Economics

ECON 2000 - THESIS AND RESEARCH MA DEGREE

Minimum Credits: 1

Maximum Credits: 12

Students pursue study or research independently with minimal supervision by faculty.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

ECON 2001 - INTRO TO MATHEMATICAL METHODS

Minimum Credits: 3

Maximum Credits: 3

Intensive mathematics preparation for first year Ph.D. students.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Economics (PHD)

ECON 2010 - MATHEMATICAL METH ECON ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

A survey of differential and integral calculus with application to economic analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: ECON 2001; PLAN: Economics (PhD)

ECON 2020 - INTRO TO ECONOMETRIC THEORY

Minimum Credits: 3

Maximum Credits: 3

This course covers elements of inferential statistics necessary for the study of econometric theory. It emphasizes estimation theory and its applications. Illustrations are drawn from several areas of economics. Students are expected to understand the theory of statistical inference mathematically as well as intuitively when applied to economic problems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: ECON 2001; PLAN: Economics (PhD)

ECON 2100 - ADVANCED MICROECONOMIC THEORY 1

Minimum Credits: 3

Maximum Credits: 3

Theories of consumer behavior, producer behavior, market equilibrium, industry structure.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: CREQ: ECON 2001; PLAN: Economics (PhD)

ECON 2110 - ADVANCED MACROECONOMIC THEORY 1

Minimum Credits: 3

Maximum Credits: 3

The course covers the comparative static approach to macroeconomics. The objectives include both an understanding of past and recent literature on theory and empirical evidence.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: ECON 2001; PLAN: Economics (PhD)

Course Attributes: Global Studies

ECON 2120 - ADVANCED MICROECONOMIC THEORY 2

Minimum Credits: 3

Maximum Credits: 3

This course will present the Arrow-Debreu-McKenzie Theory of competitive equilibrium, the theory of imperfect competition, and economics of uncertainty. The presentation will be self-contained, including a discussion of the mathematical techniques used. As time permits, special topics will be discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Global Studies

ECON 2130 - ADVANCED MACROECONOMIC THEORY 2

Minimum Credits: 3

Maximum Credits: 3

The first part of the course will be devoted to studying models of economic growth and the role money plays in the growth process. The second part of the course will consist of an introduction to the macro-economic rational expectations literature. Both theoretical as well as empirical contributions will be surveyed and discussed in this area.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Global Studies

ECON 2150 - GENERAL ECONOMETRICS

Minimum Credits: 3

Maximum Credits: 3

Surveys standard econometric models, their estimation, hypothesis testing and other inferential problems of, among others, (1) classical linear regression, (2) generalized linear regression models, including sur an pooled regression models, (3) dynamic models with spherical and nonspherical errors, (4) qualitative and limited dependent variable models, (5) simultaneous equations models--static and dynamic, (6) use and analysis of econometric models.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ECON 2160 - EMPIRICAL METHODS

Minimum Credits: 3

Maximum Credits: 3

This course will cover empirical methods typically used in applied microeconomic research and it is designed to help you apply the techniques learned in the econometrics sequence. We will focus on techniques used in applied microeconomics to identify causal estimates. The course will cover data issues and distributional estimators in some detail along with matching and propensity scores, local regressions, instrumental variables, regression discontinuity designs, and inference issues. Many examples will come from development, health, labor, public economics, and political economy, but the material will be useful to any applied researcher. The course will focus also on the implementation of econometric techniques learning the basic tools of programming and coding. The goal of this class is to provide students with the tools needed to become critical readers of

empirical work and teach them techniques that they can apply to their own original research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ECON 2170 - EMPIRICAL METHODS 2

Minimum Credits: 3

Maximum Credits: 3

This course will cover methods to cope with selection bias and external validity (e.g.: imperfect IV, plausibly exogenous IV, weighting matrix), decomposition methods, multiple hypothesis testing, methods for spatial analysis (ARGIS), causal mediation analysis, an introduction to machine learning and big data in economic research, discrete choice models and dynamic choice model applications. Many examples will come from development, health, labor, public economics, and political economy, but the material will be useful to any applied researcher. The course will focus also on the implementation of econometric techniques learning the basic tools of programming and coding. We will use STATA, ARCGIS, R, and Matlab. The goal of this class is to provide students with the tools needed to become critical readers of empirical work and teach them techniques that they can apply to their own original research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ECON 2220 - TOPICS IN EXPERIMENTAL ECONOMICS

Minimum Credits: 3

Maximum Credits: 3

The course is designed to familiarize the student with experimental methodology and the range of application of experimental methods in economics. Students will devise and execute (in consultation with the instructor) a "pilot" experiment in a substantive area of interest. This can be done in small groups of 2 or 3 or be a solo project. The object is to provide hands-on experience in conducting an economics experiment.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ECON 2230 - PUBLIC ECONOMICS

Minimum Credits: 3

Maximum Credits: 3

This is a survey course of topics in public finance. The purpose is to acquaint students with a broad range of classical and contemporary issues in public finance. The course will be divided into several topic areas; taxation; expenditure analysis; economics of political processes; control of externalities; regulation; and fiscal federalism.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ECON 2250 - INDIVIDUAL RESEARCH

Minimum Credits: 1

Maximum Credits: 12

Students pursue study or research independently with minimal supervision by faculty.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

ECON 2260 - ADVANCED ECONOMETRICS 1

Minimum Credits: 3

Maximum Credits: 3

Covers, with rigor commensurable to the current professional standard, the basis results of statistical inference in the classical linear regression model

and their extension; asymptotic theory and its application to extremum estimators including the least squares estimator and the maximum likelihood estimator; asymptotic tests and related topics; generalized least squares theory; and linear and nonlinear simultaneous equation models.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ECON 2270 - ADVANCED ECONOMETRICS 2

Minimum Credits: 3

Maximum Credits: 3

Covers qualitative choice models, censored and truncated models, duration models, time series models - univariate and multivariate, causality analysis, dynamic models, cointegration, time series macroeconometrics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ECON 2320 - TOPICS IN URBAN AND ENVIRONMENTAL ECONOMICS

Minimum Credits: 3

Maximum Credits: 3

The first portion of the course is devoted to examining the allocation of resources within and between urban areas. The second portion of the course examines the relationship between this resource allocation and various urban problems including poverty, discrimination, housing, transportation, and urban public finance.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ECON 2400 - LABOR MARKET ANALYSIS 1

Minimum Credits: 3

Maximum Credits: 3

This course covers topics in areas of labor economics such as: labor supply; household production and labor force participation; labor demand; minimum wages; schooling and earnings; human capital externalities; wage inequality, and skilled biased technological change. The purpose of the sequence (this course and econ 2410) is to familiarize students with the economic models and empirical strategies used in the labor economics literature, and teach them to critically analyze empirical research in preparation of doing their own applied work. By the end of the course, students should have the background necessary to start developing their own independent research interests in the field.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ECON 2410 - LABOR MARKET ANALYSIS 2

Minimum Credits: 3

Maximum Credits: 3

This course covers topics in areas of labor economics such as: immigration; labor market discrimination; compensating wage differentials; incentives, effort and monitoring; efficiency wages; and the economics of marriage and childbearing. The purpose of the sequence (econ 2400 and this course) is to familiarize students with the economic models and empirical strategies used in the labor economics literature, and teach them to critically analyze empirical research in preparation of doing their own applied work. By the end of the course, students should have the background necessary to start developing their own independent research interests in the field.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ECON 2450 - ECONOMIC HISTORY

Minimum Credits: 3

Maximum Credits: 3

This course explores the economic history of the United States from European settlement up to the recent past. Topics covered will include: the origins of American industrial growth; the political economy of the constitution and constitutional ratification; economic and environmental change; the welfare effects of industrialization; the industrial organization of the great trusts, such as standard oil and American tobacco; the sources and consequences of regulatory change; and the great depression and the new deal. The course will train students in the tools and methods of the economic historian. In this way, the course will consider a wide body of theory and empirical tools that can be applied to the study history and historical change. The course readings will be mix of old classic articles and more recent work.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ECON 2500 - INTERNATIONAL TRADE

Minimum Credits: 3

Maximum Credits: 3

This course is a rigorous introduction to the pure theory of international trade. The material requires a background in microeconomic theory.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ECON 2510 - INTERNATIONAL FINANCE

Minimum Credits: 3

Maximum Credits: 3

Rigorous survey of the theory of international finance, the applications to international economic policy. Assumes thorough knowledge of micro and macroeconomic theory at the graduate level, and some acquaintance with mathematical techniques. Topics covered include: balance-of-payments adjustment under various change-rate regimes; theory of economic policy in an open economy; international capital movements; the monetary approach to the balance of payments; and empirical evidence on many of the above topics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ECON 2530 - ECONOMIC DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

A comprehensive survey of the major analytical literature of development economics. Covers approaches to and theories of development; dualistic models of the development process; the impact of the international economy; and development planning. Both major theoretical literature and empirical findings in each area are covered. Primary focus will be on the analytical techniques and literature, though some time will be spent on discussion of researchable topics in the area.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ECON 2540 - GROWTH & POLICY MODELS OF ECON

Minimum Credits: 3

Maximum Credits: 3

For students interested in the more formal mathematical approaches to economic development and to related quantitative methods for planning and decision making. Topics will include applications of growth theory, input-output analysis, linear programming, computable general equilibrium, and project analysis in a development context. Problem exercises will be assigned.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ECON 2600 - COMPUTATIONAL METHODS ECONOMICS

Minimum Credits: 3

Maximum Credits: 3

This class is intended to familiarize Ph.D. students with numerical methods to solve economic models. Topics covered depend on instructor. Example topics include approximation methods, fixed point problems, solving functional equations like dynamic programs, Monte Carlo methods. Such methods are used in differentiated product models in industrial organization, political economy models in macroeconomics, and dynamic private information models. Heavy use is made of the computer.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ECON 2670 - POLITICAL ECONOMY

Minimum Credits: 3

Maximum Credits: 3

In this course, we will take a formal look at various environments where a group of individuals (committee, society, congress, etc) takes a binding decision through some institutional mechanism (consensus, elections, jury deliberations, legislative bargaining etc). The course will have a strong formal, positive focus on how the varied political, social and legal institutions that define the 'rules' of collective decision-making determine the nature of collective outcomes. On the normative side, the course would focus on certain 'desirable properties' (e.g. Respecting minority preference) of collective decision-making and analyze whether and to what extent the existing institutional arrangements satisfy such properties. While we shall start out using concepts of co-operative game theory, for most part of the course we will be in the realm of non-cooperative game theory. This course will provide a starting point for research in formal political theory and political economy. As such, it might be of interest to students of both economics and political science.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ECON 2700 - SPECIAL TOPICS

Minimum Credits: 3

Maximum Credits: 3

Current topics of particular interest to economics graduate students are discussed and analyzed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ECON 2701 - GREEN INFRASTRUCTURE IMPLEMENTATION: A CASE STUDY OF THE PITTSBURGH REGION

Minimum Credits: 3

Maximum Credits: 3

This course is designed to exercise the student's academic knowledge, passions, and skills to facilitate real-world problem solving in a collaborative setting. It will improve the students' skills in these areas: analytical; collaborative work; project management; communication; experimentation; and decision analysis. Differences in baseline skills and interests will be recognized in assignments and grading.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ECON 2710 - EMPIRICAL METHODS II

Minimum Credits: 3

Maximum Credits: 3

This course will cover cutting-edge methods typically used in applied micro-economic research and it is designed to help you learn how to apply the econometric techniques learned in the econometrics sequence. It is a natural prosecution of the empirical methods class. The course will cover

methods for spatial analysis introducing students to the use of ArcGIS for applied microeconomic research. Furthermore, it will introduce students to scraping and data mining techniques using Python and R. The goal of this class is to provide students with the tools needed to become critical readers of empirical work and teach them techniques that they can apply to their own original research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ECON 2713 - TOPICS IN MACROECONOMICS

Minimum Credits: 3

Maximum Credits: 3

A field course designed to initiate original research projects in areas categorized under the broad heading of macroeconomics. Students select an area in which to specialize (asset pricing theory, growth theory, business cycle theory, etc.). And present one to three lectures summarizing the literature in the area. A short reading list of seminal papers in the area would be provided for the class to follow. Students begin an original research project to be presented at the end of the term, and to be summarized in a paper.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Global Studies

ECON 2720 - RESEARCH METHODS IN ECONOMICS

Minimum Credits: 1

Maximum Credits: 1

This is a mandatory course for second-year PhD students. The course will introduce students to strategies for identifying interesting research ideas, to determine whether the idea is worth pursuing, to effectively review the literature, and to plan how to conduct the research. Insights into how these strategies change across fields within economics will be provided by relevant faculty guests. Other topics discussed in the course will include the typical difficulties involved in conducting research and how to address them; how to deal with advisors; academic etiquette; techniques for presenting work in progress at seminars; and how to write and submit academic papers. Requirements will include the drafting of the second-year paper proposal (PhD Comprehensive Research Paper) and the selection of two faculty readers.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ECON 2730 - SEMINAR EXPERIMENTAL ECONOMICS

Minimum Credits: 3

Maximum Credits: 3

There is a small, but rapidly growing literature in which behavioral experiments are used to test central propositions of various economic theories. This course will review the experimental literature that exists in several areas of economics, including industrial organization, social choice and preference revelation, behavior of decentralized markets and bargaining. A number of experiments will be replicated. Students will be expected to design their own experiments.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ECON 2740 - TEACHING ECONOMICS

Minimum Credits: 1

Maximum Credits: 1

A required course for newly appointed ta/tfs in economics. The object is to develop teaching skills that are essential for effective communication between instructor and college students in economics. Theory and pedagogy, as well as practicum and demonstrations are part of this course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad SN Basis

ECON 2760 - TOPICS IN MICROECONOMIC THEORY

Minimum Credits: 3

Maximum Credits: 3

This is an advanced level course in microeconomic theory. It deals with a broad range of topics, some drawn from recent papers, chosen to prepare students to tackle the literature on their own. Offered in alternate years to economics 2210 introduction to game theory 2.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ECON 2770 - COMPREHENSIVE PREPARATION

Minimum Credits: 1

Maximum Credits: 12

Graduate students pursue study independently to prepare for comprehensive examinations.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

ECON 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 12

Students pursue study or research independently with minimal supervision by faculty.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

ECON 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1

Maximum Credits: 12

Graduate students pursue study or research under the supervision of faculty.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

ECON 3100 - SEMINAR IN MICROECONOMICS

Minimum Credits: 3

Maximum Credits: 3

This is a seminar in microeconomic theory and analysis. Special topics are selected each time the seminar is offered.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ECON 3110 - SEMINAR IN MACROECONOMICS

Minimum Credits: 3

Maximum Credits: 3

This is a seminar in modern macroeconomic theory and analysis. Special topics are selected each time the seminar is offered.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Global Studies

ECON 3160 - ECONOMETRICS SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Advanced topics in econometrics not covered in econ 2150 and 2160 shall be studied. Each student is assigned a special topic and is asked to present research results.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ECON 3400 - APPLIED MICROECONOMIC SEMINAR

Minimum Credits: 3

Maximum Credits: 3

The primary aim of this course is to introduce Ph.D. Students to a sampling of the current professional research in various applied microeconomics fields 'such as labor economics, health economics, public finance, industrial organization, development economics or political economy. Students learn and critically analyze the range of empirical approaches used to study topics within these areas, in preparation of doing their own applied work. This course requires attendance to the joint CMU/Pitt applied microeconomics workshop, where renowned guest speakers will be presenting their current working papers.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ECON 3420 - LABOR DEVELOPMENT SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ECON 3500 - INTERNATIONAL ECONOMICS SEMINAR

Minimum Credits: 3

Maximum Credits: 3

The seminar will be used to promote student and faculty research, especially doctoral dissertations.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Global Studies

ECON 3520 - COMPARATIVE & DEVELOP ECON SEM

Minimum Credits: 3

Maximum Credits: 3

The seminar will focus on the most recent theoretical and empirical studies that are being carried out by specialists in these areas. It will consist of presentations both by the university of Pittsburgh and outside faculty.

Academic Career: Graduate

Course Component: Workshop

Grade Component: Grad LG/SNC Basis

ECON 3902 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 12

Students pursue study or research under the direct supervision of a faculty member.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

Education

EDUC 2000 - PSYCHOLOGY OF LEARNING AND DEVELOPMENT FOR EDUCATION

Minimum Credits: 3

Maximum Credits: 3

This course focuses on those areas of development and learning which have relevance for educators. The course covers preschool through old age. For each age range, typical behaviors and competencies that are learned or developed are considered from a number of domains (cognitive, affective, psychomotor, social). Attention is also given to appropriate research methods. An interactionist perspective is utilized; the course may be team taught.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EDUC 2003 - RESEARCH METHODS IN EDUCATION POLICY AND PRACTICE

Minimum Credits: 3

Maximum Credits: 3

This course presents psychological theory, research and analytical methods applicable to the variety of settings in which adults learn and to the variety of objectives adults have for learning. The roles of memory, prior knowledge and self-regulated learning in these and other task domains are considered. Students should emerge with an understanding of how to analyze what is involved in selected domains of learning and how to identify the more important questions for research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EDUC 2007 - HUMAN LEARNING

Minimum Credits: 3

Maximum Credits: 3

Presents an overview of theories and of kinds of learning that educational professionals should know. Also considered are recent developments in cognitive psychology, such as information processing and knowledge-based approaches in transition from novice to expert, and from poorly to well adjusted states.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EDUC 2008 - CONCEPTION TO EARLY CHILDHOOD

Minimum Credits: 3

Maximum Credits: 3

Focuses on developmental pathways from conception through early childhood within contexts of family, daycare/school, community and culture. Pathways are considered with regard to developmental changes in transactions between individuals and social life conditions, with focus on patterns of change in participation in social-cultural practices. Besides a review of current literature, students will be engaged in qualitative investigations of the social lives of young children.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

EDUC 2009 - DEVELOPMENT: MIDDLE CHILDHOOD/ADOLESCENCE

Minimum Credits: 3

Maximum Credits: 3

Course focuses on developmental pathways from middle childhood through adolescence (ages 7-18) within the contexts of family, school, community and culture. Pathways are considered in regard to developmental changes in transactions between individuals and social life conditions, with regard to patterns of change in participation in social cultural practices. Students will be engaged in qualitative investigations of the social lives of children and adolescents.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EDUC 2011 - CULTURALLY RESPONSIVE PEDAGOGY

Minimum Credits: 3

Maximum Credits: 3

The course, culturally responsive pedagogy, introduces students to theory, research, and especially practice related to developing and enacting curriculum and instructional practices that respond to the social context in which they (will) work. The course covers general principles and approaches to culturally responsive teaching such as how teachers develop meaningful relationships with students, how teachers learn from and about a school and local community, how teachers develop and implement culturally responsive classroom management, and how teachers develop expectations for students that maximize their capacity. In addition, the course will assist students in learning about and developing culturally responsive curriculum and pedagogy in their different content/subject matter areas (such as mathematics, science, art, language arts, and social studies). A recurrent and central question of the course is: how do teachers develop culturally responsive instructional practices in their particular disciplinary domain to maximize students learning opportunities?

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

EDUC 2046 - SPECIAL TOPICS-THE URBAN ENVIRONMENT

Minimum Credits: 3

Maximum Credits: 3

This course will provide students with an introduction to the social, historical, and political factors shaping urban life and communities in the United States. The course is primarily, but by no means exclusively, intended for education students and is designed to help students develop a more sophisticated understanding of the contexts in which urban education occurs and the relationship between urban processes and urban education. More specifically, the course will focus on the history of cities, including 20th and 21st century urban transformation, the development and persistence of residential segregation, urban poverty, the criminalization of urban communities, immigration, and trends in theory and practice around urban redevelopment. In all cases, we will consider the implications for urban families, communities, and schools.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EDUC 2088 - URBAN EDUCATION REFORM

Minimum Credits: 3

Maximum Credits: 3

The course is designed to provide both a background understanding of urban education, as well as expose students to particular urban education reforms. Students will examine selected historic and contemporary reform efforts in education, in particular studying the theories of change, implementation challenges and critiques associated with these different reforms as they apply to urban districts and schools. We will look at the theoretical underpinnings of particular reforms, as well as why education policies have succeeded or failed, and the consequences of these outcomes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EDUC 2089 - SPECIAL TOPICS

Minimum Credits: 3

Maximum Credits: 12

An experimental course with a flexible curriculum oriented to special research topics or current issues of concern to educators. Topics vary.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EDUC 2100 - EDUCATION AND SOCIETY

Minimum Credits: 3

Maximum Credits: 3

The course focuses on the interaction between educational institutions and their social context. Situated in the field of study known as social foundations of education, the content reflects disciplinary methods in the examination of such policy issues as the role of the schools in social change, the influence and consequences of formal and non-formal educational forces, and the economics and politics of school reform efforts. Students are challenged to consider the relationships between culture and power and the value-laden character of all educational endeavors. Thus the role of schooling is considered in cultivating the habits necessary for democratic citizenship which include ongoing efforts to secure equitable and just social relations, and to advance the common good.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: Global Studies

EDUC 2102 - HISTORY OF EDUCATION

Minimum Credits: 3

Maximum Credits: 3

Both a chronological order and a thematic/conceptual investigation will constitute the structure of this course by juxtaposing past and contemporary historical developments. Emphasis will be placed on the ideas that prevailed in different time periods. Conflicting organizational arrangements, competing theories, and growing external pressures in different eras will be traced and analyzed in order to develop an educational historiography.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EDUC 2103 - RACE AND RACISM IN EDUCATION AND SOCIETY

Minimum Credits: 3

Maximum Credits: 3

This course focuses on issues of equity in education based upon the divisions of American society by social constructs of "race". The course is designed to expose students to conceptual frameworks of culture, society, race, class and gender from the social sciences and humanities for understanding the experiences of subordinated minority groups in school and society. The practical problems of social and school reform in American communities and schools will be addressed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EDUC 2104 - LEADERSHIP IN SERVICE LEARNING

Minimum Credits: 3

Maximum Credits: 3

This seminar examines the conditions under which social and ethnic movements have created non-formal educational programs; assesses pedagogical aspects of movement education; and evaluates movement education outcomes regarding movement goals and relations with the larger society.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EDUC 2105 - SOCIOLOGY OF EDUCATION

Minimum Credits: 3

Maximum Credits: 3

An analysis of the development of modern social institutions with special reference to the sociology of the schools. The school is studied as a social system and in the context of broad social organization.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EDUC 2106 - EDUCATION AND CULTURE

Minimum Credits: 3

Maximum Credits: 3

The active experiences in the course are intended to challenge students to investigate and analyze the dynamic relationship between schooling, education, popular culture and society by addressing the normalizing effects of cultural narratives and images that influence our taken-for-granted assumptions, beliefs and actions. Class activities involve considering the moral, social and political dimensions of our educational practice by expanding our sense of what happens outside of schools and classrooms that contribute to shaping our worldviews. We work to better understand the dynamics of culture and the relationships among culture, history, power, language and knowledge. Thus we are challenged to become informed and invigorated professionals that can help reverse the patterns of dehumanization and social control that are often overlooked in the everyday world of practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: Global Studies

EDUC 2107 - EVIDENCE BASED HEALTH PROGRAM PLANNING

Minimum Credits: 3

Maximum Credits: 3

The course focuses on the roles of schools in responding to the health needs of children in collaboration with the family and community. Examined is how schools and communities compliment and support health and social services needed to overcome the conditions that put a young person at educational risk.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EDUC 2108 - STATE/NATIONAL POLITICS OF EDUCATION

Minimum Credits: 3

Maximum Credits: 3

Analyzes broad national and international political issues as they relate to schools. Political issues are viewed from a contemporary political perspective and are compared to other social science interpretations. An examination is made of the dialectical relationship between the state and the school in an effort to determine how social, economic, and cultural reproduction occurs.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EDUC 2109 - GENDER IN EDUCATION

Minimum Credits: 3

Maximum Credits: 3

This introductory course provides an overview of anthropological approaches to the study of education. Ethnographic cases drawn from many cultures, knowledge systems, and time periods help to provide a broad, holistic view of education in diverse community and institutional contexts. Modules may include: nurturing a sense of place; comparing folk, popular, and elite cultures; understanding cultural continuity and change; celebrating rituals and holidays; fostering cultural resilience and responsive reform policies; framing multicultural education; and appreciating the sociolinguistics of schools and home. Student's have opportunities to participate in authentic schooling activities, to draft public advocacy pieces, to create team presentations, and to refine a personalized synthesis of a topic of interest. Anthropological field research methods are discussed as a

means to craft compelling analytical accounts, but research training is not part of this course

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: African Studies, West European Studies

EDUC 2110 - GENDER AND EDUCATION

Minimum Credits: 3

Maximum Credits: 3

This seminar examines the role that gender plays in the lives as students, researchers, educators, and policy makers. Major topics may include: changing trends of participation and success in k-16 schooling; childhood and professional socialization; media and curricular bias; coming of age; embodiment, sexuality, and sexual harassment; gender and the educational professions; feminist and antibias teaching; leadership and transnational communities of practice; activism and engaged feminist scholarship.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EDUC 2111 - CONTEMPORARY PHILOSOPHY OF EDUCATION

Minimum Credits: 3

Maximum Credits: 3

Examines how philosophies of education can contribute to one's vision of educative experience. Central educational concepts (e.g., Knowing, learning, thinking, valuing, and being) are analyzed in alternative ways.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EDUC 2112 - POLITICS AND HISTORY OF HIGHER EDUCATION

Minimum Credits: 3

Maximum Credits: 3

This course surveys the perennial forces which have shaped the character of America's colleges and universities. Institutional control and governance. Curricular goals and organization, and faculty and student life are examined against the background of political, economic, religious, social, and intellectual developments in American culture.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EDUC 2200 - DISCIPLINED INQUIRY

Minimum Credits: 3

Maximum Credits: 3

This course deals both with methods used in educational research and with the underlying theories, assumptions, and limitations. Students will do various inquiry activities, including sampling, observation and other data collection activities, as well as critical analysis of literature relevant to an important educational problem. These inquiry activities and study provide a foundation for further study of epistemological issues on which educational research and theory are based.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EDUC 2201 - INTRODUCTION TO RESEARCH METHODOLOGY

Minimum Credits: 3

Maximum Credits: 3

Introduces basic language and concepts of empirical research with emphasis on the applicability of research methodology (statistics, measurement,

design, and evaluation) for improvement of professional practice in education.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

EDUC 2202 - EDUCATIONAL/PSYCHOLOGICAL MEASUREMENT

Minimum Credits: 3

Maximum Credits: 3

Introduction to basic principles of measurement and a survey of educational and psychological testing. Topics include validity, reliability, item selection, and referencing (both norm and criterion); interpreting factor analysis of test scores; using tests in decisions; social and ethical issues in testing; theories of intelligence and their relation to intelligence testing; and tests of personality. Students participate in a laboratory section where they analyze data and evaluate tests.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

EDUC 2205 - FIELD METHODS

Minimum Credits: 3

Maximum Credits: 3

Designed to acquaint students with basic ethnographic field work techniques. Topics addressed include taking and managing field notes on participant-observation and use of archival materials. There will also be some discussion of the relationship among research design, data collection, and data analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

EDUC 3001 - PRACTITIONER INQUIRY 1

Minimum Credits: 3

Maximum Credits: 3

This initial course in the research sequence introduces students to disciplined inquiry of problems of practice through a variety of perspectives, approaches, and methods of planning and conducting educational research. This course provides a foundation for further study of research topics and the enactment of educational research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EDUC 3002 - FOUNDATIONS 1:

Minimum Credits: 3

Maximum Credits: 3

This course introduces the notion of a conceptual framework and engages students in critical analysis of exemplars that demonstrate how conceptual frameworks drive the intellectual work of educational research and practice. Students identify a topic of interest and begin to survey the professional literature related to that topic in order to identify a problem of practice and how that problem has been framed and investigated.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EDUC 3003 - FOUNDATIONS 2: LEADERSHIP IN GROUPS AND ORGANIZATIONS

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the leadership of pre-20 institutions, and other educationally-related entities in an environment characterized by socioeconomic, political, technological, and demographic change. It will examine the breadth of leadership theories and styles in education, including

traditional, entrepreneurial, behavioral, and relationship-based models. Course participants will learn how to lead system- and institutional-level changes, drawing upon strategic, human resources, financial management, and quality assurance skills. Emphasis is given to leadership models that focus on student-centric solutions, sustainable excellence, equity and social justice within education institutions at all levels.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

EDUC 3004 - FOUNDATIONS 3: CONTEXTS OF EDUCATION

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the leadership of pre-20 institutions, and other educationally-related entities in an environment characterized by socioeconomic, political, technological, and demographic change. It will examine the breadth of leadership theories and styles in education, including traditional, entrepreneurial, behavioral, and relationship-based models. Course participants will learn how to lead system- and institutional-level changes, drawing upon strategic, human resources, financial management, and quality assurance skills. Emphasis is given to leadership models that focus on student-centric solutions, sustainable excellence, equity, and social justice within education institutions at all levels.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

EDUC 3005 - FOUNDATIONS 4: POLICY AS A LEVER FOR CHANGE

Minimum Credits: 3

Maximum Credits: 3

Students in this core course will learn the principles of policy development; experience the views of decision-makers about how public policies are created; highlight notable examples of both effective and ineffective policies in education, human services, and healthcare; critically examine policies which are evident in local, national, and international realms for critical examination; and respond to problem-based learning (PBL) scenarios to form and modify real-world examples of policies and regulations in education and related settings; and understand the links among effective policy, leadership, advocacy for children and families, and systems reform.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

EDUC 3006 - PRACTITIONER INQUIRY 2

Minimum Credits: 3

Maximum Credits: 3

The course will introduce concepts, tools and methods of quantitative analysis commonly used in research. The course will emphasize real world applications, including data preparation and analysis. Some concepts include: variables and their measurement 'measures of central tendency and variability; sampling; tests of statistical significance; causal inference and research design; data reduction; bivariate relationships: correlation and cross-tabulation; multivariate relationships: inference using regression analysis

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EDUC 3007 - PRACTITIONER INQUIRY 3

Minimum Credits: 3

Maximum Credits: 3

The course will introduce approaches, strategies, and practices commonly used in qualitative research. The course will emphasize real world contexts and phenomena. Key areas of study include: researcher perspective, stance and voice. Making use of observations, survey, interviews, focus groups, artifact analysis, and other forms of gathering and using 'data'. Applying various research and analytic strategies such as case study, action research, grounded theory, and thematic analysis. Considering emergent genre of research including narrative study, arts-based research and others.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EDUC 3008 - PRACTITIONER INQUIRY 4: APPLYING DISCIPLINED INQUIRY

Minimum Credits: 3

Maximum Credits: 3

This final course in the research series provides students the opportunity to engage in practice-based research with real-world issues and problems of practice. The seminar will begin with the opportunity to review a number of studies representing quantitative, qualitative, and mixed approaches. Students will then collaborate with colleagues pursuing the same and/or similar research methods and approaches through small workgroups. Each small group will be organized to support students in conducting pilot work in the methods/approaches they plan to use for their practice-based dissertation. Student groups will work with advanced PhD students who have expertise in the methods and who will act as a consultant. Students will be expected to finalize their dissertation overview proposal through this course (in conjunction with their Arco advisor and faculty).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

EDUC 3009 - SUPERVISED PRACTITIONER INQUIRY

Minimum Credits: 3

Maximum Credits: 3

Ed.D research seminar is a faculty-led inquiry group focused on developing deep knowledge in an area of interest.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad HSU Basis

EDUC 3010 - INTRODUCTION TO THE HISTORY & SOCIAL CONTEXTS OF URBAN EDUCATION

Minimum Credits: 3

Maximum Credits: 3

In this course, students will develop an introductory and foundational understanding of the dynamics of urban education. The course will address the history of urban life, communities, and schools in the U.S., as well as provide an introduction to policy and practices in the field of urban education. Additionally, the course will take an interdisciplinary approach through readings and activities that are designed to help students establish a basis for lifelong learning through normative and critical reflection on urban education within its historical, philosophical, cultural and social contexts. This includes a focus on the history of cities, including 20th and 21st century urban transformation, the development and persistence of residential segregation, urban poverty, the criminalization of urban communities, and current trends in urban redevelopment, which may shape the future of urban education.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

EDUC 3011 - CULTURALLY RESPONSIVE PEDAGOGY

Minimum Credits: 3

Maximum Credits: 3

The course, culturally responsive pedagogy, introduces students to theory, research, and especially practice related to developing and enacting curriculum and instructional practices that respond to the social context in which they (will) work. The course covers general principles and approaches to culturally responsive teaching such as how teachers develop meaningful relationships with students, how teachers learn from and about a school and local community, how teachers develop and implement culturally responsive classroom management, and how teachers develop expectations for students that maximize their capacity. In addition, the course will assist students in learning about and developing culturally responsive curriculum and pedagogy in their different content/subject matter areas (such as mathematics, science, art, language arts, and social studies). A recurrent and central question of the course is: how do teachers develop culturally responsive instructional practices in their particular disciplinary domain to maximize students learning opportunities?

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

EDUC 3012 - SUPERVISED INTERNSHIP

Minimum Credits: 3

Maximum Credits: 3

Students may complete one of three internship experiences: Job-embedded internship: students already working in their field of choice may elect to have their current responsibilities reviewed for eligibility for a full-time job-embedded internship. If the advisor and student agree that the student's current responsibilities represent a relevant and meaningful internship experiences, then a plan will be developed that will engage the student in analysis of practice and leadership activities. Aspirant internship: students will have an apprenticeship experience in which they shadow and collaborate with a trained mentor in their discipline. Global studies experience: students will have the opportunity to design an international experience that provides direct observation or experience with practice or policy in another country.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad HSU Basis

EDUC 3045 - CRITICAL RACE THEORY IN EDUCATION

Minimum Credits: 3

Maximum Credits: 3

This course focuses on foundational scholarship, theories and germinal texts that inform critical race theory. By introducing central tenets, principles and tensions, we will provide an historical overview of critical race theory and consider the following interrelated questions: how are racial inequities produced, reproduced, and maintained in education and society? In what ways is critical race theory used as an analytic tool to explain policy, reform, practice and other phenomena? In what ways is critical race theory used as a framework to conceptualize research? Students interested in the intersections of race, racism, equity, justice and education should find the course useful in helping them conceptualize and develop research projects.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

EDUC 3046 - SPECIAL TOPICS-THE URBAN ENVIRONMENT

Minimum Credits: 3

Maximum Credits: 3

This course will provide students with an introduction to the social, historical, and political factors shaping urban life and communities in the united states. The course is primarily, but by no means exclusively, intended for education students and is designed to help students develop a more sophisticated understanding of the contexts in which urban education occurs and the relationship between urban processes and urban education. More specifically, the course will focus on the history of cities, including 20th and 21st century urban transformation, the development and persistence of residential segregation, urban poverty, the criminalization of urban communities, immigration, and trends in theory and practice around urban redevelopment. In all cases, we will consider the implications for urban families, communities, and schools.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EDUC 3088 - URBAN EDUCATION REFORM

Minimum Credits: 3

Maximum Credits: 3

The course is designed to provide both a background understanding of urban education, as well as expose students to particular urban education reforms. Students will examine selected historic and contemporary reform efforts in education, in particular studying the theories of change, implementation challenges and critiques associated with these different reforms as they apply to urban districts and schools. We will look at the theoretical underpinnings of particular reforms, as well as why education policies have succeeded or failed, and the consequences of these outcomes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EDUC 3089 - SPECIAL TOPICS

Minimum Credits: 3

Maximum Credits: 12

An experimental course with a flexible curriculum oriented to special research topics or current issues of concern to educators. Topics vary.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

EDUC 3099 - GUIDANCE IN SCHOLARLY PRACTICE

Minimum Credits: 1

Maximum Credits: 15

Students will enact an applied inquiry plan and write a report of the enactment under the supervision of a research advisor. The report becomes the basis for a culminating demonstrations of excellence for the doctor of education degree.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

EDUC 3100 - INTRODUCTION TO QUAN METHODS: DESCRIPTIVE AND INFERENTIAL STATISTICS

Minimum Credits: 3

Maximum Credits: 3

This seminar prepares students to conduct descriptive and inferential statistics about a population using data collected under complex survey design. The emphasis throughout the course is on real world data preparation and analysis using the SPSS/STRATA/SAS statistical software package.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

EDUC 3102 - FIRST YEAR SEMINAR 1

Minimum Credits: 1

Maximum Credits: 1

This seminar addresses professional issues germane to doctoral skills and competencies. Topics addressed in the seminar include guidelines for constructing a literature review, IRB requirements, ethical and legal issues pertaining to conducting research, preparing professional presentations and research proposals.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

EDUC 3103 - QUANTITATIVE METHODS 2

Minimum Credits: 3

Maximum Credits: 3

The primary focus of this course is single predictor and multiple regression analysis for continuous and binary outcomes. The pedagogical strategy will be to learn statistical analysis by doing statistical analysis. We will rely primarily on the stata statistical software package. Over the course of the semester, we will examine a variety of data sets, each of which can be used to address substantive research questions by fitting increasingly sophisticated regression models. As we build understanding about how to use these methods in practice, we will discuss the regression model's purpose, mathematical representation, assumptions, implementation, interpretation, presentation, relationship to other statistical methods, implications for research design, and limitations. Additional principles of research design will be incorporated throughout the semester. The course will also include introductory coverage of more advanced topics, such as: multi-level modeling, structural equation modeling, regression discontinuity and propensity score matching. Introduction to these topics is meant primarily to inform students about upper-level courses that they might consider and not necessarily to prepare students to execute these methods on their own.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EDUC 3104 - INTRODUCTION TO QUALITATIVE METHODS

Minimum Credits: 3

Maximum Credits: 3

This seminar introduces students to the inquiry traditions (e.g. empirical, interpretive, critical) and modes of research (e.g. narrative, ethnographic, historical, rhetorical, linguistic) associated with qualitative research in the social sciences. Students will gain experience with various elements in the research process (formulation of questions; research design; data organization and reduction; data analysis; validity and reliability issues) and with research methods characteristic of qualitative research. This course should be completed by the end of the students' second year.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

EDUC 3105 - FIRST YEAR SEMINAR 2

Minimum Credits: 2

Maximum Credits: 2

This seminar for beginning Ph.D. students addresses professional issues germane to doctoral skills and competencies. Topics addressed in this seminar include guidelines for constructing a literature review, IRB requirements, preparing professional presentations, and research proposals.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

EDUC 3107 - WAYS OF KNOWING

Minimum Credits: 3

Maximum Credits: 3

In making a distinction between ways of knowing and procedures for knowledge generating, students in this seminar will examine various epistemological, ontological and axiological schools of thought that are the basis for educational inquiry. The focus will include assumptions that form the logics of justification for truth claims embedded in educational research.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

EDUC 3595 - SPECIAL TOPICS - LSAP

Minimum Credits: 3

Maximum Credits: 3

This doctoral level course covers a specially selected learning science and policy topic. Topics vary from section to section and from term to term.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Electrical and Computer Engineering

ECE 2043 - ELECTRON MICROSCOPY IN MATERIALS SCIENCE

Minimum Credits: 3

Maximum Credits: 3

Electron optics, lens aberrations, depth of field, depth of focus, resolution, contrast, bright and dark field microscopy, selected area diffraction, calibration, specimen preparation, electron scattering, electron diffraction, Bragg's law, Laue conditions, structure factor, Ewald construction, double diffraction, twinning, Kikuchi lines, contrast theory, kinematical theory of diffraction by perfect and imperfect crystals, limitations, column approximation, extinction contours, dynamical theory, special techniques, high voltage microscopy, applications.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ECE 2120 - HARDWARE DESIGN METHODOLOGIES 1

Minimum Credits: 3

Maximum Credits: 3

This course teaches hardware design processes through use of industry tools. Students use graphical tools to design, simulate and synthesize designs using hardware description languages (e.g. VHDL/Verilog). High-level design and problem decomposition are also taught. Optimization, simulation and synthesis of combinatorial functions, data paths, and finite state machines are covered in depth. Architecture encapsulation and reuse through 'Intellectual Property' (IP) modules is described and covered in detail. Students will work individually and as a part of a team to create, simulate, model, document, and test IP models.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Graduate School of Engineering

ECE 2130 - TOPICS IN VLSI CAD

Minimum Credits: 3

Maximum Credits: 3

The course introduces state-of-the-art computer-aided design algorithms with application to VLSI. The course starts with a review of fundamental algorithms, from graph theory, sorting, searching and hashing, and then proceeds to focus on major CAD application areas in architectural, logical, and physical design. Major topics discussed are multiple level combinational logic synthesis and optimization, sequential logic optimization (retiming, clock scheduling), convex optimization and its applications, testing test pattern generation and design for testability, placement and routing, simulated annealing. Hot current research topics will be surveyed briefly.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: ECE 2192; PROG: Swanson School of Engineering

ECE 2140 - SYSTEMS-ON-A-CHIP DESIGN

Minimum Credits: 3

Maximum Credits: 3

This course is a full semester project involving the entire class in one System on a Chip design experience. This includes requirements definition, high-level design, system specification, algorithm modeling, decomposition, IP selection and/or IP creation for re-use, synthesis simulation and testing. The system will be a true SoC with at least one processor core with associated system and application software. Lectures will be the philosophy of SoC as well as the practical issues involved in the SoC design methodology. State of the art CAD software will be used for design and co-simulation of the hardware/software platform.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: ECE 2120; PROG: Swanson School of Engineering

ECE 2141 - VALIDATION AND VERIFICATION TECHNIQUES OF DIGITAL SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

This course presents state of the art methodologies and tools for simulation based validation and formal verification of complex digital systems implemented as systems on a chip. Topics include testing strategies, test bench design, coverage, and model checking.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: ECE 2121 or 2140; PROG: Swanson School of Engineering

ECE 2160 - EMBEDDED COMPUTER SYSTEM DESIGN

Minimum Credits: 3

Maximum Credits: 3

Design and implementation of embedded microprocessor systems. Topics include 'C' language, top down iteration for assembly language

programming, data structures, co-routines, I/O software structures and real time operating systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Graduate School of Engineering

ECE 2161 - EMBEDDED COMPUTER SYSTEM DESIGN 2

Minimum Credits: 3

Maximum Credits: 3

Organized as a full term project carried out by student design groups. A complex embedded system will be designed, implemented and tested using Altera and other cad tools. Grade will be based on project reviews and the final project report. Proper design process will be emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: ECE 2160; PROG: Swanson School of Engineering

ECE 2162 - COMPUTER ARCHITECTURE 1

Minimum Credits: 3

Maximum Credits: 3

Review of basic architecture concepts, data representation, microprocessor and minicomputer architectures, memory and i/o subsystems, stack computers, parallel and pipelined computers.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Graduate School of Engineering

ECE 2165 - DEPENDABLE COMPUTER ARCHITECTURE

Minimum Credits: 3

Maximum Credits: 3

The field of dependable computing has recently emerged as one of the most important areas of study in computer and electrical engineering. Modern computer systems are susceptible to a broad range of potential faults, errors, and failures, and increasing chip density and design complexity exacerbate the problem. Novel methods in hardware, information, network, software, and time redundancy are now available to mitigate these threats in the form of resilient computer architectures, apps, and systems. The focus of studies here is the design and analysis of dependable machines, from small embedded systems to space-based platforms to high-end supercomputers, in terms of reliability, availability, performability, testability, and safety metrics, and more.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ECE 2166 - PARALLEL COMPUTER ARCHITECTURE

Minimum Credits: 3

Maximum Credits: 3

Introduction to fundamental and newly developing hardware and software topics in parallel computer architecture (PCA) including concepts, models, methods, metrics, systems, and applications. PCA has become one of the most challenging and important areas of ECE, and it is now a dominant theme throughout computer architecture, systems, and programming, from low-power embedded systems to high-end supercomputers, and featuring various forms of fixed-logic (e.g., CPU, DSP, GPU), reconfigurable-logic (e.g., FPGA), and hybrid (e.g., CPU+DSP, CPU+FPGA, CPU+GPU, CPU+FPGA+GPU) processing devices. Prerequisite: Completion ECE 2162 Computer Architecture, with B or better grade, or consent of professor

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ECE 2170 - EMERGING MEMORY TECHNOLOGIES AND SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

Emerging memory and technology systems discussions on the modern computer system designs and simulations. Topics cover multi-core architecture, CPU, 3D integration, emerging memory hierarchy, solid state data storage, etc. Students are required to read the latest technical references, give seminars, learn how to use simulators and do the self-proposed research projects.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ECE 2192 - INTRODUCTION TO VLSI DESIGN

Minimum Credits: 4

Maximum Credits: 4

Introduction to the concepts and techniques of modern integrated circuit design. Use of computer aided design (cad) tools for circuit design and simulation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Graduate School of Engineering

ECE 2193 - ADVANCED VLSI DESIGN

Minimum Credits: 3

Maximum Credits: 3

This course is organized as a full semester project in conjunction with a small amount of lecture material on advanced CMOS and biCMOS digital design techniques, as well as the group design process itself. Students form groups that design and implement different VLSI projects which are then fabricated by NSF Mosis facility and returned for testing. Focus is on group projects with written and oral reviews and reports.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: ECE 2192; PROG: Swanson School of Engineering

ECE 2195 - SPECIAL TOPICS: COMPUTERS

Minimum Credits: 3

Maximum Credits: 3

An MS level course in special topics of current interest in computer engineering.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ECE 2231 - FUNDAMENTALS OF SEMICONDUCTOR AND QUANTUM ELECTRONIC DEVICES

Minimum Credits: 3

Maximum Credits: 3

Fundamental quantum theory, electron in potential well, harmonic oscillator, band theory of solids, Kronig-Penny Model.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Graduate School of Engineering

ECE 2235 - MONOLITHIC INTEGRATED CIRCUITS

Minimum Credits: 3

Maximum Credits: 3

Fabrication of integrated silicon monolithic circuits, thermal oxidation, solid state diffusion, epitaxial growth, ion implantation, photo and electron lithography, design considerations, active and passive elements in monolithic blocks, surface effects.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Graduate School of Engineering

ECE 2240 - NANO-OPTICS

Minimum Credits: 3

Maximum Credits: 3

A graduate level course designed for students who want to understand the mechanisms of interaction of light and matter at the nanometer scale, and become acquainted with nano-optics-based technologies. Topics include: electromagnetic theory of optical interaction with matter, optical waves in periodic media, photonic bandgap structures, surface plasmons, optical interaction with metal nanostructures (metal nanoapertures and arrays, and metal nanoparticles), surface plasmon resonance spectroscopy, plasmon coupling and concentration/funneling of electromagnetic energy, surface-enhanced raman scattering, near-field imaging and microscopy, and negative refraction. Prerequisite: junior or senior level em theory course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ECE 2250 - POWER ELECTRONICS

Minimum Credits: 3

Maximum Credits: 3

The objective of this course is to cover the fundamental concepts in the field in sufficient depth to allow students to analyze and design power electronics circuits. The course covers dc-dc converters and dc-ac converters.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Graduate School of Engineering

ECE 2260 - SCANNING PROBE MICROSCOPY-BASED CHARACTERIZATION AND NANOFABRICATION

Minimum Credits: 3

Maximum Credits: 3

The course concentrates on both theoretical and practical issues of advanced scanning probe microscopy (SPM) techniques. It introduces concepts, theoretical backgrounds, and operation principles of varieties of scanning probe microscopies; addresses the fundamental physical phenomena underlying the SPM imaging mechanism; covers the practical aspects of SPM characterization of a wide range of materials as well as operation devices; discusses SPM-based approaches to nanofabrication and nanolithography such as dip-pen nanolithography and nano-robotic manipulation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ECE 2264 - FLEXIBLE ELECTRONICS

Minimum Credits: 3

Maximum Credits: 3

This course is designed to provide an understanding of scientific and technical aspects of the flexible electronics and to enable students to contribute to the rapidly developing flexible electronics information. The course aims to introduce graduate level students to semiconductor devices, modern electronic devices on flexible substrate, and wearable and stretchable devices.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ECE 2270 - FUNDAMENTALS OF PHOTOVOLTAICS

Minimum Credits: 3

Maximum Credits: 3

The course concentrates on both theoretical and practical issues of advanced scanning probe microscopy (SPM) techniques. It introduces concepts, theoretical backgrounds, and operation principles of varieties of scanning probe microscopies; addresses the fundamental physical phenomena underlying the SPM imaging mechanism; covers the practical aspects of SPM characterization of a wide range of materials as well as operation devices; discusses SPM-based approaches to nanofabrication and nanolithography such as dip-pen nanolithography and Nano-robotic manipulation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ECE 2295 - SPECIAL TOPICS: ELECTRONICS

Minimum Credits: 3

Maximum Credits: 3

An MS level course in special topics of current interest in electronics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ECE 2372 - PATTERN RECOGNITION

Minimum Credits: 3

Maximum Credits: 3

Emphasis on machine pattern recognition and learning; Bayes decision theory, parameter estimation, Bayesian belief networks, discriminant functions, supervised learning, nonparametric techniques, feature extraction, principal component analysis, hidden Markov models, expectation-maximization, support vector machines, artificial neural networks, unsupervised learning, clustering, and syntactic pattern recognition.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ECE 2390 - IMAGE PROCESSING AND COMPUTER VISION

Minimum Credits: 3

Maximum Credits: 3

This first level graduate course covers essential elements of image processing for computer vision and introductory subjects in computer vision; image segmentation: region-based, edge detection, scale space, active contours ; shape description, deformable templates; textures ; perspective camera model and its parameters; geometry of multiple (2) views, fundamental matrix; scene planes and homographies; consistent labeling; locating objects in 3-d space; motion analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ECE 2521 - ANALYSIS STOCHASTIC PROCESSES

Minimum Credits: 3

Maximum Credits: 3

Probability theory, random variables, sums and limits of random variable sequences, time and frequency domain, modeling of continuous and discrete random signals, least square estimation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ECE 2523 - DIGITAL SIGNAL PROCESSING

Minimum Credits: 3

Maximum Credits: 3

Discrete-time signal processing, discrete Fourier transform and FFT implementation, design and stability considerations of FIR and IIR filters, filter implementation and finite register effects.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ECE 2525 - DETECTION AND ESTIMATION THEORY

Minimum Credits: 3

Maximum Credits: 3

A study of optimal techniques for extracting information from the observation of random variables or random signals. This includes hypothesis testing, estimation theory, optimal receiver design, wiener and Kalman-Bucy filtering, and applications such as digital communications and medical imaging.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ECE 2555 - BIOMEDICAL SIGNAL PROCESSING

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ECE 2595 - SPEC TOPICS: SIGNAL PROCESSING/COM

Minimum Credits: 3

Maximum Credits: 3

An MS level course in special topics of current interest in signal processing/communications.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ECE 2646 - LINEAR SYSTEM THEORY

Minimum Credits: 3

Maximum Credits: 3

Linear spaces and operators, mathematical descriptions of linear systems, controllability and observability, irreducible realization of rational transfer-function matrices, canonical forms, state feedback, and state estimators, stability.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ECE 2647 - INTRODUCTION TO NONLINEAR CONTROL DESIGN

Minimum Credits: 3

Maximum Credits: 3

This course is an introduction to nonlinear control design methods. The main topics include: Lyapunov stability analysis, feedback linearization, sliding mode control, and integrator backstepping. The content will be mathematical, supplemented with application examples from nonlinear systems such as robotic manipulators and human musculoskeletal system.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ECE 2654 - DIGITAL CONTROL SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

Transform domain approach to analysis and design of digital computer control systems, linear discrete dynamic systems analysis and the z-transform, discrete equivalents to continuous transfer functions, sampled data systems, design of digital control systems using transform techniques, quantization effects, sample rate selection. Prerequisite: ECE 1673

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Graduate School of Engineering

ECE 2671 - OPTIMIZATION METHODS

Minimum Credits: 3

Maximum Credits: 3

Analytical and computational aspects of finite dimensional optimization, unconstrained and equality constrained problems, basic descent methods, conjugate direction methods, nonlinear programming and the Kuhn-Tucker Theorem, linear programming, dynamic programming, multicriteria optimization.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ECE 2680 - ADAPTIVE CONTROL

Minimum Credits: 3

Maximum Credits: 3

Adaptation and learning play an essential role in biological systems, and these characteristics have been widely incorporated in modern control systems. This course introduces the general principles of adaptive control and learning. Topics to be covered include: real-time parameter estimation, self-tuning regulators, model-reference adaptive systems, adaptive control of nonlinear systems, practical aspects and implementation of adaptive control systems, introduction to computational learning theory and learning in neural systems, and an example of adaptive control by the cerebellum.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ECE 2695 - SPECIAL TOPICS: ADAPTIVE CONTROL

Minimum Credits: 3

Maximum Credits: 3

An MS level course in special topics of current interest in control.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ECE 2774 - POWER SYSTEMS ANALYSIS 2

Minimum Credits: 3

Maximum Credits: 3

Steady state phenomena, matrix transformations, system parameters, system unbalances, digital methods, and numerical analysis techniques applied to load flow, state estimators, and fault studies in the large power systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Graduate School of Engineering

ECE 2775 - ADVANCED ELECTRIC MACHINES AND DRIVES

Minimum Credits: 3

Maximum Credits: 3

This is a course in electric machine and drive analysis and modeling, along with their control systems. The course will cover the dq0 transformation, reference frame theory, saturation, unbalanced operation and dynamics in electric machines. Then cover the converter topologies typically used in machine drives, power electronic device characteristics, pulse-width modulation techniques, current regulation, torque and speed control, and space vector control.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ECE 2776 - MICROGRID CONCEPTS & DISTRIBUTED GENERATION TECHNOLOGIES

Minimum Credits: 3

Maximum Credits: 3

This course describes fundamental concepts related with the development of microgrids and the integration of distributed generation. Technical topics are divided into three modules. The first module introduces microgrid components and discusses the main types of microsources. The second focuses on energy storage technologies. The third includes system integration topics, such as power electronics interfaces; dc and ac architectures; economics, operation, stabilization, and control; reliability aspects; grid interconnection, and microgrids as part of the "smart"

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ECE 2777 - POWER SYSTEMS TRANSIENTS 1

Minimum Credits: 3

Maximum Credits: 3

Lumped parameter analysis, switching transients in ac/dc systems, arc modeling, damping, current suppression, traveling wave phenomena, line discontinuities, Ferro resonance, transient recovery voltage.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Graduate School of Engineering

ECE 2778 - FACTS AND HVDC TECHNOLOGIES

Minimum Credits: 3

Maximum Credits: 3

Advanced Power Electronics (FACTS and HVDC) is a comprehensive course in the area of large-scale power electronics systems, circuits, devices, and the ever-advancing areas of applications. This course will provide graduate students with an understanding of how the broad spectrum of power electronics is integrated into a wide variety of industries, with an emphasis on utility scale FACTS and HVDC technologies and applications,

as well as how applications of power electronics circuits, devices, and systems are utilized for control and operation of various processes and business fields. The course will cover, from a ground-up approach, devices and their characteristics, conversion techniques and circuits, and applications of power electronics with an emphasis on power conversion fundamentals for FACTS and HVDC applications.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ECE 2780 - RENEWABLE AND ALTERNATIVE ENERGY

Minimum Credits: 3

Maximum Credits: 3

This course covers an in-depth analysis and understanding of various renewable and alternative energy technologies' including wind, solar, biomass, thermal, wave, hydro, and other sources and systems. Investigation of applications, integration, markets, policy, and other aspects of renewable development will be studied. Supporting technologies, such as energy storage, power electronics, and controls as applied to renewable and alternative energy applications are also explored.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ECE 2781 - SMART GRID TECHNOLOGIES AND APPLICATIONS

Minimum Credits: 3

Maximum Credits: 3

This is a comprehensive course designed to introduce students to new technologies dedicated to reliably, efficiently and safely managing electric power across utility, commercial, industrial, and residential networks. The course will cover the application of smart grid technologies from power generation through power consumption including grid automation, smart meters, demand response, communication, electric vehicle integration, grid connectivity, renewable energy, cyber security, microgrids and the business processes. Students will gain an understanding of the how the broad spectrum of smart grid technologies is integrated into the electrical energy industry, with an emphasis on distribution systems within homes, buildings, factories, transportation systems, and the utilities serving them

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ECE 2795 - SPECIAL TOPICS POWER

Minimum Credits: 3

Maximum Credits: 3

An MS level course in special topics of current interest in power.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ECE 2900 - GRADUATE FELLOWSHIPS AND PROPOSAL-WRITING WORKSHOP

Minimum Credits: 1

Maximum Credits: 1

This workshop will provide information and guidance to students interested in competing for external fellowships to support their graduate research, as well as instruction on proposal writing in general. The workshop will consist of structured class time and outside-the-class mentoring teams to work with students on the preparation of a fellowship application.

Academic Career: Graduate

Course Component: Workshop

Grade Component: Grad SN Basis

ECE 2990 - MBA/MS GRADUATE PROJECTS

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

ECE 2997 - RESEARCH, MS

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis
Course Requirements: PLAN: Electrical Engineering(MEE) or Computer Engineering(MCO)

ECE 2998 - GRADUATE PROJECTS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Electrical Engineering(MEE) or Computer Engineering(MCO)

ECE 2999 - MS THESIS

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Electrical Engineering(MEE) or Computer Engineering(MCO)

ECE 3000 - PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
For full-time graduate students interested in industrial internships as a means of gaining practical experience in their areas of research. Students are responsible for arranging practicum with industry. See practicum guidelines and application. Requires permission of graduate coordinator.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis

ECE 3162 - ADVANCED COMPUTER MICROARCHITECTURE

Minimum Credits: 3
Maximum Credits: 3
This upper level graduate course aims to cover the state-of-the-art advances and hot topics in computer architecture research. Topics include emerging non-volatile memory technologies, massive parallel architectures (e.g. GPU), accelerators, optimizing architecture for data analytics, etc. Students are required to read contemporary research papers, and present them throughout a semester. One term project, done either individually or in a team, is required. Prerequisite: ECE 2162 or equivalent.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ECE 3195 - ADVANCED TOPICS-COMPUTERS

Minimum Credits: 3

Maximum Credits: 3

A Ph.D. level course in advanced topics of current interest in the area of computer engineering.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ECE 3233 - SEMICONDUCTOR DEVICE MODELING

Minimum Credits: 3

Maximum Credits: 3

Topics of current interest in the field of solid-state electronic devices.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ECE 3235 - SEMICONDUCTOR LASERS

Minimum Credits: 3

Maximum Credits: 3

Properties of heterojunctions, stimulated emission in semiconductors, carrier and optical confinement, fabrication and operating characteristics of semiconductor lasers including double-heterostructure lasers, quantum well lasers, distributed feedback lasers, surface emitting lasers, various modulation techniques of semiconductor lasers.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: ECE 2231; PROG: Swanson School of Engineering

ECE 3374 - APPLICATIONS OF WAVELET TRANSFORMS

Minimum Credits: 3

Maximum Credits: 3

This course presents applications of wavelet transforms to multiresolution signal/image processing and pattern recognition. Topics include basic notions of basis functions with compact support, localization property, multiresolution analysis, continuous wavelet transform, discrete wavelet transform, wavelet packets, image compression, signal/image demising, edge localization, texture feature extraction, and multiresolution data fusion.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: ECE 2390 or ECE 2523; PROG: Swanson School of Engineering

ECE 3524 - DIGITAL SPEECH PROCESSING

Minimum Credits: 3

Maximum Credits: 3

The application of digital signal processing techniques in the representation, analysis, and synthesis of speech signals. Topics include digital modeling of speech signals, waveform coders, time and frequency methods in speech processing, linear predictive coding of speech, and discussion of speech processing systems in the area of human-machine communication by voice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: ECE 2521 and 2523; PROG: Swanson School of Engineering

ECE 3526 - MODERN SPECTRAL ESTIMATION

Minimum Credits: 3

Maximum Credits: 3

An overview of concepts of modern spectral analysis covering traditional approaches and modern estimation methods. The properties, advantages and disadvantages of each estimator will be covered in detail and demonstrated using computer experiments. Also covered are applications of spectral estimation to signal detection and beam forming.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: ECE 2521; PROG: Swanson School of Engineering

ECE 3557 - STATISTICAL SIGNAL PROCESSING

Minimum Credits: 3

Maximum Credits: 3

Random vectors, discrete-time stochastic processes, rational and state-space Gaussian-Markov discrete-time models, estimation, parameter estimation, Wiener and Levinson filtering, Kalman filtering (modeling, filtering and prediction, stability and computational aspects), adaptive filtering.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: ECE 2521 and 2523 and 2646; PROG: Swanson School of Engineering

ECE 3650 - OPTIMAL CONTROL

Minimum Credits: 3

Maximum Credits: 3

Variation calculus and optimality conditions, linear quadratic problems, the Riccati equation, Pontryagin maximum principle, time optimal control, dynamic programming and the Hamilton-Jacobi equation, numerical methods, decentralized control, multicontroller-multiobjective systems, differential games.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: ECE 2646; PROG: Swanson School of Engineering

ECE 3776 - POWER SYS CONTROL & STABILITY

Minimum Credits: 3

Maximum Credits: 3

The power system model for stability studies, response to disturbances, the behavior of machines, the effect of excitation, and mathematical techniques for stability studies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ECE 3778 - POWER SYSTEMS TRANSIENTS 2

Minimum Credits: 3

Maximum Credits: 3

Project-based course in simulation and modeling techniques for power system electromagnetic transients. Frequency-dependent and non-linear component models, with applications to transmission, distribution, power electronic and measurement systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: ECE 2777; PROG: Swanson School of Engineering

ECE 3795 - ADVANCED TOPICS POWER

Minimum Credits: 3

Maximum Credits: 3

A Ph.D. level course in advanced topics of current interest in power.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ECE 3893 - GRADUATE SEMINAR

Minimum Credits: 1

Maximum Credits: 1

A weekly series of presentations by engineers and scientists, visiting researchers, faculty, and graduate students.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

Course Requirements: PROG: Swanson School of Engineering

ECE 3995 - RES TOPC ELCRCL & COMPUTR ENGR

Minimum Credits: 3

Maximum Credits: 3

A research course that focuses on specific skills required by students to conduct original research in a particular area of EECE. Students will complete a project, such as a full journal paper, a proposal for research funding, or a complete patent application, as specified by the faculty teaching the course. The project should be beyond material to be included in the student's dissertation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ECE 3997 - RESEARCH, PHD

Minimum Credits: 1

Maximum Credits: 12

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Electrical Engineering(PHD) or Computer Engineering(PHD)

ECE 3998 - PHD INDEPENDENT STUDY

Minimum Credits: 3

Maximum Credits: 3

PHD INDEPENDENT STUDY

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Electrical Engineering(PHD) or Computer Engineering(PHD)

ECE 3999 - PHD DISSERTATION

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

Emergency Medicine

EMED 5376 - SPECIALTY CARE CLERKSHIP

Minimum Credits: 0
Maximum Credits: 0

The specialty care clerkship is a four (4) week rotation that includes a combination of one week experiences in the disciplines of ENT, ophthalmology, adult emergency medicine and pediatric emergency medicine. In addition to four weeks of clinical time, students will attend weekly lectures, workshops and lab activities. This required clerkship begins with orientation and a suturing and splinting session followed by a simulation-based session in phone communication (how to best communicate medical information over the telephone to patients). One morning each week there will be an ophthalmology lecture and an ENT lecture. Additional morning workshops include dermatology, EKG cases, dizziness and audiology, musculoskeletal exam and rehab and musculoskeletal radiology. The lecture will be followed by clinical responsibilities. Students are evaluated by each specialty area based on clinical performance and will take an on-line proctored examination. One grade will be assigned for the entire four week rotation.

Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

EMED 5380 - FUNDAMENTALS OF EMERGENCY MEDICINE

Minimum Credits: 0
Maximum Credits: 0

This four week clinical elective is designed for the student seeking exposure to acute care medicine, with an emphasis on the initial approach and decision-making. The clinical experience will consist of supervised evaluation of undifferentiated patients presenting to the emergency department. Basic clinical skills such as the directed history and physical examination and clear, concise documentation will be stressed, while evaluating the diverse illnesses encountered in the emergency department. Students will experience a variety of shifts in the emergency department that may include days, evenings, overnights, weekdays and weekends. Development of medical decision-making skills will be encouraged by working closely with the attending staff and emergency medicine residents. The course curriculum includes an orientation to emergency medicine and a laboratory experience in suturing and wound care basics, acute care oriented orthopedic evaluation and splinting techniques. Students will also have the opportunity to participate in the emergency medicine grand rounds and other conferences.

Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

EMED 5390 - EMERGENCY MEDICINE

Minimum Credits: 0
Maximum Credits: 0

This elective is offered to third year medical students who will be integrated into the health care team at the emergency room of a hospital. The student will learn the basics of evaluating, both serious and acute, patients under the direct supervision of an attending or senior resident. Directed history, physical exam and lab evaluation will be taught. Directed didactic sessions, in addition to bedside teaching, will reinforce concepts and facts as well as introduce the learner to topics relevant to the field of emergency medicine.

Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

EMED 5450 - EMERGENCY MEDICINE

Minimum Credits: 0

Maximum Credits: 0

This 4 week elective is designed for the student desiring added experience in acute care medicine as practiced both in and out of the hospital. Student will become part of mobile intensive care unit field team operating in the city of Pittsburgh's system. Students are responsible for gaining experience in initial on-scene assessment and intervention, rescue, extrication techniques and cases for follow-up and presentation. Module 2 is spent in emergency department with the goal of providing experience and supervision in the initial evaluation and treatment of wide variety of patient problems.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

EMED 5460 - MEDICAL TOXICOLOGY

Minimum Credits: 0

Maximum Credits: 0

This four week clinical elective will provide students with experience in the assessment and treatment of toxicology patients. Students will spend time with toxicology faculty in consultation, examination, treatment, and follow-up of patients in the emergency, inpatient and outpatient settings. The clinical experience will include daily clinical rounds on inpatients, outpatient consults, and Pittsburgh poison center case review. Students will be on-call daily with the rotating residents and medical toxicology staff member and will be expected to join the resident and attending on cases presenting to UPMC Presbyterian and Children's Hospital of Pittsburgh. A portion of the rotation will be at the Pittsburgh poison center, where students will learn from current patient cases and summary case reviews. Daily teaching sessions will be provided by members of the medical toxicology service on the spectrum of toxicology subjects. Sample topics include: initial approach to the toxicology patient, decontamination, acetaminophen, salicylates, toxic alcohols, antidepressants, iron and digoxin. Students will also attend the medical toxicology service lectures. Additionally, the student will be encouraged to participate in on-going research projects if available (e.g. chart review). Students will also be encouraged to prepare interesting cases for scientific presentation and publication. The overall curriculum will help students develop their knowledge base in medical toxicology, and improve their ability to diagnose and treat a poisoned patient.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

EMED 5465 - POINT OF CARE ULTRASONOGRAPHY

Minimum Credits: 0

Maximum Credits: 0

This elective serves as an introduction to the use of point of care ultrasonography (POCUS) over the course of four weeks. The course will expose students to the use of focused, point of care ultrasonography to make bedside clinical decisions for the care of acutely ill patients. POCUS as serve as an extension of the physical exam to aid physicians narrow their differential diagnosis, provide direct visualization of pathophysiology as well as tracking changes to medical interventions, improve accuracy and safety in procedural skills and obtain direct visualization of pathology without the need for transportation to specialized suites or the use of radiation. These skills are essential in the present medical climate where pocus can aid in improved safety, cost-savings and even patient satisfaction. As the use of this technology expands, it is crucial for medical trainees to have exposure.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

EMED 5466 - POST CARDIAC ARREST SERVICE

Minimum Credits: 0

Maximum Credits: 0

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

EMED 5470 - SENIOR ELECTIVE IN QUALITY AND PATIENT SAFETY

Minimum Credits: 0

Maximum Credits: 0

The quality and patient safety elective is designed for the motivated learner with self-study modules and learning activities facilitated by preceptors remotely. The course complements busy months of interviewing and travel through the use of on-line media, case reviews, videos, podcasts and blog discussions. Instead of in-person meetings, course directors employ on-line meetings and electronic touch points to ensure progress throughout the course. Learning in this course is asynchronous, so timing is at the convenience of the individual learner. Participants will spend at least 2 hours per day completing required on-line learning modules. In addition, students will work independently to research, understand and create a root cause analysis and a rapid process improvement plan. Students will review the RCA and QI plans of their peers, provide feedback and participate in discussion of their work.

Academic Career: Medical School

Course Component: Lecture

Grade Component: S/U Basis

EMED 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0

Maximum Credits: 0

An individualized course of study may be arranged with the department of ophthalmology to fit the student's needs. The student will meet with a department faculty person to design a clinical course of study for a four-week period of time. A written proposal must be approved by the faculty member as well as the student's scheduling advisor. When approvals have been received, the school registrar will schedule the course and notify the department student coordinator.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

EMED 5735 - SCIENCE OF RESUSCITATION (ILS)

Minimum Credits: 0

Maximum Credits: 0

This 4-week elective will satisfy requirement for integrated life science course of senior year. Course objectives: 1) identify major physiological influences affecting resuscitation and trace their implementation into clinical guidelines; 2) critique clinical study of resuscitation; 3) become confident conducting medical resuscitation, including use of relevant equipment; 4) appreciate practical/ethical issues surrounding research on emergency interventions. Small group sessions, live animal/simulator sessions and written research critique is required.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

EMED 5740 - EXERCISE IS MEDICINE

Minimum Credits: 0

Maximum Credits: 0

This is a four week selective that meets the requirement of an integrated life science course. The principles of the exercise is medicine program are shared by the American medical association (AMA) and the American college of sports medicine (ACSM) and they are the focus of this course. At the end of this course, the student will have an understanding of the evidence for the role of exercise in the treatment and prevention of chronic disease and how to apply the evidence to their practice. There are multiple learning modes in this course, including didactic, laboratory, and independent study. The didactic portion will be an active participation exercise in a journal-club format. The goal of the didactic portion will be to critically evaluate the evidence for the role of exercise in chronic disease providing the foundation for understanding, creating, and employing comparative effectiveness research (CER). Through these reviews, the student will evaluate the AXSM/aha exercise recommendations. Laboratory experiences in exercise science will provide insight into the acute response to exercise and exercise stress testing reinforcing principles of physiology learned in the first two years of the curriculum. Students will participate in the labs, wear activity monitors and pedometers at various times during the course to track daily activity to appreciate how these devices can be used to motivate and modify patient lifestyle. Finally, each student will complete an independent study on an aspect of exercise and chronic disease treatment or prevention.

Academic Career: Medical School

Course Component: Workshop

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

EMED 5750 - GET READY FOR RESIDENCY BOOT CAMP

Minimum Credits: 0

Maximum Credits: 0

This elective is an intensive preparation for students who are about to enter residency. Students will be provided with a combination of general and specialty-specific, clinically relevant content in a variety of modalities. The focus will be on content that will prepare the student to function at the starting level of an intern (and meet the expected intern-level milestones) after graduation. Teaching modalities will include simulation, small group sessions, skills workshops, standardized patient cases, and a limited number of high-yield lectures.

Academic Career: Medical School

Course Component: Clinical

Grade Component: S/U Basis

EMED 5898 - INDIVIDUAL STUDY OR RESEARCH

Minimum Credits: 0

Maximum Credits: 0

This is a senior-level elective offering. This is a four week elective for the student interested in participating in clinical or basic science research in emergency medicine. The student will be offered the opportunity to choose a research project which interests him or her. The student will work closely with the emergency department attending staff as well as the clinical research coordinator for the department of emergency medicine. The coordinator will meet weekly with the student to provide guidance as well as education materials.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

EMED 5899 - INDEPENDENT STUDY IN EMERGENCY MEDICINE

Minimum Credits: 0

Maximum Credits: 0

The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

EMED 5900 - EXTRAMURAL EMERGENCY MEDICINE

Minimum Credits: 0

Maximum Credits: 0

A clinical experience in emergency medicine may be arranged at an institution other than the University of Pittsburgh school of medicine. Arrangements must be made in accordance with the process set out in the UPSOM course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Endodontics

ENDOD 2000 - GRADUATE ENDODONTICS

Minimum Credits: 6

Maximum Credits: 6

General studies of various clinical endodontic techniques and procedures.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

ENDOD 2011 - TEACHING/EMERGENCY CARE 1

Minimum Credits: 2

Maximum Credits: 2

The student is involved in teaching clinical endodontics to pre-doctoral dental students. This will include consultation in the pre-doctoral clinics, and assisting the dental student with clinical techniques in endodontics. The resident will also be involved in the diagnosis and treatment of difficult cases in the pre-doctoral emergency clinic.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

ENDOD 2021 - TEACHING/EMERGENCY CARE 2

Minimum Credits: 2

Maximum Credits: 2

The student is involved in teaching clinical endodontics to pre-doctoral dental students. This will include consultation in the pre-doctoral clinics, and assisting the dental student with clinical techniques in endodontics. The resident will also be involved in the diagnosis and treatment of difficult cases in the pre-doctoral emergency clinic.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

ENDOD 2043 - ENDODONTIC SURGERY 3

Minimum Credits: 1

Maximum Credits: 1

This course is designed so that the student will be knowledgeable and competent in surgical endodontic procedures so that he or she is capable of utilizing them in practice. The resident will be knowledgeable of hospital policies, and admitting patient protocol.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ENDOD 2111 - ENDODONTOLOGY 1

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2112 - ENDODONTOLOGY 3

Minimum Credits: 2

Maximum Credits: 2

This course is the study of the scientific rationale for endodontic treatment. The dental pulp and periapical tissues will be studied at the most basic cellular level. This course will include the embryological development of all related structures; a study of the pathologic/physiologic occurrences of the pulp and periapex; and an understanding of the biological basis for endodontic treatment.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2115 - ENDO MICROSCOPE 1

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

ENDOD 2121 - ENDODONTOLOGY 2

Minimum Credits: 2
Maximum Credits: 2
This course is the study of the scientific rational for endodontic treatment. The dental pulp and periapical tissues will be studied at the most basic cellular level. This course will include the embryological development of all related structures; a study of the pathologic/physiologic occurrences of the pulp and periapex; and an understanding of the biological basis for endodontic treatment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2122 - ENDODONTOLOGY 4

Minimum Credits: 2
Maximum Credits: 2
This course is the study of the scientific rational for endodontic treatment. The dental pulp and periapical tissues will be studied at the most basic cellular level. This course will include the embryological development of all related structures; a study of the pathologic/physiologic occurrences of the pulp and periapex; and an understanding of the biological basis for endodontic treatment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2131 - ENDODONTOLOGY

Minimum Credits: 2
Maximum Credits: 2
This course is the study of the scientific rational for endodontic treatment. The dental pulp and periapical tissues will be studied at the most basic cellular level. This course will include the embryological development of all related structures; a study of the pathologic/physiologic occurrences of the pulp and periapex; and an understanding of the biological basis for endodontic treatment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ENDOD 2145 - ENDO MICROSCOPE 2

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

ENDOD 2211 - CASE PRESENTATION 1

Minimum Credits: 2

Maximum Credits: 2

This course will provide each resident with the experience of presenting clinical cases in a formal setting. The cases will be discussed in detail, and the student must be prepared to answer questions regarding the general medical condition of the patient, as well as present an evidence based rational for the endodontic treatment provided

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2212 - CASE PRESENTATION 3

Minimum Credits: 2

Maximum Credits: 2

This course will provide each resident with the experience of presenting clinical cases in a formal setting. The cases will be discussed in detail, and the student must be prepared to answer questions regarding the general medical condition of the patient, as well as present an evidence based rational for the endodontic treatment provided

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2221 - CASE PRESENTATION 2

Minimum Credits: 2

Maximum Credits: 2

This course will provide each resident with the experience of presenting clinical cases in a formal setting. The cases will be discussed in detail, and the student must be prepared to answer questions regarding the general medical condition of the patient, as well as present an evidence based rationale for the endodontic treatment provided.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2222 - CASE PRESENTATION 4

Minimum Credits: 2

Maximum Credits: 2

This course will provide each resident with the experience of presenting clinical cases in a formal setting. The cases will be discussed in detail, and the student must be prepared to answer questions regarding the general medical condition of the patient, as well as present an evidence based rationale for the endodontic treatment provided.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2280 - CASE PRESENTATION

Minimum Credits: 2

Maximum Credits: 2

This course will provide each resident's with the experience of presenting clinical cases in a formal setting. The cases will be discussed in detail, and the student must be prepared to answer questions regarding the general medical condition of the patient, as well as present an evidence based rationale for the endodontic treatment provided.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2281 - CASE PRESENTATION

Minimum Credits: 2

Maximum Credits: 2

This course will provide each resident's with the experience of presenting clinical cases in a formal setting. The cases will be discussed in detail, and the student must be prepared to answer questions regarding the general medical condition of the patient, as well as present an evidence based rationale for the endodontic treatment provided.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2282 - CASE PRESENTATION

Minimum Credits: 2

Maximum Credits: 2

This course will provide each resident's with the experience of presenting clinical cases in a formal setting. The cases will be discussed in detail, and the student must be prepared to answer questions regarding the general medical condition of the patient, as well as present an evidence based rationale for the endodontic treatment provided.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2301 - TOPICAL LITERATURE

Minimum Credits: 2

Maximum Credits: 2

This class will cover specific areas of endodontics through the review of classic and current literature. The resident will be given reading assignments and will be required to present a narrative of the reading for further discussion in a small seminar format.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2302 - TOPICAL LITERATURE

Minimum Credits: 2

Maximum Credits: 2

This class will cover specific areas of endodontics through the review of classic and current literature. The resident will be given reading assignments and will be required to present a narrative of the reading for further discussion in a small seminar format.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2325 - ENDO MICROSCOPE 3

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

ENDOD 2345 - ENDO MICROSCOPE 4

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

ENDOD 2351 - CURRENT LITERATURE 1

Minimum Credits: 1

Maximum Credits: 1

The purpose of this course is to familiarize the student with current endodontic literature so that he/she is abreast of what is taking place in the specialty of endodontics. The student will identify research that is pertinent and of quality. The student will have a knowledge of current endodontic literature and will be able to critically analyze the literature and help decide what is pertinent.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ENDOD 2375 - ENDODONTIC CLINIC 5

Minimum Credits: 1

Maximum Credits: 1

Endodontic resident clinical patient care. This treatment will include all phases of endodontics, such as conventional surgical and emergency endodontic treatment.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

ENDOD 2380 - TOPICAL LITERATURE 1

Minimum Credits: 2

Maximum Credits: 2

This class will cover specific areas of endodontics through the review of classic and current literature. The resident will be given reading assignments and will be required to present a narrative of the reading for further discussion in a small seminar format.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2381 - TOPICAL LITERATURE 2

Minimum Credits: 2

Maximum Credits: 2

This class will cover specific areas of endodontics through the review of classic and current literature. The resident will be given reading assignments and will be required to present a narrative of the reading for further discussion in a small seminar format.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2382 - TOPICAL LITERATURE 3

Minimum Credits: 2

Maximum Credits: 2

This class will cover specific areas of endodontics through the review of classic and current literature. The resident will be given reading assignments and will be required to present a narrative of the reading for further discussion in a small seminar format.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2383 - TOPICAL LITERATURE 4

Minimum Credits: 2

Maximum Credits: 2

This class will cover specific areas of endodontics through the review of classic and current literature. The resident will be given reading assignments and will be required to present a narrative of the reading for further discussion in a small seminar format.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2410 - CURRENT LITERATURE

Minimum Credits: 2

Maximum Credits: 2

This class will entail the reading of current periodicals. The student will abstract assigned articles and then present the abstract for discussion in a round table format.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2411 - CURRENT LITERATURE 1

Minimum Credits: 2

Maximum Credits: 2

This class will entail the reading of current periodicals. The students will abstract assigned articles and then present the abstract for discussion in a round table format.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2412 - CURRENT LITERATURE 3

Minimum Credits: 2

Maximum Credits: 2

This class will entail the reading of current periodicals. The students will abstract assigned articles and then present the abstract for discussion in a round table format.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2420 - CURRENT LITERATURE

Minimum Credits: 2

Maximum Credits: 2

This class will entail the reading of current periodicals. The student will abstract assigned articles and then present the abstract for discussion in a round table format.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2421 - CURRENT LITERATURE 2

Minimum Credits: 2

Maximum Credits: 2

This class will entail the reading of current periodicals. The student will abstract assigned articles and then present the abstract for discussion in a round table format.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2422 - CURRENT LITERATURE 4

Minimum Credits: 2

Maximum Credits: 2

This class will entail the reading of current periodicals. The student will abstract assigned articles and then present the abstract for discussion in a round table format.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2430 - CURRENT LITERATURE

Minimum Credits: 2

Maximum Credits: 2

This class will entail the reading of current periodicals. The student will abstract assigned articles and then present the abstract for discussion in a round table format.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2510 - CLINICAL TREATMENT

Minimum Credits: 3

Maximum Credits: 3

This course will involve the actual treatment of patients. The resident will demonstrate both nonsurgical as well as surgical proficiency in the field of endodontics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2511 - CLINIC 1

Minimum Credits: 3

Maximum Credits: 3

This course will involve the actual treatment of patients. The resident will demonstrate both nonsurgical, as well as surgical proficiency in the field of endodontics.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

ENDOD 2512 - CLINIC 3

Minimum Credits: 3

Maximum Credits: 3

This course will involve the actual treatment of patients. The resident will demonstrate both nonsurgical, as well as surgical proficiency in the field of endodontics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2520 - CLINICAL TREATMENT

Minimum Credits: 3

Maximum Credits: 3

This course will involve the actual treatment of patients. The resident will demonstrate both nonsurgical as well as surgical proficiency in the field of

endodontics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2521 - CLINIC 2

Minimum Credits: 3

Maximum Credits: 3

This course will involve the actual treatment of patients. The resident will demonstrate both nonsurgical, as well as surgical proficiency in the field of endodontics.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

ENDOD 2522 - CLINIC 4

Minimum Credits: 3

Maximum Credits: 3

This course will involve the actual treatment of patients. The resident will demonstrate both nonsurgical, as well as surgical proficiency in the field of endodontics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2530 - CLINICAL TREATMENT

Minimum Credits: 3

Maximum Credits: 3

This course will involve the actual treatment of patients. The resident will demonstrate both nonsurgical as well as surgical proficiency in the field of endodontics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2610 - CLINICAL CONCEPTS IN ENDODONTICS

Minimum Credits: 2

Maximum Credits: 2

This course is the study of the scientific rationale for endodontic treatment. The dental pulp and periapical tissues will be studied at the most basic cellular level. This course will include the embryological development of all related structures; a study of the pathologic/physiologic occurrences of the pulp and periapex; and an understanding of the biological basis for endodontic treatment.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2611 - CLINICAL CONCEPTS

Minimum Credits: 1

Maximum Credits: 1

This course will provide the clinical aspect of endodontic treatment. By presenting various techniques used to diagnose and treat the patient in the endodontic practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2612 - CLINICAL CONCEPTS 2

Minimum Credits: 1

Maximum Credits: 1

This course will provide the clinical aspect of endodontic treatment. By presenting various techniques used to diagnose and treat the patient in the endodontic practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2613 - CLINICAL CONCEPTS 3

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

ENDOD 2614 - CLINICAL CONCEPTS 4

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

ENDOD 2620 - CLINICAL CONCEPTS IN ENDODONTICS

Minimum Credits: 2

Maximum Credits: 2

This course is the study of the scientific rationale for endodontic treatment. The dental pulp and periapical tissues will be studied at the most basic cellular level. This course will include the embryological development of all related structures; a study of the pathologic/physiologic occurrences of the pulp and periapex; and an understanding of the biological basis for endodontic treatment.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2721 - TRAUMATOLOGY

Minimum Credits: 1

Maximum Credits: 1

This course will detail various types of dental trauma; the methods of treatment and possible long-term effects trauma have on oral structures.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2821 - SPECIAL LECTURES SERIES

Minimum Credits: 2

Maximum Credits: 2

This course will include an array of lectures that will be presented by experts in various fields, exposing the students to a wide variety of topics and ideas including practice management, dental jurisprudence, and teach methodology

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

ENDOD 2921 - ENDODONTIC SURGERY

Minimum Credits: 2

Maximum Credits: 2

This course will provide the surgical aspect of endodontic treatment. Proficiency in the treatment planning of endodontic surgery, as well as evidence based foundation for all aspects of surgical treatment will be explored. 1) Develop the skills for proper case selection and treatment planning of surgical cases. 2) Understand soft tissue management, and flap design as it pertains to endodontic surgery. 3) Demonstrate knowledge of guided tissue techniques and materials. 4) Demonstrate an understanding of wound healing of both soft and mineralized tissues as they pertain to endodontic surgery. 5) Discuss methods of hemostasis and crypt control during periapical surgery. 6) Understand the possible postoperative complications associated with endodontic surgery and how to manage these situations. 7) Have a strong knowledge of the head and neck anatomy. 8) Understand possible periodontal considerations with the various flap designs. 9) Discuss various suture techniques for specific for the conditions that present themselves.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENDOD 2999 - RESEARCH PROJECT

Minimum Credits: 1

Maximum Credits: 1

This course involves independent or joint research in the field of endodontics. The completion of this class, oral presentation and written paper must be submitted.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

ENDOD 5210 - ENDODONTICS 1

Minimum Credits: 1

Maximum Credits: 1

In this course, students will learn the morphology, physiology, and pathology of the human pulp and periapical tissues and the diagnosis, prevention and treatment (to include access preparation, instrumentation and temporization) of diseases and injuries related to these tissues. This course includes lectures and class discussions.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

ENDOD 5216 - ENDODONTICS 1 LAB

Minimum Credits: 1.5

Maximum Credits: 1.5

In this course, students will develop clinical skills for endodontic treatment in a simulation/laboratory environment. This course includes small group simulation and laboratory sessions.

Academic Career: Dental Medicine

Course Component: Practicum

Grade Component: ABCF

ENDOD 5247 - ENDODONTICS 2 LAB

Minimum Credits: 1.5

Maximum Credits: 1.5

Academic Career: Dental Medicine

Course Component: Practicum

Grade Component: ABCF

ENDOD 5252 - ENDODONTICS 2

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

ENDOD 5313 - ENDODONTICS 3

Minimum Credits: 1

Maximum Credits: 1

In this course, students will learn about endodontic microbiology, endodontic therapeutics, preventive endodontics, procedural accidents, evaluation of endodontic outcomes, nonsurgical retreatment, bleaching of discolored teeth, management of incompletely formed roots, management of traumatic dental injuries, longitudinal tooth fractures, endodontic and periodontal interrelationships, endodontic surgery and differential diagnosis of orofacial pain. This course includes lectures and class discussions.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

ENDOD 5348 - CLINICAL ENDODONTICS 1

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad Letter Grade

ENDOD 5388 - CLINICAL ENDODONTICS 1

Minimum Credits: 2

Maximum Credits: 2

This course is designed to provide clinical experiences in the area of endodontics for predoctoral dental students. By the end of the fourth year of the curriculum, students will be able to demonstrate competence in providing care to endodontic dental patients at the level of a general dentist and will participate in a variety of additional experiences to increase skills in caring for the endodontic patient.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: ABCF

ENDOD 5448 - CLINICAL ENDODONTICS 2

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

ENDOD 5900 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Dental Medicine

Course Component: Independent Study

Grade Component: Grad HSU Basis

ENDOD 5911 - ADVANCED ENDODONTICS

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

Energy Resources

ENRES 2096 - INTERNSHIP

Minimum Credits: 1

Maximum Credits: 12

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: Swanson School of Engineering

ENRES 2097 - GRADUATE PROJECTS

Minimum Credits: 1

Maximum Credits: 12

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

ENRES 2998 - CASE STUDY

Minimum Credits: 1

Maximum Credits: 12

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad HSU Basis

ENRES 2999 - M. S. THESIS

Minimum Credits: 1

Maximum Credits: 15

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Engineering

ENGR 2007 - SUSTAINABILITY CAPSTONE

Minimum Credits: 3

Maximum Credits: 3

Building upon students' previous experience and skills, this course will focus on enabling interdisciplinary student teams to synthesize comprehensive solutions to complex real-world Sustainability challenges. This is a project-based course. Project topics will be developed in consultation with instructors and sustainability stakeholders. Innovative solutions will require the application of critical thinking and collaboration to resolve. By the end of the course the students will have a deeper understanding of 1) the multi-faceted nature of Sustainability solutions 2) approaches to problem solving across fields and 3) how to communicate sustainable solutions and concepts in an interdisciplinary team environment.

This course serves as a capstone course for the Sustainability certificate and M.S. in a Sustainable Engineering degree and is a required course for these two programs.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENGR 2050 - TECHNICAL WRITING

Minimum Credits: 3

Maximum Credits: 3

This course is designed for non-native English speaking advanced graduate students preparing to write thesis or dissertation proposals in engineering. Topics covered include: format and content of reports needed in technical writing, abstracts and summaries, project proposals and research reports; correcting language problems encountered by non-native English writers and technical writers in particular.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad SN Basis

ENGR 2051 - PRODUCT REALIZATION

Minimum Credits: 3

Maximum Credits: 3

This interdisciplinary course considers diverse aspects of product realization process. Aspects, include defining user requirements, creation of computer based model and designs of a product from an existing product, rapid prototyping techniques and development of a manufacturing plan. Teams of 3-4 students from engineering and business will take a product with a microsystem or mems technology feature from concept to working prototype. In doing this students will address issues of market analysis, design, manufacturing design and product planning.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ENGR 2052 - INTRODUCTION TO TECHNICAL COMMUNICATION

Minimum Credits: 3

Maximum Credits: 3

An introduction to technical writing and oral presentation skills using Word, Powerpoint, Mendeley, InkScape and LaTeX.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ENGR 2060 - SOCIAL ENTREPRENEURSHIP- ENGINEERING FOR HUMANITY

Minimum Credits: 3

Maximum Credits: 3

The course will explore the concepts of social entrepreneurship through the three tenets of sustainability: environment, economy, and equity in the context of complex or 'wicked' problems. An introduction will provide a foundation in sustainability and social entrepreneurship while exploring the impact of innovative business models, such as disruptive innovation and Prahalad and Hart's fortune at the bottom of the pyramid. Additional class time will explore different examples and challenges in the developed and developing worlds. Through weekly readings, the course will focus on classroom discussions about the tenets of sustainability and the relevance of engineering in crafting 'solutions'. The course project will provide students with an opportunity to work with a multi-disciplinary team to design an engineering-based business plan targeting a specific challenge either locally or in the developing world.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ENGR 2061 - INTRAPRENEURSHIP: ENTREPRENEURSHIP WITHIN THE CORPORATION

Minimum Credits: 3

Maximum Credits: 3

This course explores the developing practice of intrapreneurship which is defined as the application of entrepreneurial principles in a corporate environment for the creation of new products and businesses. The focus will be on providing the student with the needed awareness of cultural and political barriers while providing a specific tool set targeted at maximizing new business as well as career success. The course is designed for junior and senior engineering students who have already had some work experience.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENGR 2062 - STARTUP FUNDAMENTALS FOR ENGINEERS

Minimum Credits: 3

Maximum Credits: 3

This course is offered within the Swanson School of Engineering to undergraduate and graduate students. At the undergraduate level, the class is part of the new Certificate in Innovation, Product Design and Entrepreneurship. The class is designed to introduce the student to the core business concepts behind innovation and entrepreneurship. The class is highly interactive, and students will be required to participate in groups and individually. Grading is heavily weighted around participation in the group project which will be ongoing throughout the semester. The class is taught by Babs Carryer, Director of Education & Outreach, Innovation Institute at Pitt. Guest speakers, who are experts in their fields, will supplement the core teaching. Topics covered will include: ideation, problem/solution, market opportunity, competitive analysis, customer discovery, pitching, funding, finance, legal issues, team building, and innovation within existing companies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENGR 2080 - LEAN LAUNCHPAD: EVIDENCE-BASED ENTREPRENEURSHIP

Minimum Credits: 3

Maximum Credits: 3

Conventional wisdom regarding starting a business is dead wrong. This conclusion led Steve Blank and others to develop the lean startup method, an approach for systematically exploring the business model needed to make an idea into a success. In Blank's own words: 'existing companies execute a business model, startups search for one. This distinction shapes the lean definition of a startup: a temporary organization designed to search for a repeatable and scalable business model.' In this course, we discuss the basic elements of the lean startup method and apply them to the domain of engineering product and customer development. Students are expected to come to the class with their own idea(s) for potential product offering(s), which they will then test using the lean startup approach over the course of the term.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ENGR 2090 - GRADUATE ENGINEERING COOPERATIVE PROGRAM

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Swanson School of Engineering

ENGR 2092 - GRADUATE ENGINEERING INTERNATIONAL COOPERATIVE PROGRAM

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

ENGR 2100 - FUNDAMENTALS OF NUCLEAR ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

Provides an introduction to application of theory to practical aspects of nuclear science and technology. It is intended as a ramp-up course for non-nuclear engineers who wish to pursue a graduate level certificate in nuclear engineering at the University of Pittsburgh. Graduate level content will be assured by use of open-ended assignments and group discussions via an electronic blackboard. The course is designed to accommodate working adults who must travel from time to time. Topics will include: 1. Introduction: a grand tour of the nuclear fuel cycle 2. Power reactors and nuclear systems 3. Atomic and nuclear physics: the Einstein connection 4. Nuclear reactions and radiation: the life and trials of a neutron 5. Radiation and radiation protection: radiation and realism 6. Nuclear reactor theory: from complex to simple 7. Reactor kinetics and control: thanks for delayed neutrons 8. Reactor energy removal: the balance between resilience and power density 9. Power conversion systems and the balance of plant: from neutrons to electricity 10. Reactor accidents and lessons learned.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: School of Engineering (PENGR)

ENGR 2101 - NUCLEAR CORE DYNAMICS

Minimum Credits: 3

Maximum Credits: 3

This course reviews the mathematics of nuclear reactor kinetics. Linear systems of ordinary differential equations are solved by state vector techniques, Laplace transform techniques, or finite difference techniques including the treatment of discretization errors resulting from various finite differencing approximations. A review of the physics of nuclear kinetics is followed by treatments of the kinetics equation including the effect of uncertainties, approximate solutions, and the interpretation of experiments to measure kinetics parameters. Representations and the physical basis of reactivity feedback mechanisms are treated. Lumped and distributed parameter models of fuel, coolant, fission products, and selected plant components are derived and applied to develop quantitative static relationships and qualitative dynamic results for transient conditions. The course provides an introduction to reactor protection and safety analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ENGR 2102 - NUCLEAR PLANT DYNAMICS AND CONTROL

Minimum Credits: 3

Maximum Credits: 3

This course provides an integrated engineering examination of a nuclear power plant from the perspective of instrumentation and control systems used to infer the condition of the nuclear plants and its systems, control its normal operation, and provide protection during transient situations as well as assess core damage during severe accident situations. Students will apply previous knowledge of analog, digital, and microprocessor electronics techniques to nuclear power plant design and operation and reactor protection and safety considerations that influence the design of the reactor plant. A major outcome of this course will be an integrated understanding of the interaction between the physics of nuclear plant control (reactivity and heat balance) and the control and protection systems. This integrated plant understanding will be essential for the successful completion of the integrated nuclear power plant operations course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ENGR 2103 - INTEGRATION OF NUCLEAR PLANT SYSTEMS WITH THE REACTOR CORE

Minimum Credits: 3

Maximum Credits: 3

This course examines design bases for major systems and components in a nuclear plant and evaluates how the systems function in an integrated fashion. The student will examine a typical nuclear power plant and those components and systems of the nuclear plant complex that have the potential for affecting core power, and whose failure could be an initiating event for a plant transient. Dynamic relationships for the systems

developed in the companion nuclear courses will be transformed into stable, numerical algorithms for computer solutions and system interactions will be illustrated using a major industry transient analysis code. Emphasis is on how operations of and faults in systems and components can influence reactivity and core behavior. Through classroom discussions the students will assess engineering problems and operational problems that have been experienced in historical nuclear plant operations. The intended outcome is an aptitude for predicting complex transient behavior of the integrated nuclear plant considering factors that are important for safe and efficient operation: reactivity management and control, coolant inventory control, and core heat removal.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ENGR 2104 - NUCLEAR OPERATIONS AND SAFETY

Minimum Credits: 3

Maximum Credits: 3

Nuclear power is an abundant and renewable power source with unique characteristics which require special attention in its design, licensing and operation. This course explains the fundamental plant processes: nuclear fission, neutron kinetics, heat transfer, chemistry and feedback mechanisms, showing how variations in one plant parameter can propagate effects in the others in ways not seen in fossil, solar, wind, or other systems. The student will also learn methods for analyzing these processes, and the relationship of their features to normal and off-normal plant operations, up to and including postulated severe accidents. Both deterministic analysis and Probabilistic Risk Assessment (PRA) will be employed, with exercises provided in both approaches. Similar concepts will also be applied to the design, manufacture and utilization of nuclear fuel. Stress is placed throughout on the defense in depth concept, and the nuclear safety cultural approach - a necessary point of view regarding how tasks are approached and conducted, whether they be analytical or operational.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ENGR 2105 - INTEGRATED NUCLEAR POWER PLANT OPERATIONS

Minimum Credits: 3

Maximum Credits: 3

This course promotes understanding of how the integrated nuclear plant works and what challenges the operator faces, and helps an engineer 'speak operations' with interfacing groups. Use of the replica simulator is an effective way for students to understand accident control, emergency operating procedures, and how the control room interfaces with the rest of the plant. Emphasis is placed on understanding plant characteristics and controls, rather than on developing control manipulation skills. Intended outcomes are an aptitude for predicting transient behavior of the integrated plant and a command of reactivity management and control that is important for efficient operation of a nuclear plant complex. The course presumes knowledge of the major systems in a nuclear power plant and will emphasize how operations of and faults in those systems and components can affect reactivity and core transient behavior.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ENGR 2106 - NUCLEAR QUALITY ASSURANCE MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

An introduction to the basic concepts of nuclear quality assurance through a series of case studies of the 18 criteria of NQA-1, 10CFR50 appendix B and other applicable standards that govern work in the construction, service and the supply of safety related items to support the nuclear industry. There will be a concentration of pragmatic examples of what to expect as engineers in support of nuclear power plants. These lectures will highlight such topics as the following: small modular reactors, new passive system designed in the new generations of nuclear power plants, relationships with the NRC, authorized nuclear inspectors, and the nation board, what to expect with respect to acquiring patents and your registered professional engineer qualifications, what is critical to know about non-destructive examinations, software control and validation and verification requirements, an introduction to auditing, welding and other special processes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ENGR 2107 - HIGH PERFORMANCE COMPUTING ALGORITHMS AND METHODS

Minimum Credits: 3

Maximum Credits: 3

The objective of this course is to solve complex physical problems using algorithms developed for supercomputing platforms. The course will introduce key concepts in the field of high performance computing, including how to design algorithms. The theoretical concepts will be tied directly to practical applications in the field of science and engineering such as radiation transport, heat transfer, and acoustics. Particular attention will be devoted to hardware selection for supercomputing applications, and will cover the concept and utilization of "open source" libraries, a key component for rapid algorithm development in today's scientific environment.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ENGR 2110 - NUCLEAR MATERIALS

Minimum Credits: 3

Maximum Credits: 3

In this course, materials principles are taught in the initial lectures; students do not need to have prior understanding of them. The course will cover the metallurgy and phase diagrams of alloy systems important in the design of commercial nuclear power plants. The micro-structural changes that result from reactor exposure (including radiation damage and defect cluster evolution) are discussed in detail. The aim is to create a linkage between changes in the material microstructure and changes in the macroscopic behavior of the material. Also discussed is the corrosion of cladding materials as well as the effects of irradiation on corrosion performance, and the effects of primary and secondary coolant chemistry on corrosion. Both mathematical methods and experimental techniques are emphasized so that theoretical modeling is guided by experimental data. Materials issues in current commercial nuclear reactors and materials issues in future core and plant designs are covered.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ENGR 2112 - NUCLEAR CHEMISTRY AND RADIOCHEMISTRY

Minimum Credits: 3

Maximum Credits: 3

Nuclear and radiochemistry are subdisciplines of nuclear science that focus on the study of radioactive materials and their applications. The course will provide students with knowledge of fundamental nuclear science concepts that are key to the understanding of nuclear power plant safety, spent fuel and nuclear waste management, nuclear fuel reprocessing, environmental radioactivity, nuclear forensics, radionuclide production, medical imaging, nuclear pharmacy, and medical and health physics. The proposed course will consist of lectures on nuclear science fundamentals that include: atomic structure, nuclear models and properties, phenomenon of radioactive growth and decay, radiation emissions, nuclear reactions, radiation interactions with matter, radiation detection and measurement, radiation dosimetry and biological effects, and applications of nuclear and radiochemistry in science, engineering, and medicine.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ENGR 2113 - RADIATION DETECTION AND MEASUREMENT

Minimum Credits: 3

Maximum Credits: 3

This combined lecture and laboratory course will provide students with an introduction to the principles of radiation detection and measurement and experimental techniques. The lecture material will provide students with an understanding of the theoretical basis of detector operation, radiation interactions with matter, signal conditioning and processing electronics, measurement techniques, and statistical considerations. Laboratory work will

emphasize the practical aspects of radiation detection using an array of radioactive sources, detectors, and associated signal processing electronics. Through a series of laboratory experiments, students will learn to configure and operate instrumentation used in a wide range of radiation detection applications that are of interest to nuclear power, nuclear medicine, radiochemistry, and other scientific disciplines.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: ME 2100 or ENGR 2100; PROG: Swanson School of Engineering

ENGR 2115 - HEAT TRANSFER AND FLUID FLOW IN NUCLEAR PLANTS

Minimum Credits: 3

Maximum Credits: 3

This course provides advanced knowledge to promote understanding and application of thermal and hydraulic tools and procedures used in reactor plant design and analysis. It assumes that the student has a fundamental knowledge base in fluid mechanics, thermodynamics, heat transfer, and reactor thermal analysis. The focus of the course is on physical and mathematical concepts useful for design and analysis of light water nuclear reactor plants. Applications of mass, momentum, and energy balances are combined with use of water properties to analyze the entire reactor plant complex as a whole. Principles are applied through the application of major industry codes to specific cases.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ENGR 2116 - BOILING WATER REACTOR THERMAL-HYDRAULICS AND SAFETY

Minimum Credits: 3

Maximum Credits: 3

BWR thermal-hydraulics and safety is a course that focuses on the boiling water reactor (BWR), design, operation, transient response, and abnormal operating conditions and accidents; boiling water heat transfer and two-phase flow; applications with respect to the Fukushima Dai-ichi BWR's. The course will cover the evolution of BWR systems including BWR features and characteristics and containment configurations. Basic thermal-hydraulics (T/H), boiling heat transfer and two-phase flow in BWR systems, t/h performance and thermal limits, BWR abnormal operating conditions and accidents including accident evaluations and overview of the state-of-the-art safety analysis techniques will be the focus of this course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ENGR 2118 - COMPUTATIONAL RADIATION TRANSPORT

Minimum Credits: 3

Maximum Credits: 3

This course provides an in-depth review of modern computational techniques used for solving the linear boltzmann equation, with specific applications to neutron and photon radiation transport problems. Topics to be covered include: an introduction to the physical processes that govern radiation transport through materials, monte carlo methods for the simulation of radiation transport, a first-principles derivation of the boltzmann radiation transport equation for multiplying and non-multiplying systems, the multi-group, diffusion, and discrete ordinates approximations to the transport equation, expansion of the scattering kernel in legendre polynomials, and numerical methods for approximating solutions to the transport equation. In addition, the course will review many commonly used numerical methods for solving integral and differential equations, including: finite differencing, numerical quadrature, harmonic analysis, and the power method for solving eigenvalue problems. Topics covered in the class will be reinforced with weekly programming exercises designed to illustrate the different methods for solving the boltzmann radiation transport equation and demonstrate how these methods can be used to solve realistic problems related to nuclear reactor and radiation shielding analysis. The course will also place a strong emphasis on formal quality assurance methods (and best-practices) for the development, verification, and validation of scientific computer codes intended for use in engineering design calculations of record.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ENGR 2120 - MATHEMATICAL MODELING OF NUCLEAR PLANTS

Minimum Credits: 3

Maximum Credits: 3

Graduate students will develop the graphics/simulation framework and the underlying mathematical models for simulating nuclear power plants in ME/ENGR 2120 mathematical modeling of nuclear plants. Models will be developed in Matlab/Simulink(tm) and configured to run on a PC so that students can both examine the mathematical models on which the simulation is based and use the simulation program in laboratory-like sessions to study the effect of design changes on plant behavior. The simulation model fidelity developed is suitable for educational purposes and provides students with a desktop tool to realistically model and better understand reactor performance under various conditions. While it would not be intended to replace or duplicate the high-fidelity dynamic simulation used in major accident analysis codes such as Relap, Trac, and Trace, the course will provide the student with an introduction and a working knowledge what is embodied in these industry standard codes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ENGR 2122 - MANAGEMENT PRINCIPLES IN NUCLEAR POWER

Minimum Credits: 3

Maximum Credits: 3

This course will teach management theory and best practices associated for a successful manager in the nuclear industry. The following topics presented and discussed: management theory and practice; ethics; generation economics across the U.S.; dispatch curves; implications of economic factors for existing and new nuclear plants and likely future changes; compensation theory and best practices; labor law issues and challenges common to the nuclear industry; contract law issues and challenges in the nuclear industry; management techniques for dealing with the diverse age groups; change management techniques and best practices in corporations; ethics challenges and issues in the nuclear field; management interactions with inpo and the nrc; project management techniques and practices; management's role in nuclear safety and security culture. Case studies of actual business situations will be studied.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ENGR 2125 - CASE STUDIES IN NUCLEAR CODES AND STANDARDS

Minimum Credits: 3

Maximum Credits: 3

Presentation of major issues associated with systems and component engineering relative to the nuclear power industry and the industry's consensus codes and standards. The course provides an explanation of the necessity of consensus codes and standards, a high-level view of codes and standards organizations, and shows how codes and standards promotes the safe operation of nuclear power plants. The course discusses how the NRC adopts and makes use of consensus codes and standards. It covers codes and standards for current, advanced and next generation, and high-temperature reactors, including global conformity assessment requirements. Relevant codes and standards from other communities, including nuclear quality assurance, are also summarized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ENGR 2130 - NUCLEAR FUEL CYCLE AND ENVIRONMENTAL ISSUES

Minimum Credits: 3

Maximum Credits: 3

This course will be developed in conjunction with university of Pittsburgh faculty with an interest in environmental issues impacting the nuclear power industry including school of engineering faculty involved with the Mascaro sustainability initiative, faculty from the department of civil and environmental engineering and faculty from the graduate school of public and international affairs. The course will address such topics as sustainable energy resources, engineering and societal ethical concerns, risk analysis, and future energy supplies in general and as each of these topics relates to such specific issues as the nuclear fuel cycle, nuclear reactor safety, nuclear waste disposal and transportation, and gen iv and the hydrogen economy.

Students will better understand the socio-economic issues surrounding achieving a sustainable nuclear power future as it impacts fuel acquisition, plant operation and waste disposal.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: (ENGR 2100) or (ME 2100); PROG: Swanson School of Engineering (PENGR)

ENGR 2210 - UNDERSTANDING BRAZIL-PREPARATIONS FOR RESEARCH AND STUDY IN BRAZIL

Minimum Credits: 2

Maximum Credits: 2

This seminar is specifically designed for students who will be doing research and/or studying in Brazil. It introduces the economic, political, social, and cultural aspects of Latin America in general and Brazil in particular. The seminar is organized and conducted by the center for Latin American studies, and features guest lectures from on Brazil, readings from current popular literature and news sources (available from the Eduardo Lozano Latin American collection, a library resource of over 340,000 volumes spanning 30 years), and contemporary films (such as *Decade of Destruction: Killing for Land and Brazilian Populations: Stories and Myths*). The first half of the course will introduce students to day-to-day life in Brazil, as well as its current socio-economic situation, the influence of politics and ethnic relations, and the many aspects of Brazilian culture. The second half will focus on disciplinary perspectives that allow students to explore regional issues from a variety of viewpoints. The final seminars in the semester will be used for the presentation of individual student reports on a topic related to Brazilian life, such as the governmental structure, university system, or integration of technology with indigenous lifestyles and traditions. This course is required for all Igert fellows.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ENGR 2230 - PORTUGUESE 3 FOR ENGINEERS

Minimum Credits: 3

Maximum Credits: 3

This third semester of Brazilian Portuguese is specifically designed for engineering students who will be doing research and/or studying in Brazil. The course covers technical and educational terminology through examination of Brazilian sustainable engineering case studies while further advancing the students' knowledge and ability in Brazilian Portuguese. The course will further enhance the cognitive skills of engineering students, and give them an appreciation of the interrelation of career paths, language skills, and cultural awareness. This course is required for all fellows.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ENGR 2256 - ENGINEERING IN THE AMERICAS PERU

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad Letter Grade

ENGR 2281 - CLEAN ENERGY GRID ENGINEERING: SCANDINAVIA GRAD

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad Letter Grade

ENGR 2282 - GERMAN ENGINEERING CULTURE GRAD

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the day-to-day business issues facing German engineers. The course will cover service businesses in Germany, workplace culture, digital factories, engineering law in Germany and a project that will tackle solving real engineering problems. Students learn to analyze typical German cultural aspects in order to understand differences in the social system of a company and use the knowledge to improve the processes and structures. Students work with appropriate analytical methods and apply their knowledge on real business examples, given by experienced international Managers.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad Letter Grade

ENGR 2450 - ENGINEERING- THE GERMAN WAY

Minimum Credits: 1

Maximum Credits: 18

This course highlights the German approach to engineering from various perspectives. It is designed as mixture of in-class lectures and industrial experience in the form of factory tours. Four broad topics are addressed from the German perspective: (1) R&D management, (2) production and manufacturing systems, (3) digital factory layout and factory simulation, and (4) product-ergonomics and ergonomic aspects in manufacturing. In addition students select one of two additional options dealing with unique aspects of the German business economy: (1) the nature of cooperation between trade unions and employers or (2) the impact on technology law and harmonization on engineering in Europe.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad Letter Grade

Course Attributes: Pitt Class

ENGR 2600 - GLOBAL ENGINEERING TECHNOLOGY: INNOVATION AND LEADERSHIP

Minimum Credits: 3

Maximum Credits: 3

Globalization and innovation will be studied with a particular emphasis on china in conjunction with the Innovate 2011 conference. As such the course provides both the preparation for the conference and the post-conference synthesis of what was learned during the conference. The course will be jointly taught by University of Pittsburgh and rice University faculty exclusively for those students who will be delegates to the innovate conference. Guest lecturers will be invited from the two participating universities who will discuss the history, government, religion, business climate and culture of china. This course requires participation in the Innovate 2011 symposium that will visit Beijing, Suzhou, Hangzhou and Shanghai China from March 3 - 13.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENGR 2623 - ENGINEERING FOR A BETTER ENVIRONMENT: BRAZIL

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ENGR 2631 - INTRODUCTION TO MINING ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

The course introduces students to: 1) the history and importance of mining, 2) the exploration and development of surface and underground mines, 3) modern mining methods and operations, 4) common mining equipment, 5) fundamentals of mine ground control and ventilation, 6) elements of coal preparation and mineral processing plants, and 7) mine health and safety management. It is designed to provide students with basic understanding of the primary elements of a mining operation and the engineering issues associated with operating a mine in a safe, effective, and sustainable manner.

The mining industry is replete with technical jargon and specialized processes and machinery that require mastery by students prior to exploration of more technically complex engineering coursework. Introductory lectures and field trips help to prepare students for the rigors of studying the other mining engineering courses offered within the Swanson School of Engineering. The course introduces students to: 1) the history and importance of mining, 2) the exploration and development of surface and underground mines, 3) modern mining methods and operations, 4) common mining equipment, 5) fundamentals of mine ground control and ventilation, 6) elements of coal preparation and mineral processing plants, and 7) mine health and safety management. It is designed to provide students with basic understanding of the primary elements of a mining operation and the engineering issues associated with operating a mine in a safe, effective, and sustainable manner. The mining industry is replete with technical jargon and specialized processes and machinery that require mastery by students prior to exploration of more technically complex engineering coursework. Introductory lectures and field trips help to prepare students for the rigors of studying the other mining engineering courses offered within the Swanson School of Engineering. The course introduces students to: 1) the history and importance of mining, 2) the exploration and development of surface and underground mines, 3) modern mining methods and operations, 4) common mining equipment, 5) fundamentals of mine ground control and ventilation, 6) elements of coal preparation and mineral processing plants, and 7) mine health and safety management. It is designed to provide students with basic understanding of the primary elements of a mining operation and the engineering issues associated with operating a mine in a safe, effective, and sustainable manner. The mining industry is replete with technical jargon and specialized processes and machinery that require mastery by students prior to exploration of more technically complex engineering coursework. Introductory lectures and field trips help to prepare students for the rigors of studying the other mining engineering courses offered within the Swanson School of Engineering.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: (PROG: Swanson School of Engineering) or (PLAN: Geology (BS or BPH))

ENGR 2632 - SUSTAINABLE DEVELOPMENT AND THE MINERAL INDUSTRY

Minimum Credits: 3

Maximum Credits: 3

The course begins by examining the needs of society and commercial entities engaged in mineral production. Well conceived and designed mineral or solid fuel projects exercise a balance between economic prosperity, environmental health, and social equality. These concepts are then integrated into a case study, where the feasibility of a proposed mining project is analyzed. This examination forms the underpinnings of a course project report.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ENGR 2633 - MINERALS INDUSTRY RISK MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

Explores the concepts, models and methods used to create and support the implementation of risk management within minerals industry organizations. Models and methods include life cycle model, work process model, risk analysis methods and risk assessment methods used to implement a minerals industry risk management framework.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ENGR 2634 - ENVIROMENTAL CONTROLS IN MINING

Minimum Credits: 3

Maximum Credits: 3

The course is designed to study the environmental impact of coal, stone, and other mining operation and examine the engineering controls used to mitigate these impacts. The examination begins with the exploration and permitting of the mine site, emphasizing important environmental issues. Next, the impacts of active mining on land and water use are outlined. Most of these issues are related to subsidence impacting surface structures and water movement both at the surface and underground. To complete the mine's life cycle, closure and remediation issues are investigated. Lastly, a detailed examination of the issues associated with abandoned mined-lands, i.e. Acid-mine drainage, mass-wasting, fires, etc., Are studied. Throughout the course, engineering controls that focus on mitigating the environmental impacts of mining are acknowledged and assessed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ENGR 2635 - MINE VENTILATION ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

This course provides the skills needed to analyze and design ventilation systems for underground mines based on 1) regulatory requirements, 2) health concerns for workers, 3) levels of dusts and toxic or explosive gases present, 4) mining methods used, and 5) splitting and delivery of different quantities of air to various workplaces.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ENGR 2637 - STRATA CONTROL ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

This course provides the skills needed to analyze and design ground control systems for underground mines based on 1) regulatory requirements, 2) safety concerns for workers, 3) stress and displacement characteristics, 4) proposed mining methods, and 5) local geologic conditions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ENGR 2638 - MINING HEALTH AND SAFETY

Minimum Credits: 3

Maximum Credits: 3

Presents an overview of the health and safety issues within the mining industry and to examine current efforts to address these issues. In-depth discussion of health issues affecting mining include: diesel control, noise induced hearing loss, silicosis, coal mine dust monitoring and control, toxic substances, and toxic fumes. In-depth discussion of safety issues affecting mining include: explosives, falls of ground, mine inundations, fire prevention, mine explosions, ventilation, methane control, emergency response and rescue, training, ergonomics, machine safety, and electrical safety.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ENGR 2639 - MINE EVALUATION AND MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

Mine evaluation, an essential component of mineral resource management, are examined in terms of performing, investigating and reporting on mine sampling, mine evaluation, grade control and reserve estimation. Mine management relates the economic, governmental, social, regulatory, cost, labor, health, safety and environmental aspects of mineral extraction to the management of the mining enterprise.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ENGR 2801 - INTRODUCTION TO CYBER-PHYSICAL SYSTEMS

Minimum Credits: 1

Maximum Credits: 1

This course is an introductory course to be taken with hacking for defense (h4d). It will introduce lean startup concepts used (h4d), and will present fundamental and necessary background information in cyber-physical systems (more generally described as mechatronics and the internet of things). Topics covered include: embedded systems and micro-controllers, interfacing with physical systems, networks, communications, and mobile platforms.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENGR 2811 - HACKING FOR DEFENSE

Minimum Credits: 3

Maximum Credits: 3

This course will teach students how to build products and services using lean methods. This will be done by solving real-world military and intelligence community problems. The course uses the lean launchpad platform for entrepreneurship. This is a highly customer-centered hypothesis-test approach to developing a mission modes, and is particularly well-suited for technology startups. It incorporates customer needs and user testing to build a minimum viable prototype. At the conclusion of the course, students will be able to understand the problems/needs of searching for product-market fit; understand all the stakeholders, deployment issues, costs, resources, and ultimate mission value; deliver minimum viable products that match customer needs in an extremely short time; produce a repeatable model that can be used to launch other potential technology solutions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENGR 2812 - HACKING FOR ENERGY

Minimum Credits: 3

Maximum Credits: 3

This course will teach students how to build products and services using lean methods. This will be done by solving real-world energy industry problems. The course uses the lean launchpad platform for entrepreneurship. This is a highly customer-centered hypothesis-test approach to developing a mission modes, and is particularly well-suited for technology startups. It incorporates customer needs and user testing to build a minimum viable prototype. At the conclusion of the course, students will be able to understand the problems/needs of searching for product-market fit; understand all the stakeholders, deployment issues, costs, resources, and ultimate mission value; deliver minimum viable products that match customer needs in an extremely short time; produce a repeatable model that can be used to launch other potential technology solutions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENGR 2900 - GRADUATE FELLOWSHIPS & PROPOSAL-WRITING WORKSHOP

Minimum Credits: 1

Maximum Credits: 1

This workshop will provide information and guidance to students interested in competing for external fellowships to support their graduate research, as well as instruction on proposal writing in general. The workshop will consist of structured class time and outside-the-class mentoring teams to work with students on the preparation of a fellowship application.

Academic Career: Graduate

Course Component: Workshop

Grade Component: Grad HSU Basis

ENGR 2905 - CURRENT ISSUES IN SUSTAINABILITY

Minimum Credits: 3

Maximum Credits: 3

This course will introduce the core principles of sustainability (i.e. Social, economic, and environmental) from the perspective of several disciplines and research fields. Covering a variety of topics such as urban infrastructure, energy policy and the environment, sustainable water-use, habitat sustainability and biodiversity, the curriculum and schedule are updated annually to reflect advancements in the field of sustainable engineering and science, and to continually incorporate current topics. While the course is primarily taught by the sustainability faculty fellows it will also consist of various guest lectures by sustainability faculty and senior practitioners working throughout the Pittsburgh region. Course assignments will consist of

a series of essays and assignments and culminate in a team term project. This is a required course for the undergraduate sustainability certificate and the M.S. in Sustainable Engineering.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ENGR 3000 - PREPARATION FOR AN ACADEMIC CAREER

Minimum Credits: 1

Maximum Credits: 1

This is seminar series designed for Ph.D. students interested in pursuing an academic career and within 1.5 years of graduating. Experienced faculty provide seminars and discussions on two areas: getting the desired academic position and how to be successful during the early years. Topics include, but not limited to: how to apply for academic positions, preparing for the interview, supervising graduate research, balancing service obligations, the promotion and tenure process, funding avenues, publishing and intellectual property, teaching expectations, and balancing work-life issues.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: PROG: Swanson School of Engineering

ENGR 3001 - PREPARATION FOR THE STEM CLASSROOM

Minimum Credits: 1

Maximum Credits: 1

This seminar series is designed for Ph.D. students and post-doctorate fellows interested in pursuing an academic career and wish to gain didactic knowledge and skills related to teaching in a science, technology, engineering and mathematics (STEM) classroom. Experienced faculty provide topics and discussion based seminars.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: PROG: Swanson School of Engineering

ENGR 3002 - ADVANCED LEARNING THROUGH EVIDENCE-BASED STEM TEACHING

Minimum Credits: 1

Maximum Credits: 1

Designed for graduate students and postdocs preparing for academic careers in the stem disciplines, this course provides an introduction to the scholarship of teaching and learning (SOLT). This is the second course in a series; however, the former course (3001) is not a required prerequisite. The course will utilize material presented in a massive open online course (MOOC) available through coursera.org and sponsored by the center for the integration of research, teaching and learning (CIRTL). Participants will learn about effective teaching strategies and the research that supports them in addition to learning how to collect, analyze, and act upon their own evidence of student teaching. Topics include but are not limited to: 1. Learning through diversity, 2. Cooperative learning/peer instruction, 3. Inquiry-based labs, 4. Problem-based learning, 5. Flipped classroom pedagogy. Further, participants will learn the process for developing a teaching as research plan as well as the role of human subjects consent for classroom based research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Requirements: PROG: Swanson School of Engineering

Course Attributes: Hybrid

ENGR 3004 - ADVANCED PREPARATION FOR FUTURE STEM FACULTY

Minimum Credits: 1

Maximum Credits: 1

This seminar series is designed for Ph.D. students and post-doctorate fellows interested in pursuing an academic career. Specific topics can vary depending on interest, but may include preparing for faculty job applications and interviews, research mentoring practices, and advanced best practices and pedagogy in STEM teaching. Experienced faculty provide topics and discussion based seminars.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad HSU Basis

Course Requirements: PREQ: ENGR 3001 and ENGR 3002 or EQUIVALENT; PROG: PENG

ENGR 3200 - ENGINEERING SUSTAINABILITY CAPSTONE DEFINITION

Minimum Credits: 3

Maximum Credits: 3

Two-semester, interdisciplinary, team-based PH.D.-Level capstone design course sequence required by IGERT students and other interested graduate students. The courses will require the application of rigorous analytical thinking and research investigation techniques in order to address a real-world, complex problem. The first term of the course will be at Pitt with the second term at unicamp. Project topics will be developed in combination with recommendations from various stake holders. Research will be firmly rooted in industrial needs. The problem will build upon the combined students' acquired engineering knowledge and will require collaboration to resolve. The capstone courses will reinforce the community-building aspect of the IGERT, since students will work in teams both at Pitt and unicamp.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ENGR 3210 - ENGINEERING SUSTAINABILITY CAPSTONE REALIZATION

Minimum Credits: 3

Maximum Credits: 3

A two-semester, interdisciplinary, team-based Ph.D.-Level capstone design course sequence required by IGERT students and other interested graduate students. The courses will require the application of rigorous analytical thinking and research investigation techniques in order to address a real-world, complex problem. The first term of the course will be at Pitt with the second term at unicamp. Project topics will be developed in combination with recommendations from various stakeholders. Research will be firmly rooted in industrial needs. The problem will build upon the combined students' acquired engineering knowledge and will require collaboration to resolve. The capstone courses will reinforce the community-building aspect of the IGERT, since students will work in teams both at Pitt and unicamp.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

English Film

ENGFLM 2425 - BLACK TIME: AFROFUTURISM, AFROPESSIMISM, AND BEYOND

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGFLM 2451 - FILM HISTORY/THEORY

Minimum Credits: 3

Maximum Credits: 3

This course will explore issues relating to film theory, history and research methodology. We will discuss dominant modes of film criticism and explore the creation of "cinema history". We will examine different formulations of this history, tracing how certain explanations of events in cinema have come to prevail, and how certain methods of writing about film have become institutionalized.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Film Studies, Global Studies

ENGFLM 2452 - FILM HISTORY/THEORY 2

Minimum Credits: 3

Maximum Credits: 3

This seminar will focus on the history and theory of cinema from 1960 to the present. While individual theorists and historians will be discussed (e.g. Cavell, Deleuze, Frampton, Kluge, Gunning, Mulvey), there will be special attention paid to historical and theoretical arguments within film studies, such as: psychoanalysis and theories of spectatorship; apparatus theory; historicism and archival research; film and philosophy; theories of genre, adaptation, and performance; neo-formalism and cognitive theory; and the rise of new media, from television to digital cinema and from Imax to video games. These arguments will be explored through major film movements and film-makers, taking up topics such as international art cinema, the changing Hollywood studio system, the role of political cinema, and the growing importance of documentaries.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGFLM 2455 - FILM HISTORIOGRAPHY

Minimum Credits: 3

Maximum Credits: 3

This course will look into theories of film history exploring philosophies behind their social, political, economic, technological, and textual stakes. We will analyze how various forms of film history, intellectual and popular, assert their truth and credibility, and discuss how these kinds of claims might be supported and contested. We will explore the problems of writing film history, particularly in eras where little material survives for any kind of study or where language becomes a major barrier.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Film Studies

ENGFLM 2456 - FILM STUDIES AS A DISCIPLINE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGFLM 2458 - ESSAY FILM/DOCUMENTARY FILM

Minimum Credits: 3

Maximum Credits: 3

This course will explore documentary from critical and creative vantage points. Key theoretical texts from the interdisciplinary field of documentary studies will address the pertinent ethical, formal and thematic concerns.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGFLM 2459 - DOCUMENTARY THEORY & PRACTICE

Minimum Credits: 3

Maximum Credits: 3

This course will explore documentary film and video from critical and creative vantage points. Students will be introduced to key discussions from within the interdisciplinary field of documentary studies while also working on individual and collaborative short documentary projects and exercises. Hands-on training in audiovisual recording and editing techniques will be provided. No prior production experience is required.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGFLM 2471 - CINEMA AND PSYCHE

Minimum Credits: 3

Maximum Credits: 3

From the earliest years of film theory, writers have likened the discourse of cinema to the workings of the human mind. In 1916, for instance, Hugo Munsterberg (in "the photoplay") drew parallels between film language and recollection, attention, and anticipation. This course (through readings and film screenings) will pursue such comparisons between cinema and the mind, investigating such topics as dream, memory, fantasy, nostalgia, perception, cognition, affect, etc.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Film Studies

ENGFLM 2480 - WAR AND CINEMA

Minimum Credits: 3

Maximum Credits: 3

This course theorizes the convergence of military and cinematic technologies, focusing on the logistics of perception, bio-politics, and the relation of cinematic/military technologies to the body. Topics include the military, medical, and cinematic uses of the scope and the screen, theories of human vision and ocularcentrism, new conceptions of space and time, the temporal convergence of production and exhibition (speed and acceleration), new media technologies, and the blurred boundaries of war and entertainment.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGFLM 2485 - GENRE AND FILM MELODRAMA

Minimum Credits: 3

Maximum Credits: 3

Course will interrogate the cultural impact of melodrama through the media. We will explore the various expressions of melodrama in gothic narratives, the "woman's film", historical films, "tragic" melodramas, family melodramas, and TV docudramas. Topics addressed include questions about common sense/folklore and the nature of mass and popular cultural representation, the problematic nature of genre, the relation between melodrama, history, and the construction of narratives of national identity in relation to race, gender and sexuality.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Film Studies

ENGFLM 2491 - FILM SOUND: HISTORY, THEORY, AESTHETICS

Minimum Credits: 3

Maximum Credits: 3

Questions framing the course include the relation of sound and image, aural and visual pleasures, soundscapes and theories of shock and modernity, the relation of voice and body to subject formation, sound in silent cinema, the aesthetics of analog and digital sound in cinema, sound technologies and imperialism, theories of non-cinematic audio technology such as radio and gramophone, debates over the ontological status of recorded sound, film sound and space, sound in documentary cinema, and culturally specific theories of sound.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGFLM 2494 - KEY CONCEPTS IN NEW MEDIA

Minimum Credits: 3

Maximum Credits: 3

What exactly is "information"? What is an "interface"? What does it mean when we speak of a "media platform"? These terms and concepts form the backbone of the major theories and discourses in new media, which produce a rich vocabulary that has yet to be rigorously defined. This course aims

to provide a theoretical map to navigate the rapidly expanding fields of media studies by critically interrogating a set of key concepts that have been extensively used to deal with the technologies, forms, materials and cultures of new media. We will discuss the meaning, usage, and genealogy of such concepts as "network," "cybernetics," "hardwire," "infrastructure," and "system," which have animated a wide range of researches and debates. By critically engaging with these key concepts, we hope to not only reconstitute a framework for theorizing contemporary media, but to explore the very notion of "media" as a discursive formation.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGFLM 2496 - MEDIA AND MOBILITY

Minimum Credits: 3

Maximum Credits: 3

Mobility has been one of the central functions and consequences of media technologies, from papyrus in ancient history to mobile phones in the digital era. This seminar seeks to conduct a thorough theoretical mapping between media and mobility, creating a productive framework in which media can be examined through the ways in which they facilitate, mediate, and regulate various modes of mobility of humans, things, and ideas.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGFLM 2500 - WOMEN DIRECTORS IN FILM AND TELEVISION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGFLM 2660 - SEXUAL REPRESENTATION AND CINEMA

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Film Studies

ENGFLM 2661 - QUEER THEORY, QUEER CINEMA

Minimum Credits: 3

Maximum Credits: 3

This seminar explores film (also TV and theater) textuality and reception from a "queer" perspective. What is the relationship among queer authors, queer textuality and the subcultures that consume these texts? What place does non-heteronormative sexuality occupy within the production and reception of mass culture? The course will cover: foundational works in the history of sexuality; camp and gay subcultural reception; gay and lesbian authorship of both Hollywood and avant-garde films; the rise of queer television drama; and queer critical practices.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGFLM 2695 - HORROR FILM

Minimum Credits: 3

Maximum Credits: 3

This seminar will investigate the key films and critical discussions surrounding the genre from its beginnings to the present, but not merely to perform a genre survey- instead we will use horror as a lens to ask wide-ranging questions about spectatorship, theory, history, aesthetics, and politics that have shaped and continue to transform film studies in profound ways.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGFLM 2700 - ANIMATION THEORY

Minimum Credits: 3

Maximum Credits: 3

This course will approach animation as a method, a way to rethink film theory beyond the assumption of an essentially photographic medium, and to unearth and explore the previously underdeveloped territories in theorizing and making sense of moving images.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGFLM 2710 - GLOBAL FILM STARDOM

Minimum Credits: 3

Maximum Credits: 3

Historically, film stardom was examined from an American perspective (where it originated in Hollywood in the first decades of the last century), and theories of stardom emerged from an implicitly Hollywood-based understanding of cinematic fame. Instead, while not ignoring the American cinema, this course will take a global perspective on stardom, in terms of performers, films, and theories. Our approach to stardom will be a combination of the historical, the theoretical, and the textual. This means that in addition to studying individual stars, we will also 1) consider the phenomenon of stardom in terms of its origins and the cultural and national institutional conditions that support it, 2) analyze stardom as a public phenomenon to be understood in the context of specific cultures and audiences, 3) discuss various theories of stardom, celebrity, and public fame, 4) consider the manner in which issues of gender and sexuality impact notions of stardom, and 5) consider the relationship between stardom and spectator subjectivity. Although the course will be focused on cinema stardom, we will also briefly consider theoretical overlaps with the broader category of celebrity studies. In general, when we look at individual stars in the course, we will consider their broad "star text" which involves the interrelationship of screen roles, off-screen information, publicity material, and cultural context. Questions raised will include: what constitutes a "star text" in different historical contexts and ideas about the public and the private? What specifically do the media of photography and film bring to public fame? How does stardom presume and shape norms of identity pertaining to gender, sexuality, social class, race/ethnicity, bodily norms, and other cultural values? What does stardom mean in old and new transnational contexts? What is the relation between stardom, nation, and politics?

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

English Literature

ENGLIT 2000 - HISTORY OF CRITICISM

Minimum Credits: 3

Maximum Credits: 3

This course introduces students to important aspects of critical thought, especially though not exclusively before the twentieth century. Readings for this course are offered as constellations of texts that intersect with a particular problem or issue. Each constellation will have three goals: to assemble texts that have present significant and important modes of practicing criticism; to include different types of texts where critical thought emerges; to familiarize students with methods of research central to humanistic study.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Excludes English MFA majors

ENGLIT 2001 - STUDIES IN THE HUMANITIES

Minimum Credits: 1

Maximum Credits: 1

In this course, graduate students read and discuss new scholarship in an area of the humanities that will be the subject of a one-week seminar

sponsored by the humanities center.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

ENGLIT 2002 - INTERDISCIPLINARY METHODS IN THE HUMANITIES

Minimum Credits: 3

Maximum Credits: 3

This course will theorize and practice interdisciplinary research methods. A central focus of inquiry is how interdisciplinary research might shift the content and scope of our scholarship. How might it shift our disciplines? What are the gains, losses, and syntheses entailed in that shift? (For example, how might fieldwork benefit literary critical projects?) Readings will address debates in anthropology on fieldwork; oral history methods; and the applicability to the humanities of qualitative research methods from the social sciences. Students will write a final paper in which they launch or develop an interdisciplinary research project that fits their research interests. The paper could be a step towards their manuscripts or dissertations or a more contained project.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2003 - LITERARY STUDIES

Minimum Credits: 3

Maximum Credits: 3

This course examines topics in literary studies in relation to current developments in the field of literary studies.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2005 - SPECIAL TOPICS IN LITERARY STUDIES

Minimum Credits: 3

Maximum Credits: 3

This seminar studies the most important recent developments in the fields of literary and cultural criticism. It both introduces students to a range of topics, methods, and theories and explores deeply the historical, conceptual, and societal significance presented by all these. The course introduces students to, and helps them learn to evaluate, the most important contemporary work in English studies.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2006 - CLOSE AND DISTANT READING

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2009 - DIGITAL/CRITICAL INTERDISCIPLINARY METHODS

Minimum Credits: 3

Maximum Credits: 3

This collaboratively taught seminar exposes students to interdisciplinary and evolving methods for discovery and knowledge construction in the humanities and social sciences. In particular, it focuses on how information flows in and out of sociotechnical systems, the ways that researchers access, arrange, organize and describe information for use in their disciplinary context and how that shapes critical inquiry. Students will do hands-on work with data and methods and interrogate their affordances and limitations. Mini units in this course will be led by faculty from History, Political Science, Economics, English, Sociology, Information Science, and History of Art and Architecture who are involved in the Mellon grant-funded

Sawyer Seminar, Information Ecosystems: Creating Data (and Absence) From the Quantitative to the Digital Age, which will feature invited speakers and support several post-docs and grads in AY 2019-2020.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2014 - MAGICAL NATURE BEFORE THE MODERN WORLD

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2020 - SCALE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2064 - THE BODY NOW: MATTER, FORM, AND TEXT

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2067 - BIOPOWER: BIOPOLITICAL READINGS OF THE BODY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2100 - ADVANCED THEORY AND METHODOLOGY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2101 - MEDIEVAL IMAGINATION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2131 - SHAKESPEARE, GENDER AND SEXUALITY

Minimum Credits: 3

Maximum Credits: 3

This course will read some of shakespeare's plays, emphasizing criticism and theory dealing with gender and sexuality. It will also consider historical difference and related controversies, through such means as reading other early modern texts and history, studying the influence of both dominant and dissident perspectives in later interpretations of his works, or analyzing how recent productions in film and other media deal with gender and sexuality in his plays.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2135 - KEYWORDS: HISTORY AND PRACTICE OF CROSS DISCIPLINARY RESEARCH METHOD

Minimum Credits: 3

Maximum Credits: 3

Keywords: a vocabulary of culture and society by Raymond William (1976, 2nd ed., 1983) Is one of the most important works by one of the founders of cultural studies. Keywords is made up of short essays that take crucial terms in contemporary social and political debate and use their philological history as a means of engaging with their contradictory current issues and meanings. Its combination of scholarship with relevance has proved inspiring and offers a model of how academic work can prove socially significant. A group of scholars from Pitt with colleagues from other universities is working to update Williams's work. See the website: this course aims to introduce students both to methodological and substantive issues that formed Williams's work and the uses to which it may be put.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2136 - LIT, MEDIA, SCIENCE IN THE AGE OF SHAKESPEARE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2148 - ENLIGHTENMENT TO REVOLUTION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2174 - VICTORIANS DRESSED AND UNDRESSED

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2185 - FRANTZ FANON

Minimum Credits: 3

Maximum Credits: 3

This course will be a study of Frantz fanon's work, tracing his elaboration of what he called the new humanism in relation to anticolonial resistance and global revolution. Careful attention will be given to fanon's understanding of the relationship between language, intellectual formation, and

socio-cultural transformation, and the pertinence of his theory of revolutionary change to recent events in Africa and the Arab world.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2186 - MEMORY AND MIGRATION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2192 - OSCAR WILDE AND THE 1890S

Minimum Credits: 3

Maximum Credits: 3

This graduate course presents the major works of Oscar Wilde in the context of other texts from European and Anglophone writers at the end of the nineteenth century. Wilde's writing is considered in the contexts of literary and theoretical movements such as aestheticism and realism as well as in relation to philosophical and scientific discourses.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

ENGLIT 2208 - CULTURES OF AMERICAN LITERACY

Minimum Credits: 3

Maximum Credits: 3

This course investigates the historical construction of different kinds of literacy and literacy instruction in the United States. Students will investigate the documentary evidence of how literacy has been defined, taught, and evaluated both in schools and in a variety of other cultural sites.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2240 - RACE, VISUALITY, AND LITERATURE

Minimum Credits: 3

Maximum Credits: 3

This course explores the intersection of race and visual technologies and techniques (photography, film, daguerreotypy, etc.) as they relate to key questions in literary studies. We will pay particular attention to the tense interplay between images, visual practices, and their role in the documentation and production of the racialized body. We will begin our study in the 1850s and conclude with a consideration of more recent visual productions and practices. In so doing, this course will attend to varied strategies (sonic, haptic, affective) deployed by visual theorists, artists, and intellectuals who attempt to negotiate and exit the violent relationship between the visual and race.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2241 - RACE, WRITING, SOUND: BLACK MUSIC AND LITERARY CULTURE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2244 - RACE AND TRANSNATIONAL PERFORMANCE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2245 - STUDIO IN AFRICAN-AMERICAN POETRY AND POETICS

Minimum Credits: 3

Maximum Credits: 3

Explores the interplay of social history and literary texts in the emergence of modern black literature. Readings range from slave narratives to modern novels.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2260 - BLACK WOMEN'S PRINT CIRCUITS

Minimum Credits: 3

Maximum Credits: 3

Whether described as a flourishing, an explosion, or a blossoming, the renaissance of African American women's writing that began in the 1970s is now commonly accepted as the starting point, if not a signature feature, of what we consider the long era of contemporary African American literature. Engaging in bibliographic, archival, and critical work situated at the intersection of textual scholarship and African Americanist criticism, we will examine the gendered dimensions of late-twentieth-century African American print culture by studying the conditions of publication and distribution of black women's novels, short stories, poetry, drama, manifestos, periodical work, anthologies, and essays.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2261 - QUEER WOMEN OF COLOR RADICALISM

Minimum Credits: 3

Maximum Credits: 3

What if we approached the historical and theoretical traditions of activism, feminism, and Marxism using queer women of color as our starting point? We will address intersectional theory derived from Kimberly Crenshaw's legal discourse and how questions of subjectivity have been raised by scholars such as Jennifer Nash and Maria Lugones. However, the course takes its departure from earlier writings by queer women of color in the 1970s and 1980s that resisted multiple oppressions and placed class struggle as a central to social change, including Audre Lorde, Cherrie Moraga, Alice Walker, Gloria Hull, Patricia Hill Collins, and the collective writings from *This Bridge Called My Back*, the Combahee River Collective Statement, *The Black Woman Anthology*, and Keeanga-Yamahtta Taylor's *How We Get Free*. Using this collection of voices as our starting point, we will then look at recent issues and debates in activism studies, contemporary Marxist theory, and the crises of global capitalism, privileging indigenous and grassroots approaches to social change.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2321 - TRANSLATION AND WORLD LITERATURE

Minimum Credits: 3

Maximum Credits: 3

This seminar will examine the role of translation in the construction of world literature, defined for our purposes as a mode of circulation and of reading (David Damrosch). We will operate with an expanded concept of translation, not limited to issues of linguistic or cultural equivalence and attuned to multiple contexts of literary production and reception. Drawing on the work of Damrosch, Lefevere, Casanova, Venuti, and Apter (among others), we will trace key debates and consider factors that shape the global politics of translation today. We will discuss selected case studies and pursue our own translation-based scholarly projects.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

ENGLIT 2322 - GLOBAL REALISMS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2353 - POST COLONIAL THEORY AND CULTURE CRITIQUE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2399 - ENCOUNTERING THE CARIBBEAN

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2499 - DIGITAL PEDAGOGY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2500 - SEMINAR IN PEDAGOGY

Minimum Credits: 3
Maximum Credits: 3
This course provides the opportunity for first-year teaching assistants and teaching fellows to develop strategies for teaching, to reflect on those strategies, and to consider the larger social, historical and institutional contexts that shape their teaching. The seminar will place students' work in the course they are teaching into dialogue with texts that focus on current critical questions and pedagogical theory and practice across English studies curricula.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2506 - WOMEN AND LITERACY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ENGLIT 2507 - QUEER INSCRIPTIONS

Minimum Credits: 3

Maximum Credits: 3

Students consider inscription as a hermeneutic for exploring topics related to bodies, identity, and institutional language. Students will gain tools for analyzing & writing subjectivity. Topics include queer legal theory; rhetoric's of state punishment; and race and sexuality in labor negotiation. Course readings are likely to include authors such as b. Allen; j. Alexander; J. Butler; c. Cohen; q. Driskill; s. Mckinnon; e. Meiners; J. Halley; k. Ono; c. Rankine; c. Reddy; i. Reed; b. Smith; D. Spade; s. Somerville; & l. Volpp.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2509 - ORDINARY LANGUAGE

Minimum Credits: 3

Maximum Credits: 3

The purpose of the seminar will be to consider ordinary language theory and its bearing on composition and the teaching of writing. Readings will include an anthology of student essays, some standard work in composition (Mina Shaughnessy, Joe Williams, Jim Slevin, William Coles, Peter Elbow), and a selection of work in rhetoric and philosophy, with particular attention to IA Richards, Stanley Cavell, JI Austin and Ludwig Wittgenstein.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2522 - LITERACY, RHETORIC, COMPUTER CODE

Minimum Credits: 3

Maximum Credits: 3

1. This course takes up the recent turn toward computer code as an object of study in the humanities, as exemplified in the fields of digital humanities, digital media, software studies and critical code studies. This turn toward code in the humanities is driven by the recognition that computer code is slipping into domains once dominated by text. That is, much of our communication and information is now filtered through software running on our computers, phones and tablets. Code propels our modern literacy practices: reading PDFs and writing essays, watching and making videos, taking and editing photos. Looking at computer code through the lenses of literacy and rhetoric in this course, we will ask: what can writing mean and do now that it includes not just text, sound, image, and animation but also *code*? Helping us to explore this question will be theoretical work by Kittler, Chun, Bogost, Manovich, Kirschenbaum, Hayles, Knuth, Galloway and Marino, as well as hands-on practice with digital composition. No previous technical knowledge is required, but students will be expected to play games, blog, and code digital compositions of their own design. Both textual and computational compositions are welcome as final projects.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2523 - THE ART AND IDEOLOGY OF TEACHING THE ESSAY

Minimum Credits: 3

Maximum Credits: 3

What are we asking of students when we ask them to compose an essay? What knowledge are we hoping they will develop? Many claims have been made about the cognitive, personal, and political benefits of essay writing, but such claims have been challenged by work in literacy studies that calls into question the privileging of "essay-text" writing, a privileging that has consequences not only for the classroom but also for larger, public policy debates about literacy and education. This course will explore the potentialities and limitations of the essay in classrooms and other venues.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2524 - RHETORICAL GESTURES

Minimum Credits: 3

Maximum Credits: 3

This course explores historical, theoretical, and methodological approaches to gesture as a component of rhetorical invention. Topics to be considered include affect, kinesthesia, sympathy, and other modes and manifestations of bodily suggestion.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2525 - COMPOSITION STUDIES

Minimum Credits: 3

Maximum Credits: 3

This course will provide a general introduction to composition as an area of professional study. The purpose of the course is to introduce key texts (and forgotten texts) since the turn of the century, and to situate those texts in the development of English studies, the history of post-secondary education, and history of related work on writing. We will be looking at how the field has represented the subject as its own and at how the field has constituted itself as a "discipline".

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2528 - FOUR RHETORICAL THEORISTS: ARISTOTLE, KENNETH BURKE, MIKHAIL BAKHTIN, BRUNO LATOUR

Minimum Credits: 3

Maximum Credits: 3

The seminar will read key texts of four major theorists whose work has been and continues to be fruitful for composition, literature, and criticism and will sample some recent inquiries and arguments informed by their work. These thinkers cross our current disciplinary boundaries in ways that would interest students of composition, literature, criticism, and writing, and student inquiries engaging them in those fields would be all welcome course projects.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2532 - HISTORY OF RHETORIC

Minimum Credits: 3

Maximum Credits: 3

Figurative language has had, from the outset, a vexed status in Western philosophical/rhetorical systems, conceived by some as an aberrant form of representational discourse, by others as the most foundational unit of meaning. This course will examine three specific historical moments, each of which handles the conundrum of metaphor in a different manner: the classical period (Plato, Aristotle, Longinus, Quintilian); the romantic period (Coleridge, Shelley, Emerson, Whitman) and the modern period (T. S. Eliot, Wallace Stevens, I. A. Richards and Cleanth Brooks).

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2542 - BLACK RHETORICS: "ALLS MY LIFE I HAS TO FIGHT" : STORYING BLACK RESISTANCE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2543 - ACTIVIST WRITING AND RADICAL RHETORIC

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2544 - RHETORICAL KNOWLEDGE, N PRODUCTION, AND PROFESSION CRAFT

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2547 - CRITICAL LITERACIES AND PEDAGOGIES ACROSS URBAN EDUCATION AND HIGHER EDUCATION

Minimum Credits: 3
Maximum Credits: 3
This course examines historical, theoretical, and practical relationships among reading, writing, language, culture, and schooling. Specifically, these connections are explored across urban education and higher education learning sites, both in-school and out-of-school. Ultimately, students will be expected to examine the curricular, pedagogical, and theoretical contexts that shape teaching and learning as a bridge to the continued development of their own pedagogical identities.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2555 - THEORIES OF TEACHING/WRITING

Minimum Credits: 3
Maximum Credits: 3
In this course we will examine intersections between teaching and writing theories in a number of ways. We will look at key transitional moments in the history of teaching/writing theory in the 20th century. In each case we will consider scholarly texts, companionable textbooks, and cultural constructs within which the teaching of writing gets framed. We will also look closely at a diverse array of contemporary textbooks, focusing specifically on the ways they pre-construct not only what good writing is and is for, but what a good student and a good teacher are supposed to do and believe to best promote it.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2560 - NARRATIVES OF TEACHING

Minimum Credits: 3
Maximum Credits: 3
This course will explore a wide range of narrative strategies, representing teaching and learning both in pedagogical scholarship and literary texts. We will study how scholars and writers portray their own teaching and that of others, paying special attention to how teachers characterize their students' learning. The basic premise of the course is that representations of teaching and learning are inevitably problematic, because of all they omit from their narratives. Students will develop research projects, represent moments in teaching and learning.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2569 - HISTORY OF THE BOOK

Minimum Credits: 3

Maximum Credits: 3

This seminar is designed to encourage reflection on the assumptions that underlie our own scholars by investigating modern and post-modern conceptions of writing history, and their use value for both literary and cultural studies.

Academic Career: Graduate

Course Component: Seminar

Grade Component: LG/SNC Elective Basis

ENGLIT 2570 - MATERIALITIES OF WRITING

Minimum Credits: 3

Maximum Credits: 3

Materialities of writing

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2607 - ECOCRITICISM

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ENGLIT 2608 - GENRES AND GENRE THEORY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: English (MFA) or Department Consent

ENGLIT 2610 - THE NOVEL: TEXTS AND THEORY

Minimum Credits: 3

Maximum Credits: 3

A dialogue among novels (perhaps don Quixote, Madame Bovary, the golden notebook) and the artists of narrative and the novel (perhaps James, Lawrence, Woolf, Lukas, Bakhtin, Auerbach, Genette, Barthes, de Lauretis, Miyoshi).

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2800 - CHILDREN'S LITERATURE

Minimum Credits: 3

Maximum Credits: 3

This course is an introduction to the critical study of children's literature at the graduate level. Sometimes the syllabus will be centered on a particular historical period or genre; other times, around a specific theme or critical controversy. But the course will inevitably engage with theoretical issues raised by a genre whose practitioners inhabit a different subject position than its intended readers, as well as focusing on literary, philosophical, and cultural constructions of childhood.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2801 - CHILDREN, MEDIA, AND TECHNOLOGY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2802 - CRITICAL APPROACH TO CHILDREN'S LITERATURE

Minimum Credits: 3

Maximum Credits: 3

This course examines a variety of children's books from a number of theoretical perspectives; historical, feminist, transactional, structuralist, etc. The implications of theory will be emphasized. We will place children's books and reading in the wider context of the emotional, cognitive, and moral development of the child, the popular culture of childhood, and contemporary multicultural society.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2850 - COMPUTATIONAL MEDIA

Minimum Credits: 3

Maximum Credits: 3

In this course, we will: interact with videogames, electronic literature, online journalism and other computational artifacts; read Bogost, Galloway, Chun, Brunton, Losh, C. Crawford, and J. Brown; and, via texts that we explore and create, consider the affordances, processes, protocols and potential of computational media.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2851 - GENDER, TECHNIQUES, AND MEDIA: FROM PLATO TO VIDEO GAMES

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2852 - DIGITAL HUMANITIES APPROACHES TO TEXTUAL OBJECTS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGLIT 2860 - DIGITAL ARCHIVES, BOOK HISTORY, AND LITERARY CIRCULATION

Minimum Credits: 3

Maximum Credits: 3

This seminar will investigate circulation as a crucial mediation between production and reception. Much of its materials will be drawn from the long nineteenth century, mainly works situated in trans-Atlantic systems of exchange, esp. Children's literature and the emergent canon of poetry in English, and we will be exploring digital archives in pursuit of the practices of print culture. As a result, we will need to think through issues of the digital at the present moment, of the uses and limits of various digital databases and digitally enabled methods of investigation.

Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2861 - INTERSECTIONALITY IN THE ARCHIVES

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

ENGLIT 2902 - DIRECTED STUDY FOR MA AND MFA STUDENT

Minimum Credits: 1
Maximum Credits: 6
In exceptional circumstances a student who wishes to pursue a topic for which no course is available can arrange for directed study.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

ENGLIT 2907 - LITERATURE INTERNSHIP

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

ENGLIT 2960 - ENGLISH GSA

Minimum Credits: 3
Maximum Credits: 3
This course provides credits for English department graduate students who have been appointed as a graduate student assistant.
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad SN Basis

ENGLIT 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 6
In order to register for this course a student must work with a faculty member under one of the following circumstances: a) faculty-graduate student shared research project; b) special study in relation to pedagogical problems; c) defined areas of study in relation to comprehensive examinations.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

ENGLIT 2991 - PUBLISHING PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
This workshop will help English graduate students to prepare previously-drafted seminar papers for journal publication. Students will read and workshop each other's manuscripts and discuss journals in relevant fields, the politics of publishing, the submission and publication process, and other relevant topics.
Academic Career: Graduate

Course Component: Workshop
Grade Component: Grad LG/SNC Basis

ENGLIT 2992 - DIGITAL PEDAGOGY PRACTICUM

Minimum Credits: 1

Maximum Credits: 1

This collaborative workshop for experienced teaching fellows focuses on developing assignments with digital production components. Participants will present and discuss detailed unit plans and assignments. Attention will be paid to crafting rationales to help pedagogical initiatives gain institutional support. Each participant will produce several documents for inclusion in a teaching portfolio.

Academic Career: Graduate

Course Component: Workshop

Grade Component: Grad SN Basis

ENGLIT 2993 - INTRODUCTION TO GRADUATE STUDIES

Minimum Credits: 1

Maximum Credits: 1

This course will introduce MA and Ph.D. students to important practices and genres of graduate studies and to department programs and resources.

Academic Career: Graduate

Course Component: Workshop

Grade Component: Grad LG/SNC Basis

ENGLIT 2995 - DISSERTATION WORKSHOP

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

ENGLIT 2996 - WRITING PEDAGOGY I

Minimum Credits: 3

Maximum Credits: 3

This course is a practicum designed to instruct and support graduate students who are beginning their work as teachers in the department. New TFs will teach a section of Seminar in Composition from a shared staff syllabus, will be mentored by CEAT (the Committee for the Evaluation and Advancement of Teaching), and will take this seminar. In the spring term, they will take a graduate Writing Pedagogy II, and continue with the support and mentorship of CEAT. This seminar will meet once a week to discuss a range of issues that frame the teaching of composition. We will focus on reading student writing, revision, pedagogy, and the design of writing assignments. Topics will include: the relationship of reading and writing, writing conventions, social contexts for writing, digital modes of composition, assignments and sequences, evaluation and assessment of writing.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

ENGLIT 2997 - WRITING PEDAGOGY II

Minimum Credits: 3

Maximum Credits: 3

This course is a practicum designed to instruct and support graduate students who are beginning their work as teachers in the department, following the completion of Writing Pedagogy I. New TFs will teach a section of Seminar in Composition from a shared staff syllabus, will be mentored by CEAT (the Committee for the Evaluation and Advancement of Teaching), and will take this seminar. This seminar will meet once a week to discuss a range of issues that frame the teaching of composition. We will focus on reading student writing, revision, pedagogy, and the design of writing assignments. Topics will include: the relationship of reading and writing, writing conventions, social contexts for writing, digital modes of composition, assignments and sequences, evaluation and assessment of writing.

Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

ENGLIT 3000 - DISSER RES FOR THE PH.D. DEGREE

Minimum Credits: 1

Maximum Credits: 12

For advanced doctoral students who have completed or nearly completed their formal course work and are pursuing independent research leading to the dissertation.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

ENGLIT 3902 - DIRECTED STUDY FOR PH.D. STUDENT

Minimum Credits: 1

Maximum Credits: 6

In exceptional circumstances a student who wishes to pursue a topic for which no course is available can arrange for directed study.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

ENGLIT 3910 - COMPREHENSIVE EXAM

Minimum Credits: 1

Maximum Credits: 12

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

English Writing

ENGWRT 2010 - FICTION WORKSHOP

Minimum Credits: 3

Maximum Credits: 3

This course enables students to master the particular prose fiction forms they are working in. It helps them focus on their manuscript--either a short story collection or a novel-- and to work seriously on it. Close examination of student writing and revision of submitted work are essential parts of the course.

Academic Career: Graduate

Course Component: Workshop

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: English (ENG-MFA)

ENGWRT 2092 - WRITER'S JOURNALS

Minimum Credits: 3

Maximum Credits: 3

This course studies the journal as an art form. It also questions the purpose and value of journal keeping for a writer.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGWRT 2094 - READINGS IN CONTEMPORARY FICTION

Minimum Credits: 3

Maximum Credits: 3

This course acquaints students with a variety of contemporary writers. This study helps students raise questions about their own developing esthetics as they are reflected in form and take into account their dual roles as creative writers and critics. It also helps students access their relationship to reviewing and criticism, including its benefits to a creative writer developing a career, and to discover techniques of reviewing and criticism which aid and do not transgress upon their esthetics and its expression.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGWRT 2110 - NARRATIVE AUDIO WORKSHOP

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGWRT 2210 - POETRY WORKSHOP

Minimum Credits: 3

Maximum Credits: 3

This graduate seminar emphasizes an intensive consideration of student poems, both first drafts and revisions, in an informal workshop setting.

Academic Career: Graduate

Course Component: Workshop

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: English (ENG-MFA)

ENGWRT 2245 - STUDIO IN AFRICAN-AMERICAN POETRY AND POETICS

Minimum Credits: 3

Maximum Credits: 3

Intended for graduate students and advanced undergraduates, Studio in African American Poetry and Poetics will be a course in interdisciplinary making, as we investigate the evolving fields of African American poetry and poetics through a critical and a creative lens.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGWRT 2290 - READINGS IN CONTEMPORARY POETRY

Minimum Credits: 3

Maximum Credits: 3

This course focuses on American poets who have come to prominence since 1963. We will read widely in the poetry of this period to understand its unique contribution to the development of poetic form and its relationship to the culture that produced it.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGWRT 2310 - NON-FICTION WORKSHOP

Minimum Credits: 3

Maximum Credits: 3

A workshop in non-fiction reporting for magazine publication. Students will research, write, revise and re-write articles. Emphasis will be placed on

style, fluidity, organization, suitability for market, and ultimately, on publication.

Academic Career: Graduate

Course Component: Workshop

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: English (ENG-MFA)

ENGWRT 2390 - READINGS IN CONTEMPORARY NON-FICTION

Minimum Credits: 3

Maximum Credits: 3

This course familiarizes students with a number of different forms of and approaches to contemporary non-fiction writing.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGWRT 2399 - TOPICS IN NONFICTION: NEW YORK TRIP

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGWRT 2403 - STRUCTURES AND TECHNIQUES IN NONFICTION

Minimum Credits: 3

Maximum Credits: 3

This is a grad level course required for NF MFAs. The course is designed to examine and develop advanced research skills for the nonfiction writer, and to explore and practice story structure through required readings and creative exercises. Students will design and participate in immersion research projects, produce one long-form narrative or research-based essay using field research, interview and textual sources. The classwide project will be produced in digital form.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGWRT 2405 - PUBLISHING PRACTICUM

Minimum Credits: 3

Maximum Credits: 3

This practicum is for nonfiction M.F.A.S in their third year of study. We will survey current trends in book, magazine, journal, and online publishing, as we design a trip to New York City to meet editors and agents. Students must have manuscripts and/or other completed work ready for publication in order to be accepted into the class, which is offered by special permission only.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

Course Attributes: Hybrid

ENGWRT 2430 - LITERARY AND ONLINE PUBLISHING

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGWRT 2501 - TOPICS IN CREATIVE WRITING

Minimum Credits: 3

Maximum Credits: 3

This course concerns itself with matters of interest in creative writing: form and technique, contemporary production, issues in teaching and pedagogy, and/or the relation of the creative writer to society.

Academic Career: GRAD

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ENGWRT 2900 - MANUSCRIPT WRITING FOR THE MFA

Minimum Credits: 1

Maximum Credits: 9

For advanced MFA students who have completed or nearly completed their coursework and are completing the MFA manuscript. Can be taken only once toward the 36 credits required for the degree, only in the last year of study, and counts as elective credits.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

ENGWRT 2905 - PRACTICUM IN COMMUNITY TEACHING

Minimum Credits: 1

Maximum Credits: 3

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

ENGWRT 2907 - WRITING INTERNSHIP

Minimum Credits: 1

Maximum Credits: 3

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad LG/SNC Basis

ENGWRT 2960 - ENGLISH GSA

Minimum Credits: 3

Maximum Credits: 3

This course provides credits for English department graduate students who have been appointed as a graduate student assistant.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad SN Basis

ENGWRT 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 6

In order to register for this course a student must work with a faculty member under one of the following circumstances; a) faculty-graduate student shared research project; b) special study in relation to pedagogical problems; c) defined areas of study in relation to comprehensive examinations.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

ENGWRT 3009 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 6

In exceptional circumstances a student who wishes to pursue a topic for which no course is available can arrange for directed study with a member of the graduate faculty willing to supervise the work.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Environmtal & Occupatnal Hlth

EOH 2013 - ENVIRONMENTAL HEALTH AND DISEASE

Minimum Credits: 2

Maximum Credits: 2

This is the graduate school of public health core curriculum course in environmental and occupational health. The world health organization defines environmental health as "those aspects of human health, including qualities of life that are determined by physical, biological, social, and psychosocial factors in the environment." The discipline of environmental and occupation health refers to the "theory and practice of assessing, correcting, controlling, and preventing those factors in the environment that can adversely affect the health of present and future generations." This course will familiarize the students with current issues and practice in environmental and occupational health, as well as assessment of the risk of environmental exposures. It is designed to introduce the students to knowledge basic to public health focusing on chemical and physical environmental factors affecting the health of the community.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EOH 2021 - SPECIAL STUDIES

Minimum Credits: 1

Maximum Credits: 15

Properly qualified students may undertake advanced study under the guidance of a faculty member.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

EOH 2022 - SPECIAL TOPICS

Minimum Credits: 1

Maximum Credits: 3

Properly qualified students may undertake advanced study under the guidance of a member of the faculty.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

EOH 2108 - ENVIRONMENTAL AND OCCUPATIONAL HEALTH PRACTICUM

Minimum Credits: 2

Maximum Credits: 2

This practicum provides an opportunity for EOH MPh students to demonstrate integration and application of knowledge in the area of environmental and occupational health, through a culminating experience. This is a faculty supervised applied research or problem solving project in consultation with a health environment related agency or organization. Student participates after completion of course work. The practicum includes preparation, contribution to field work, and a final written report which may be the basis for a master's essay.

Academic Career: Graduate

Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

EOH 2109 - MOLECULAR TOXICOLOGY JOURNAL CLUB

Minimum Credits: 1

Maximum Credits: 1

This course is for students to gain experience in the presentation and discussion of topics of current interest in the fields of industrial and environmental health sciences and toxicology. The format is journal club presented by the students. Our goals are to expose students to the most exciting research in our field of interest. Secondly, to provide a forum to hone skills in organizing and presenting scientific data, as well as critically discussing published work.

Academic Career: Graduate

Course Component: Colloquium

Grade Component: Grad LG/SU3 Basis

EOH 2110 - ROTATION/PRACTICUM

Minimum Credits: 2

Maximum Credits: 2

This course is designed to be a practical research experience for Ph.D. students, goals of which are for students to gain research experience within laboratories of faculty within the molecular toxicology training program. Each laboratory rotation will be eight (8) weeks in duration with 2 rotations. Students will be required to write a report on their research project upon completion of the laboratory component.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

EOH 2122 - TRANSPORT AND FATE OF ENVIRONMENTAL AGENTS

Minimum Credits: 3

Maximum Credits: 3

This course presents in a quantitative fashion the movement, transformation, bioaccumulation, and fate of various physical, biological, and chemical agents through the environment, home, and occupational settings. Chemical degradation, atmospheric transport, surface and groundwater transport, deposition on terrestrial surfaces and in sediments, and concentration by biological systems are described, including movement through food chains; also indoor transport and ventilation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: Global Studies

EOH 2175 - PRINCIPLES OF TOXICOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course will introduce students to the principles governing the interaction of chemicals within the human body. Major organ systems will be described with regard to anatomy, physiology and effects from interactions with chemicals.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EOH 2180 - INTRODUCTION TO RISK SCIENCES

Minimum Credits: 1

Maximum Credits: 1

Course will explore issues surrounding environmental and occupational risks with focus on adverse human health effects. Will provide overview of risk sciences including: risk assessment, risk perception, risk communication and risk management. Detailed attention to methods for qualitative and quantitative characterization of risks to human health. Qualitative and quantitative approaches for risk assessment will consider methods for

assessment of cancer and non cancer health risks using four step paradigm by national academy of sciences

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: CREQ: EOH 2181; PROG: Graduate Sch of Public Health (PPBHL)

EOH 2181 - RISK ASSESSMENT PRACTICUM

Minimum Credits: 2

Maximum Credits: 2

Practicum will provide the student opportunity to conduct a quantitative risk assessment for human health endpoint (either cancer or non-cancer) from an environmental or occupational exposure. Students will learn to identify human health hazards, characterize dose response relationships and site and mechanisms of action, conduct an exposure characterization dose response relationships and site and mechanisms of action, conduct an exposure characterization and use that data to characterize risks to human health.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

Course Requirements: CREQ: EOH 2180; PROG: Graduate Sch of Public Health (PPBHL)

EOH 2309 - ENVIRONMENTAL HEALTH CHEMISTRY

Minimum Credits: 3

Maximum Credits: 3

The organic, inorganic and mechanistic biochemical details of interactions of toxins and biological systems will be presented. Emphasis on chemical understanding of potential toxicological sequelae of such interactions. Students present one lecture on bioorganic toxicological topic synthesized from recent scientific literature.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EOH 2310 - MOLECULAR FUNDAMENTALS

Minimum Credits: 3

Maximum Credits: 3

Course is designed to be a review of the fundamentals of biochemistry, molecular biology, and cell biology. There is significant time devoted to techniques, with the goal of providing background for Ph.D. students beginning their research careers, and a perspective for mph students on the availability and utility of modern biological research methods.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

EOH 2504 - PRINCIPLES OF ENVIRONMENTAL EXPOSURE

Minimum Credits: 3

Maximum Credits: 3

This course introduces concepts inherent in recognition of sources, contaminant generation, transport and uptake of chemical, biological and physical stresses in the context of potential environmental exposures related to human health. This course prepares students to understand exposure assessment in anticipation, recognition, evaluation and intervention as utilized in risk assessment and composition of matter, exposure pathways, pathway assessment methods including measurement, analogy and exposure modeling.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

EOH 2513 - POLICY AND DECISION MAKING FOR PUBLIC HEALTH EMERGENCIES AND BIOTERRORISM

Minimum Credits: 3

Maximum Credits: 3

This three-credit graduate course focuses on public health emergencies and bioterrorism at the phases of preparedness, mitigation, and response. The course emphasizes not only biological agents but also all hazards with public health consequences. It addresses the interfaces of policies and laws in the context of federalism, which requires interaction among the federal, state, and local levels of government. The course considers the critical role of private-sector health care providers in addition to governmental decision makers. Students explore past emergencies through history and case studies, conduct directed research on a chosen policy issue, and experience decision-making in the context of a simulated emergency by playing a chosen and previously researched official role. Teaching methods include lectures, case studies, policy research and writing, interdisciplinary classroom discussion, and simulated decision-making.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: Global Studies

EOH 2515 - EOH PREPAREDNESS

Minimum Credits: 2

Maximum Credits: 2

This course will be a graduate level course focusing on environmental health hazards with respect to disaster preparation, didactic and experimental aspects of course will include core principles of environmental health safety. Students will examine challenges with respect to natural and man-made disasters to allow students to prepare programs to handle environmental health emergencies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

EOH 3010 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1

Maximum Credits: 15

Includes doctoral study under the various programs within the department.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

EOH 3210 - PATHOPHYSIOLOGY OF ENVIRONMENTAL DISEASE

Minimum Credits: 3

Maximum Credits: 3

This graduate level course focuses on the etiology and pathogenesis of human disease and how the disease process affects normal physiologic function. The course will include a didactic component covering the normal anatomy and function of the major organ systems and a series of student-led presentations and discussions of the nature and cause of commonly encountered diseases and or injuries. Students will be expected to apply basic mechanistic physiologic principles of each organ system in current public health and environmentally relevant topics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EOH 3305 - GENOME INSTABILITY AND HUMAN DISEASE

Minimum Credits: 3

Maximum Credits: 3

Mechanisms that maintain genome stability allowed the origin of species. DNA damage is omnipresent and DNA repair and DNA damage tolerance mechanisms are interwoven in systems that control transcription, replication, cell division, signal transduction, cell death and evolution. More than 40 distinct human diseases are caused by defects in DNA repair, including syndromes of impaired development, immunodeficiency, cancer predisposition, neurodegeneration, and premature aging. This course will emphasize the molecular biology and biochemistry of DNA repair, placing these mechanisms into the context of other cellular processes as they pertain to health and disease. Environmental, clinical and endogenous sources of DNA damage will be discussed. An understanding of the fundamental role of DNA repair mechanisms in immunology, oncology, neurology, and

aging will be central to all lectures.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Envrl Influence Management

BENV 2115 - MARKET MANIPULATIONS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BENV 3091 - READING BUSINESS ENVIRONMENT/PUBLIC POLICY

Minimum Credits: 1

Maximum Credits: 9

Individual project administered under the supervision of a faculty member. Faculty approval is required.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

BENV 3094 - INDEPENDT STUDY BUSINESS ENVIRONMENT PUBLIC POLICY

Minimum Credits: 1

Maximum Credits: 9

Individual project administered under the supervision of a faculty member. Faculty approval is required.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

Epidemiology

EPIDEM 2004 - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN

Minimum Credits: 4

Maximum Credits: 4

This course is designed to provide the student with a comprehensive theoretical foundation of the phenomena that produce alterations in human physiologic function in diverse populations across the life span. Information gained in this course will prepare the student for subsequent courses related to the diagnosis and management of disease processes associated with pathophysiologic dysfunction/alterations in people of various ethnic/cultural groups across the life span.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EPIDEM 2012 - NEUROEPIDEMIOLOGY

Minimum Credits: 2

Maximum Credits: 2

This course focuses on the application of the methods of epidemiology to understand the pathogenesis and etiology of conditions affecting the central nervous system. This course covers epidemiological approaches, etiological perspectives and methodologies to assess disorders of the central nervous

system (CNS), with a special emphasis of neurocognitive assessment and neuroimaging methods. This course also provides guided and critical knowledge of existing neuroepidemiological studies through the research practicum. In addition to students pursuing Doctoral and Master level degrees in Epidemiology, this course is designed to reach trainees in a variety of fields, including medicine, neurology, psychiatry, physical medicine and rehabilitation, neuroscience, psychology and computer science. Emphasis is placed on: a. descriptive epidemiology methods; b. factors that influence vulnerability to onset, progression and response to treatment of neurological diseases, including geographic variations; c. methodologies to assess disorders of the central nervous system (CNS), including behavioral neuropsychological assessments and cutting-edge multimodal neuroimaging. Separate sessions will be available upon request for students less familiar with epidemiology methods (descriptive, analytic, experimental).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EPIDEM 2017 - POPULATION NEUROSCIENCE SEMINAR

Minimum Credits: 1

Maximum Credits: 1

This seminar focuses on the methods and current literature in population neuroscience. Population neuroscience draws from multiple fields, including epidemiology, neuroimaging, and cognitive psychology, to understand the intrinsic (e.g. genetic) and extrinsic (e.g. environmental) factors that contribute to brain structure and function in various populations (healthy, aging, and diseased).

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

EPIDEM 2019 - INTRODUCTION TO MULTIMODAL NEUROIMAGING AND APPLICATIONS IN POPULATION NEUROSCIENCE

Minimum Credits: 2

Maximum Credits: 2

There have been great advances in neuroimaging techniques, which allow neuroscientists to visualize molecular, cellular and system physiology and functions. The Introduction to Multimodal Neuroimaging course will teach the underlying principles of neuroimaging techniques, including data modeling and visualization. Special emphasis will be on the discussion of the strengths and limitations of each technique, and on novel approaches to utilize complementary imaging modalities. The course will teach the principles and research applications of neuroimaging modalities via basic lectures and workshops that emphasize the integration of multiple imaging modalities.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

EPIDEM 2110 - PRINCIPLES OF EPIDEMIOLOGY

Minimum Credits: 3

Maximum Credits: 3

Epidemiology is a scientific discipline which seeks to identify and describe patterns of disease occurrence, identify determinants of disease, and evaluate disease prevention and health care treatment efforts. With its focus of study in human populations, epidemiology is directly linked with public health research, policy, and practice. This course provides an introduction to the fundamental definitions, terminology, concepts, methods, and critical thinking used in epidemiology. The material presented in this course is designed to lay the foundation for future study and practice in public health activities.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

EPIDEM 2141 - BEHAVIORAL LIFESTYLE INTERVENTION TRAINING - THEORY OF PREVENTION EFFORTS

Minimum Credits: 2

Maximum Credits: 2

Translating the findings of clinical trials of lifestyle intervention for disease prevention into community settings is increasingly important. This

course will provide the conceptual foundation needed for such public health initiatives and serves as a key component of the Prevention, Lifestyle Intervention, and Physical Activity Area of Emphasis within the Department of Epidemiology. The background and rationale for behavioral lifestyle intervention will be covered in this course, as well as the relationship of lifestyle behaviors to chronic disease, with a focus on diabetes and cardiovascular disease. By attending this lecture-style course, students will receive behavioral lifestyle intervention training based upon a modified version of the Diabetes Prevention Program intervention protocol, called the Group Lifestyle Balance (DPP-GLB) program, which was adapted for use in the community setting. Upon successful completion of this class, each student will also receive a Certificate confirming that he/she was officially trained as a coach for the DPP-GLB intervention program.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Graduate Sch of Public Health

Course Attributes: Hybrid

EPIDEM 2142 - LIFESTYLE INTERVENTION PRACTICUM

Minimum Credits: 3

Maximum Credits: 3

This course follows the lifestyle intervention training theory course. The foundation for this practicum is the group lifestyle balance (GLB) program, a behavioral lifestyle intervention training based upon a modified version of the diabetes prevention program intervention protocol. The GLB has already been developed and evaluated by the course instructors. The lifestyle intervention training practicum will provide students with the opportunity to utilize their theoretical knowledge for behavioral lifestyle intervention with hands-on application in the field. This course will be a key component in the new prevention/ lifestyle intervention area of concentration within the department of epidemiology, providing the practical experience needed to deliver the group lifestyle balance program independently.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

Course Requirements: PREQ: EPIDEM 2141

EPIDEM 2143 - SOCIAL EPIDEMIOLOGY

Minimum Credits: 2

Maximum Credits: 2

This course is designed to introduce students to a broad overview of the field of social epidemiology related to the history and development of the field including the theoretical underpinnings, conceptual approaches, current topic areas, and research methods. Social epidemiology reveals how social processes are intrinsically linked to the health of populations and individuals. Social epidemiology takes into account the social, psychological, biological, and medical determinants of disease and health and uses a multidisciplinary approach to analyzing and solving complex contemporary social issues. This course will emphasize the role of social determinants of health in relation to health equity. Teaching methods include lectures, readings, class discussions, and written assignments.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: EPIDEM 2110 and (BIOST 2011 or 2041); PROG: Graduate Sch of Public Health

EPIDEM 2150 - EPIDEMIOLOGY CARDIOVASCULAR DISEASES

Minimum Credits: 2

Maximum Credits: 2

In this course, we hope not only to guide you to a better understanding of cardiovascular disease and its epidemiology, but also to help develop your critical and presentation skills. We will do this by "critiquing" an article most sessions and having a twenty-minute student presentation based on recent statements of the American Heart Association.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: EPIDEM 2110 and (BIOST 2011 or 2041)

EPIDEM 2151 - PHYSICAL ACTIVITY EPIDEMIOLOGY

Minimum Credits: 2

Maximum Credits: 2

Physical inactivity is a major risk factor for many chronic diseases as identified in the Surgeon General's Report. This course will provide an up-to-date overview of the area of physical activity epidemiology, from the evidence of the relationships between physical activity and/or sedentary behavior and various chronic diseases, to methodological issues pertaining to the assessment of physical activity and/or sedentary behavior, to lifestyle efforts that includes physical activity in population studies, all of which will have a special emphasis on minority groups.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: EPIDEM 2110 and (BIOST 2011 OR 2041)

EPIDEM 2152 - STUDENT WORKSHOP IN CARDIOVASCULAR DISEASE EPIDEMIOLOGY

Minimum Credits: 1

Maximum Credits: 1

This course is designed to be a supplement to the standard epidemiology coursework. It is a "hands on" workshop that will provide the opportunity for students to practice many of the concepts that they learn in class in the context of CVD epidemiology. It will also cover some areas which are not covered by the current curriculum, including an introduction to subclinical CVD, professional development, reliability analyses, and formal presentations of analysis results.

Academic Career: Graduate

Course Component: Workshop

Grade Component: Grad Letter Grade

EPIDEM 2160 - EPIDEMIOLOGY OF INFECTIOUS DISEASES

Minimum Credits: 2

Maximum Credits: 2

The goal of this course is to provide students with a basic understanding of epidemiologic techniques used to describe patterns of infectious disease transmission and risk for infection. In addition, students will learn about the epidemiology, public health impact, and prevention and control measures for selected infectious diseases. This course includes a series of lectures and practical exercises to introduce students to both the application of epidemiologic skills pertaining to infectious diseases and the public health concepts associated with specific infectious diseases.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: EPIDEM 2110

Course Attributes: Global Studies

EPIDEM 2161 - METHODS INFECTIOUS DISEASES EPIDEMIOLOGY

Minimum Credits: 1

Maximum Credits: 1

Covers important topics in infectious diseases epidemiology, including public health surveillance, emerging infectious diseases, the role of infectious diseases in the etiology of chronic diseases, and epidemiologic study designs and laboratory methods used in infectious diseases epidemiology.

Course includes lectures, readings, and mid-term (take home) and final examinations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: EPIDEM 2110 and 2160

Course Attributes: Global Studies

EPIDEM 2163 - GLOBAL EPIDEMIOLOGY OF VACCINES AND VACCINATION

Minimum Credits: 2

Maximum Credits: 2

This course will provide students with knowledge and skills related to the study of vaccines and vaccination programs in the US/EU and in low- and middle income countries. This course will prepare students for entry-level positions in vaccine research or programming for academic, government,

or private sector institutions. This course will provide a broad introduction to a wide range of vaccine related topics ranging from biological mechanisms of vaccines to vaccine financing. Within this range of topics, the course will focus heavily on the epidemiological study of vaccine efficacy, safety, effectiveness, and impact. The course is organized around four themes: 1) introduction; 2) vaccines; 3) research and development; and 3) vaccination programs.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: EPIDEM 2110; PROG: Graduate Sch of Public Health

EPIDEM 2166 - GLOBAL CONTROL OF AIDS/HIV AND TUBERCULOSIS

Minimum Credits: 1

Maximum Credits: 1

This course will deal with the epidemiology of infection with human immunodeficiency virus (HIV) and Tuberculosis (TB). Current knowledge of the natural history, biology, virology or microbiology, epidemiology and clinical aspects of AIDS as well as treatment and vaccine efforts against HIV and TB will be reviewed. Descriptive, analytic and experimental epidemiologic studies will be critically reviewed to provide a synthesis of our current understanding of the pathogenesis of these infectious diseases.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: EPIDEM 2110

EPIDEM 2170 - CHRONIC DISEASE EPIDEMIOLOGY

Minimum Credits: 2

Maximum Credits: 2

This course will reinforce epidemiological concepts, research skills and public health concepts in the context of the study of chronic diseases and associated risk factors. The course will provide an overview of the prevalence, incidence and risk factors for major chronic diseases that face the U.S. population and the population around the world.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: EPIDEM 2110 and (BIOST 2011 or 2041)

EPIDEM 2171 - CANCER EPIDEMIOLOGY

Minimum Credits: 2

Maximum Credits: 2

The course reviews basic cancer biology, reviews classic descriptive cancer epidemiology, considers the role for modern biomedical techniques in studies of cancer etiology, and reviews the active hypotheses regarding the etiology of common and uncommon human cancers. Specific topics include biomarkers and intermediate endpoints, tobacco and alcohol associated cancer, viral associated cancer, endocrine related cancer, and nutrition related cancer.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: EPIDEM 2110

EPIDEM 2180 - EPIDEMIOLOGICAL METHODS 1

Minimum Credits: 3

Maximum Credits: 3

This course is an introduction to the epidemiology methods used in research. The course is designed for students in the Graduate School of Public Health with a modest statistical and data management background. Students will use SAS, a statistical software package, to analyze data sets. This course will focus on the appropriate application of various study designs and statistical methods for answering research questions, as well as the proper interpretation of results derived from these methods. Students will be expected to participate in class discussions that extend and apply the topics covered in lectures and reading to epidemiology research articles and epidemiology in practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: EPIDEM 2110 and BIOST 2041; CREQ: BIOST 2042; PROG: Graduate Sch of Public Health

EPIDEM 2181 - DESIGN AND CONDUCT OF CLINICAL TRIALS

Minimum Credits: 2

Maximum Credits: 2

The course surveys methods in the design and conduct of clinical trials. Clinical trials require successful collaboration of clinical, organizational and statistical skills. This course will focus on clinical and organizational issues, such as patient selection, recruitment, endpoint definition and protocol development. Throughout the semester, students develop a clinical trial proposal that emphasizes the application of the concepts learned. The course will complement courses in biostatistics on the statistical analysis of clinical trials.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: EPIDEM 2110

EPIDEM 2183 - READING, ANALYZING AND INTERPRETING PUBLIC HEALTH MEDICAL LITERATURE

Minimum Credits: 2

Maximum Credits: 2

This course provides the opportunity to analyze, interpret and critique original research articles. Assignments consist of oral and written reviews of recently published papers. A literature review paper on a topic chosen by the student is also required. Lecture topics include assessing study validity, subject selection, bias, confounding, laboratory methods, results presentation, quality control, statistical analyses, library searches, and bibliographic data base development.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: EPIDEM 2110 and EPIDEM 2180 and (BIOST 2042 or BIOST 2049)

EPIDEM 2185 - INTRODUCTION TO SAS

Minimum Credits: 2

Maximum Credits: 2

This course is an introduction to SAS, a statistical software package commonly used to perform data preparation, statistical analysis, and graphical presentation of results. The course consists of lectures and four lab sessions, where students will practice in a guided manner what was taught during the preceding lectures. The aim of this course is to teach students how to write basic SAS programs to import data, export data, create data sets within SAS, clean data, prepare data sets for analysis and apply statistical, as well as graphical, procedures. Students will also learn to make informed decisions regarding the appropriate SAS commands and options to use for these tasks and will be asked to use SAS for solving a set of simple specific research questions. Upon completion of this course students will feel comfortable using SAS as a tool to conduct research and know how to subsequently further develop their own SAS programming skills.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Epidemiology (MS or MPH or PHD or DPH)

EPIDEM 2187 - EPIDEMIOLOGICAL METHODS 2

Minimum Credits: 3

Maximum Credits: 3

This course is an introduction to advanced epidemiology and statistical methods used in clinical and public health research. The focus of the course is on the appropriate selection and application of statistical methods for answering research questions as well as the proper interpretation of results derived from these methods. Students will learn about the analysis of categorical data, survival data, and longitudinal data. The sample size and power issues involved when using these methods will also be covered. Students will be introduced to the causal inference framework, including the

use of propensity scores and inverse probability weighting, and dynamic modeling. Students will gain experience with the statistical methods studied in this course by analyzing data sets with SAS.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: EPIDEM 2180 and BIOST 2041 and BIOST 2042

EPIDEM 2200 - EPIDEMIOLOGY AND HEALTH SERVICES

Minimum Credits: 2

Maximum Credits: 2

The course surveys epidemiologic methods and approaches, as applied to the study of health services and medical technologies. The course places particular emphasis on measurement and design issues which impact on the validity of health services research studies. The course develops a systematic approach to the assessment of medical technologies and to the application of epidemiologic and other scientific information to the formulation of health policy.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: EPIDEM 2110 and (BIOST 2011 or 2041)

EPIDEM 2210 - SPECIAL STUDIES - ESSAY

Minimum Credits: 1

Maximum Credits: 15

Research credits for master's essay. Also applies to credits for doctoral research prior to passing the doctoral comprehensive exam.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

EPIDEM 2213 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 12

Properly qualified students may undertake special study or research which does not apply to the master's essay or doctoral dissertation. This study must be done with permission of the specific faculty member who will supervise the work.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad HSU Basis

EPIDEM 2214 - PUBLIC HEALTH INTERNSHIP

Minimum Credits: 1

Maximum Credits: 4

This internship provides an opportunity to gain valuable knowledge and experience that would not normally be available through coursework. Placements may be outside of the University of Pittsburgh (e.g., in health services organizations, clinics, health departments, community based organizations working with "at risk" populations) or within the University. Each specific placement is to be agreed upon by each student and his/her faculty advisor, based on the strengths, needs and career/academic goals of students. Internship sites should provide a minimum of 200 hours of public health oriented work (generally 20 hours/week for 10 weeks). Students are encouraged to pursue placements beyond the online list and to think creatively about the domestic and international possibilities. Students are encouraged, but not required, to develop their master's essay based on their internship experience.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad HSU Basis

Course Requirements: PREQ: EPIDEM 2110 and BIOST 2041

EPIDEM 2215 - TEACHING PRACTICUM

Minimum Credits: 2

Maximum Credits: 2

This course is designed to provide doctoral students with opportunities to develop practical skills in teaching and mentoring students taking epidemiology courses. As teaching assistants, students may lecture, grade homework and exams, lead review sessions, hold office hours or maintain course blackboard sites. They may also help plan, update or expand course syllabi or teaching materials. Course goals include improvement in oral and written communication skills and exposure to the process of planning and implementing a course.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

EPIDEM 2220 - APPLIED SPATIAL/COMMUNITY EPIDEMIOLOGY

Minimum Credits: 3

Maximum Credits: 3

The purpose of this course is to provide a conceptual understanding of the field of environmental epidemiology and to provide the spatial statistical tools for geospatial analysis. Topics will include: study design and approaches in environmental epidemiology investigations, statistical issues in the analysis and interpretation of such studies, and "hands on" training in software and tools for analysis of spatio-temporal variations in health and disease with respect to demographic, environmental, behavioral, socioeconomic, genetic, and infectious risk factors. The course will provide an overview of health effects of environmental exposures. This includes the investigation of cancer and other disease clusters, health effects of water and air pollution, radiation threats and exposures and proximity to toxic waste sites. Basic tutorials in Arc GIS (10.3) and Geoda freeware will be provided.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: EPIDEM 2110 and (BIOST 2011 or BIOST 2041)

Course Attributes: Global Studies

EPIDEM 2221 - GEOSPATIAL MAPPING AND SPATIAL ANALYSIS IN EPIDEMIOLOGY

Minimum Credits: 2

Maximum Credits: 2

The purpose of this course is to provide a conceptual understanding of the field of environmental epidemiology and to provide the spatial statistical tools for geospatial analysis. The course will provide "hands on" training in software and tools for analysis of spatio-temporal variations in health and disease with respect to demographic, environmental, behavioral, socioeconomic, genetic, and infectious risk factors. Basic tutorials in Arc GIS (10.3) and Geoda freeware will be provided. There will be 7 assignments over the term and 1 final project. The course is meant for all interested master's and doctoral students who have taken an introduction to Biostatistics and Introduction to Epidemiology.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: BIOST 2041 and EPIDEM 2110

EPIDEM 2230 - ADVANCED TOPICS IN EPIDEMIOLOGICAL METHODS

Minimum Credits: 2

Maximum Credits: 2

This course covers methods for obtaining and presenting data from existing sources. Laboratory sections will cover data management and statistical programming in the context of large public-use datasets and clinical databases. Students will be introduced to topics such as analysis of imaging data, longitudinal clinical registries, and multi-level modeling. Students will work in groups on a secondary analysis research project that will be presented in seminar format.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: EPIDEM 2180

EPIDEM 2250 - SEMINAR IN EPIDEMIOLOGY

Minimum Credits: 1

Maximum Credits: 1

Areas of current epidemiology interest in research are presented. Often a general theme such as epidemiology of aging, women's health issues, disorders of immunity, is chosen. All departmental majors are expected to take this course.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

EPIDEM 2260 - EPIDEMIOLOGICAL BASIS DISEASE CONTROL

Minimum Credits: 2

Maximum Credits: 2

The purpose of this course is to gain understanding of the principles underlying disease prevention and the ability to apply these principles to the design, implementation and evaluation of prevention interventions for chronic and infectious diseases. The first part of the course will be devoted to learning the principles of surveillance and risk assessment development, the second part to application of observational data and efficacy and effectiveness studies to populations. The third part will focus on the evaluation of prevention strategies for chronic and infectious disease.

Throughout the course, there will be an emphasis on the interaction of biologic and clinical information with epidemiologic data and analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: EPIDEM 2110 and (BIOST 2011 or 2041)

EPIDEM 2261 - APPLIED EPIDEMIOLOGY FIELD INVESTIGATION METHODS

Minimum Credits: 2

Maximum Credits: 2

This course introduces students to the methods of applied field epidemiology used in applied epidemiology settings such as federal, state, local and tribal government agencies. Upon completion of this course, students will be prepared to conduct urgent public health investigations and write reports for public consumption. This course will also introduce students to applied epidemiology topic areas and their respective analytic methods.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: EPIDEM 2110 and EPIDEM 2180; PLAN: EPIDEM - MS or MPH

EPIDEM 2295 - BIOCHEMICAL AND EPIDEMIOLOGICAL ASPECTS OF NUTRITION

Minimum Credits: 2

Maximum Credits: 2

Students and teachers select published manuscripts to evaluate as a group. Topics have included, but have not been limited to, adipokines, antioxidants, arginine and nitric oxide, cytokines, fructose, metabolism, hormones, isoflavones, lipoprotein metabolism, polyunsaturated fatty acids and vitamins. Basic biochemical characteristics of each species are reviewed, nutritional aspects discussed and population implications assessed with respect to cardiovascular disease, diabetes, HIV infection, and obesity.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EPIDEM 2310 - PSYCHIATRIC EPIDEMIOLOGY

Minimum Credits: 2

Maximum Credits: 2

This course will review the classification systems and methodological issues in psychiatric epidemiology, the research methodologies used, and the distribution of specific psychiatric disorders.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: EPIDEM 2110

EPIDEM 2340 - PEDIATRIC EPIDEMIOLOGY

Minimum Credits: 2

Maximum Credits: 2

This course will focus on epidemiologic approaches to the study of disorders that occur during childhood and will provide an overview of common physical and psychiatric childhood disorders. In addition to describing the epidemiology of the disorders, consideration will be given to the risk factors, research methods, and methodological issues in pediatric epidemiology.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: EPIDEM 2110

EPIDEM 2400 - PSYCHOSOCIAL FACTORS IN DISEASE

Minimum Credits: 2

Maximum Credits: 2

This course focuses on psychosocial and behavioral factors that influence the development and course of physical disease. Some of these factors can be modified, so identification can lead to improved health. This course is directed towards students who want to learn about the most common psychosocial factors implicated in disease, how they are measured, psychometric issues, and how to incorporate them into studies of disease and physical health. Students will also learn how to analyze and evaluate the strengths and limitations of studies that include psychosocial factors.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: EPIDEM 2110; PROG: Graduate Sch of Public Health

EPIDEM 2525 - BIOCHEMICAL, DIETARY, AND PHYSIOLOGICAL METHODS IN AN EPIDEMIOLOGY LABORATORY

Minimum Credits: 2

Maximum Credits: 2

Students are introduced to analytical methods that support exercise and nutritional initiatives. Initially students will attend a laboratory safety course. Biochemical assays will include measurements of antioxidants, fatty acids, hormones and vitamins using elisa, gc-ms, hplc, ria, spectrophotometric and turbidimetric methods. Sub-clinical tests will involve evaluation of intima-media thickness and pulse-wave velocity. Dietary protocols will encompass behavioral and surgical approaches to weight loss and the maintenance and interpretation of food records. Physiological techniques will target exercise interventions, the determination of energy expenditure, and appraisals of fatigue, power and strength. Anthropometric methods will involve bodpod, bioelectric impedance, dexta, skinfolds and underwater weighing. Imaging studies will evaluate brain images in relation to dementia. Results will be discussed with respect to aging, cvd, diabetes, obesity and osteoporosis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

EPIDEM 2560 - NUTRITIONAL EPIDEMIOLOGY

Minimum Credits: 2

Maximum Credits: 2

This interactive course, involving lectures and in-class learning activities, provides students with the skills and knowledge necessary to understand and critically evaluate the nutritional epidemiology literature and design studies in nutritional epidemiology. The course reviews current methods of assessing nutritional status, with a focus on dietary assessment, as well as biological markers, supplement use, anthropometry, and obesity. The course addresses the application of epidemiologic methods to studies of nutrition and disease, highlighting methodological issues and interpretation of findings.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: EPIDEM 2110 and (BIOST 2011 or 2041)

EPIDEM 2600 - INTRODUCTION TO MOLECULAR EPIDEMIOLOGY

Minimum Credits: 3

Maximum Credits: 3

To provide students with an introduction to the key concepts in genetics and molecular biology, and the diverse ways they are used to solve practical problems in the epidemiology of disease and risk identification. This course will deliver the working knowledge of genetics and molecular biology necessary for critical assessment of molecular epidemiological studies. It will provide suitable preparation for more advanced and specialized study in molecular epidemiology. The student will develop familiarity with the ways molecular epidemiology is used to determine susceptibility to disease and response to interventions. The main topics covered are: genetic susceptibility, the use of biomarkers, and molecular association studies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: EPIDEM 2110

EPIDEM 2601 - MOLECULAR EPIDEMIOLOGY TOOLS & TECHNIQUES

Minimum Credits: 3

Maximum Credits: 3

There is a steady stream of new methods and technologies entering the biomedical sciences that can be used to generate high-quality, quantitative data on the molecular and biochemical aspects of health and disease. There is tremendous value in applying these methods in epidemiologic studies to interrogate the molecular underpinnings of associations within populations, generate hypotheses on the mechanisms involved, to monitor the effects of interventions and to increase confidence in causal inferences. This course will be an opportunity for students to be exposed to methods for measuring the biologic processes that are relevant to DNA variation in populations, and to exposure effects that impact RNA and protein (and other molecule) expression. This course will go beyond the standard level of awareness of how to receive and analyze data from a laboratory. We will engage students in rigorous thought on how to pose questions on the underlying biology, conduct biomarker selection, design assays, and analyze and interpret data. We will spend ~50% of the time exposing students to hands-on experimentation at the laboratory bench. While, we will discuss 'omics' and high-dimensional methods in lectures, the hands-on work will be limited to single molecule analyses.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: EPIDEM 2600 and EPIDEM 2180 and EPIDEM 2185

EPIDEM 2602 - APPLICATION OF MOLECULAR BIOMARKERS IN EPIDEMIOLOGY

Minimum Credits: 2

Maximum Credits: 2

This course will advance the learning of students interested in molecular epidemiology by teaching practical aspects of measuring, quantifying and modeling levels of RNA and protein in human biological specimens (blood, tissue, etc). Some topics will include: selecting and validating biomarkers of RNA and protein for application in epidemiologic study design, candidate molecule vs. omics (high-dimensional) approaches, basic know-how in the design and execution of bioassays, and statistical issues in biomarker data analysis. Students will observe the work of a molecular epidemiology laboratory, and have opportunities for hands-on learning.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Requirements: PREQ: Undergraduate Biology, more than one EPIDEM course, one BIOST course, and EPIDEM 2600.

EPIDEM 2640 - INJURY PREVENTION AND CONTROL

Minimum Credits: 2

Maximum Credits: 2

Injuries and violence are leading causes of morbidity and mortality in the United States and globally. This course is directed towards individuals with an interest in learning more about this burden and the current approaches being taken to reduce it. It provides an example of how the disciplines of public health can be used to study, understand, and address a significant public health issue. The course will provide an overview of the basic principles and practice underlying injury prevention and control. Lectures will identify the burden underlying major categories of unintentional and intentional injuries and review the multi-disciplinary approaches being used to reduce injuries and violence, in general, and with respect to specific injury and violence issues. In class discussion and problems will be utilized to enhance understanding of approaches to prevention.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

EPIDEM 2670 - INJURY EPIDEMIOLOGY

Minimum Credits: 2

Maximum Credits: 2

This course is designed to provide an introduction to and understanding of the epidemiology of injuries. The class will review the fundamentals underlying injury data and the methods used in injury research studies. Research in major injury topics; motor vehicle crash, violence, sports injury, and other topics will be discussed in depth. Through instruction and practice with data, participants will become familiar with the importance of injury as a public health problem, the strengths and weaknesses of injury data sources and injury surveillance systems, and injury research methods.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: EPIDEM 2110

EPIDEM 2710 - EPIDEMIOLOGY OF WOMEN'S HEALTH

Minimum Credits: 2

Maximum Credits: 2

This course presents an introduction to the influences of health and disease among women. It reviews epidemiologic approaches to understanding the basic etiology and primary prevention of diseases unique to or more common among women. There is a strong focus on life course approaches to understanding health and disease, including methods, study design and analytics appropriate for studies across the lifespan, from in utero to old age. Course includes lectures, seminars, and discussion.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: EPIDEM 2110

EPIDEM 2720 - REPRODUCTIVE EPIDEMIOLOGY

Minimum Credits: 2

Maximum Credits: 2

This course first presents a solid background of female and male anatomy and physiology, as well as fetal development. The course subsequently covers critical approaches and methodologic challenges unique to reproductive epidemiology. Specific topics include contraceptives, infertility, ectopic pregnancy, spontaneous abortion, gestational weight gain, preeclampsia, preterm birth, low birth weight, intrauterine growth restriction, infant mortality, and breastfeeding. Case studies of selected exposures and reproductive outcomes are discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: EPIDEM 2110 and (BIOST 2011 or 2041)

Course Attributes: Global Studies

EPIDEM 2721 - RESEARCH SEMINAR IN REPRODUCTIVE, PRENATAL, AND PEDIATRIC EPIDEMIOLOGY

Minimum Credits: 1

Maximum Credits: 1

This seminar focuses on areas of current research in reproductive, perinatal, and pediatric epidemiology. Fellows in the reproductive, perinatal, and pediatric training program are required to take this course, although it is open to any interested students.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

EPIDEM 2725 - REPRODUCTIVE DEVELOPMENT FROM MODEL ORGANISMS TO HUMANS

Minimum Credits: 2

Maximum Credits: 2

This course focuses on the molecular aspects of the transition from gamete to a reproductive organism. The course progresses through the building of germ cells, fertilization and stem cell participation to sex determination, gonad morphogenesis, puberty, menopause and pregnancy. This course highlights both human and model organisms to bring together diverse aspects of the cell and developmental biology of reproductive tissues and their impact on disease pathology.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: PUBHLT 2015 or EPIDEM 2004

EPIDEM 2850 - PHARMACOEPIDEMIOLOGY

Minimum Credits: 2

Maximum Credits: 2

The purpose of this course is to provide an introduction to the field of pharmacoepidemiology, which uses epidemiologic methods to examine the benefits or risk of medications in the population. This course will: explain what pharmacoepidemiology is and what types of study designs are used within this methodology, discuss the roles that pharmacoepidemiology studies have regarding drug use and health outcomes; describe the threats to validity that are possible in pharmacoepidemiologic studies and the variety of solutions available to avert or control for these threats. This information will prepare students to both interpret and critique, in writing and through presentations, studies from the pharmacoepidemiology literature.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

EPIDEM 2900 - ADVANCED EPIDEMIOLOGY OF AGING

Minimum Credits: 2

Maximum Credits: 2

This is an advanced course targeted towards Epidemiology PhD students. The purpose of this course is to understand in depth the current epidemiologic research findings regarding common health conditions and geriatric syndromes in the aging population. The course will focus on the common age related processes and chronic health conditions that contribute to disability and frailty and on enhancing successful aging and preventing disability. Advanced research methods will be reviewed as part of each class.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: EPIDEM 2110 and 2981 and (BIOST 2011 or 2041); PROG: Graduate Sch of Public Health

EPIDEM 2921 - GRANT WRITING

Minimum Credits: 3

Maximum Credits: 3

During this course, students will develop a grant proposal on a research topic of their choice. The proposal will be written in the format of the National Institutes of Health (NIH) National Research Service Award (NRSA) Individual Predoctoral Fellowship (Parent F31) grant application. The application will include specific aims and a research plan that includes significance, innovation, and approach. The proposal will also include a research training plan as required by the NIH. Students will also participate in a mock study section (grant review). Students are encouraged to use this opportunity to develop an application for submission to the NIH for support of their dissertation work.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: EPIDEM 2110 and 2180 and 2183. RECOMMENDED: EPIDEM 2160 and 2170.

EPIDEM 2950 - EPIDEMIOLOGY OF AGING WORKSHOP

Minimum Credits: 1

Maximum Credits: 1

The workshops are designed as practical professional skill development to supplement to the additional coursework for the Epidemiology of Aging trainees and students. The workshop will include sessions on: presentations by the students from their research, journal article reviews, longitudinal

analyses techniques, and professional skills sessions. The presentation sessions provide an opportunity for students to present and refine their interim research and data analyses by obtaining feedback from peers, faculty and mentors on their work in progress. Journal article review sessions will provide an opportunity for students to identify and share current articles relevant to the epidemiology of aging and develop proficiency in the critical review of scientific literature. Emphasis will be placed on understanding emerging and novel methods in the field, particularly longitudinal statistical analyses techniques (e.g. handling missing data longitudinally; interpreting changes in slopes over time; joint modeling). A faculty member will help student leaders select articles (distributed before the meeting) and will work with students to encourage questions and discussion among the group. Professional skill sessions will vary by semester and cover topics such as post-doctoral career development, grant and professional medical writing, and longitudinal data analysis.

Academic Career: Graduate

Course Component: Workshop

Grade Component: Grad HSU Basis

EPIDEM 2980 - BIOLOGY AND PHYSIOLOGY OF AGING

Minimum Credits: 1

Maximum Credits: 1

This course introduces students to the aging process as a foundation for research in the epidemiology of aging. Some topics for the course will include: Overview of aging physiology, molecular and biological processes of aging, model systems of aging and study designs that are currently relevant to human population research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: EPIDEM 2004 or 2712

EPIDEM 2981 - EPIDEMIOLOGY OF AGING-METHODS

Minimum Credits: 2

Maximum Credits: 2

This course will introduce the methodological aspects of epidemiologic research in the field of aging and to critically evaluate research in older adults. The course will focus on: demography, study design, sampling, recruitment, retention, measurement of key variables and special populations. Students will write a critical review of a published article and comment on proposed future directions for epidemiologic studies addressing these questions in older populations. Throughout the course, a Problem Solving Learning Method will be applied by prompting the students to solve pragmatic issues. Examples include: How to measure a specific outcome? What type of chronic health conditions may be related to the research question? How to operationalize specific measures of interest (e.g.: how to create a composite score for co-morbidity assessment?). The course has been formulated to provide the students with the building blocks of the epidemiological study of aging. By the end of the course, the students will be able to critically evaluate various components of a study to further address the research questions in aging populations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: EPIDEM 2110

EPIDEM 3100 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1

Maximum Credits: 15

Research and dissertation for the doctoral degree.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Faculty Development

FACDEV 2200 - PRACTICUM ON UNIVERSITY TEACHING

Minimum Credits: 1

Maximum Credits: 3

This course in university teaching is designed for people who are teaching independently for the first time, or who have the flexibility in a recitation to design course materials and teach subject matter. It features the application of instructional principles to course development and materials.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Family Medicine

FM 5316 - FAMILY MEDICINE CLERKSHIP

Minimum Credits: 0

Maximum Credits: 0

Family medicine clerkship is a four week experience in primary care discipline that deals with comprehensive care of individuals and families with special focus on preventive medicine, addressing psychological and social determinants and consequences of illness. Clerkship has five goals: 1) improve and evaluate student clinical skills; 2) provide students with fundamental knowledge of diagnosis and management of common problems; 3) provide rational and scientific approach to preventive medicine; 4) learn unique aspects of family medical care; 5) economic influences of health care delivery and care of patient.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

FM 5401 - FAMILY MEDICINE ACTING INTERN

Minimum Credits: 0

Maximum Credits: 0

Four week experience which fulfills the acting internship requirement in which students participate in a family practice teaching service at the level of a first year resident under direct supervision of senior residents and attending physicians. Students are responsible for initial patient evaluation and implementation of care, including writing orders and following up on evaluations. Students participate in night call and weekend coverage as well as all conferences. This is primarily an inpatient experience.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

FM 5406 - EXTRAMURAL ACTING INTERNSHIP

Minimum Credits: 0

Maximum Credits: 0

Students will register for this course when participating in a family medicine acting internship at an institution outside of the university of Pittsburgh school of medicine. This experience will not fulfill the required acting internship experience to meet graduation requirements.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

FM 5420 - INDIAN HEALTH SERVICE

Minimum Credits: 0

Maximum Credits: 0

This clerkship is offered at hospitals on the Navajo and other Indian reservations. Each student participates in a project, using clinical epidemiology or health survey techniques. Students may also have some clinical experience at hospitals or clinics; and opportunities to observe various aspects of the IHS field program. Students live in government quarters and work under the direct supervision of us public health service physicians. Overall

coordination and research supervision is provided by clinical epidemiology and preventive medicine faculty.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

FM 5430 - FAMILY PRACTICE-MANAGED CARE

Minimum Credits: 0

Maximum Credits: 0

Clinical education course combining comprehensive clinical experience with an opportunity to learn about the organization and operation of a large group model HMO. Majority of time spent seeing outpatients under direct supervision of practicing physician, regular inpatient rounds and one or more extended hours sessions to participate in the care of urgently ill patients. Time scheduled each week to become familiar with health education, quality assurance, utilization, claims, marketing, and consumer affairs components of an HMO.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

FM 5431 - TOPICS IN FAMILY MEDICINE

Minimum Credits: 0

Maximum Credits: 0

4 week elective consisting of 2 two week rotations selected from the following three options: 1) healthcare for the homeless, 2) managed care-how an HMO works, 3) medical care for the chronically mentally ill. Each student will also concurrently participate in the following two subjects during the 4 weeks: 1) preventive medicine and 2) critical review of the medical literature. Course objectives are to 1) see how the homeless obtain health care, 2) see how HMO control costs, 3) improve skills in managing medical illness in psych pts, 4) learn role of prevention in primary care.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

FM 5440 - CLINICAL EPIDEMIOLOGY INTERNSHIP

Minimum Credits: 0

Maximum Credits: 0

The student will design a sub-study related to one of the ongoing epidemiologic projects in the department, and participate in all aspects of the study from data collection to the analysis and presentation of the results. The student will work closely with the epidemiologists, clinicians, and biostatisticians involved in the project.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

FM 5448 - FAMILY CENTERED MATERNITY CARE

Minimum Credits: 0

Maximum Credits: 0

This elective is intended to offer medical students the opportunity to develop a wide view of family centered maternity care on a community basis. Through a series of inpatient and outpatient clinical experiences, directed readings, and a "mini-project," students will extend their understanding of integrated, interdisciplinary family centered maternity care; barriers to prenatal care; creative programs for reducing low birth weight infants; use of doulas, midwives and others in prenatal and intrapartum care; the role of health insurers in augmenting systems of prenatal care; and the abuse of detrimental drugs in pregnancy, such as alcohol, tobacco, and cocaine. The student will be evaluated by various faculty members and the course director based on oral examination of the knowledge of the readings, the "mini-project," and engagement in the topic.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

FM 5450 - COMMUNITY FAMILY MEDICINE

Minimum Credits: 0

Maximum Credits: 0

This elective is intended to offer medical students opportunity to experience family medicine in a remote community setting which is realistic to how family physicians practice. The student will focus on developing the skills necessary to evaluate and treat patients in a community office setting. The student will participate in a SWPA AHEC community or practice project during the elective. The student will choose one SWPA AHEC family practice site for the duration of the elective. The SWPA AHEC preceptor will be responsible for clinical evaluation of the student.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

FM 5451 - RURAL FAMILY MEDICINE

Minimum Credits: 0

Maximum Credits: 0

Elective is intended to offer medical students the opportunity to experience family medicine in a rural community setting. Student will focus on developing skills necessary to evaluate and treat patients in a rural office setting. The use of technology to overcome distance and educational issues will be emphasized. Responsibilities will be determined by the knowledge and skills of the student, but in general will focus on both the inpatient and outpatient settings with a practicing family physician, a dentist, and a nurse practitioner.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

FM 5455 - PRIMARY CARE SPORTS MEDICINE

Minimum Credits: 0

Maximum Credits: 0

This four-week elective is for the student who is interested in learning more about sports medicine. The musculoskeletal system, its exam and their treatment. Students will be exposed to a variety of sports/musculoskeletal injuries in a multi-provider outpatient sports medicine team approach. The course objectives are: to improve the student's musculoskeletal system exam skills; to assess and manage the various musculoskeletal injuries encountered frequently in a sports medicine/musculoskeletal outpatient setting; to develop an appreciation of the roles of surgeons.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

FM 5460 - FAMILY PRACTICE

Minimum Credits: 0

Maximum Credits: 0

Clinical experience, intensive exposure to comprehensive primary care. Multiple sites, general association with community hospitals, family practice residency program. 50-100% Clinical ambulatory, variable inpatient. Emphasis on development of problem-oriented interview and exam, formulation of cost-effective diagnostic approach, and establishment of comprehensive management plans. Knowledge of diagnostic and management strategy, presenting symptoms and chronic problems in office practice stressed.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

FM 5461 - EXTRAMURAL FAMILY PRACTICE

Minimum Credits: 0

Maximum Credits: 0

Clinical experience, intensive exposure to comprehensive primary care in primarily outpatient office settings. These family practice experiences will take place in community settings or medical schools away from the university of Pittsburgh but within the United States.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

FM 5462 - COMBINED FAMILY MEDICINE AND FAMILY PSYCHIATRY

Minimum Credits: 0

Maximum Credits: 0

This four-week elective focuses on psychiatric and general medical problems in a variety of patients. Student will work on the consultation/liaison service at St. Margaret's Hospital where the student will respond to requests from physicians for psychiatric evaluation of patients on inpatient units. The student conducts the clinical evaluation, investigates any ward management difficulties, assesses the role of the patients family in the clinical problem, makes treatment recommendations and when appropriate does follow up during the patient's hospital stay. The multi disciplinary team on the service attempts to integrate the biological with the psychosocial perspective to achieve a comprehensive view of patient care. Students will participate in family medicine case conferences, attend outpatient experiences at primary care clinics, participate in palliative care interventions and work on the medical care of the psychiatry patient (MCP) service at WPIC. Learning opportunities include: supervised clinical assessments; hospital rounds; case conferences and seminars. This elective can prepare a student for combined family medicine/psychiatry residency programs.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

FM 5465 - INTEGRATIVE MEDICINE

Minimum Credits: 0

Maximum Credits: 0

This elective is designed to give students a broad exposure to complementary & alternative medicine (cam) modalities & a more in-depth exposure to somatic oriented approaches and pain management. Students will be exposed to practitioners and physicians in clinical settings covering disciplines including: acupuncture, chiropractic, osteopathic manipulative treatment, integrative medicine, integrative pain management and mind-body approaches. Students are expected to pick one clinical problem and explore the evidence-basis for cam modalities that may offer benefit in treatment.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

FM 5470 - PRACTICE-BASED PHARMACOTHERAPY

Minimum Credits: 0

Maximum Credits: 0

This is a 4-week elective where students will participate in a variety of activities (direct patient care, group/individual case-based discussions, chart reviews, and projects to improve skills in prescribing and management of medications. Special emphasis will be placed on obtaining a thorough medication and history and using evidence-based drug information databases. The student will learn rational prescribing strategies based on cost, formulary guidelines, effectiveness and individual patient characteristics. Contact will be with clinical pharmacists and family physicians.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

FM 5485 - CULTURAL COMPETENCY

Minimum Credits: 0

Maximum Credits: 0

Course objectives: to create better understanding of different health beliefs in different culture, resulting in students with facility in operating in a multicultural environment; foster an understanding of the challenges to physicians and the health care system of varying cultural beliefs and practices; improve the recognition of health beliefs and practice as they present in the clinical setting. The medical student will be introduced to a variety of cultural issues as they relate to medical care. Directed readings will be assigned to expose students to major health beliefs, disparities, challenges and practices of members of a variety of culture groups, including native Americans, African Americans, Arab Americans, eastern European immigrants, Latino Americans, and Asian Americans. Students will spend time with UPMC medical translators, attending to inpatients and outpatients, both in clinics and on house calls, learning both from the medical reasons for the patient seeking care, and the background health belief. Students will also attend health education events as available in community settings, including steps to a healthy community programs, center for minority health programs, Jewish community center programs, and other opportunities. The student will be expected to do a complete family health belief study on a selected patient's family, including recommendations for improvement of the quality of their health experience. Students will have a weekly meeting with the course director to discuss suggested readings and how the content applied to the clinical experiences.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

FM 5500 - INTERNATIONAL FAMILY MEDICINE

Minimum Credits: 0

Maximum Credits: 0

This elective is intended to give some structure and guide lines for students wishing to experience medical care in other countries. Although the department has some contacts in other countries, students are strongly encouraged to pursue their own interests and contacts. Students should focus on the practice of medicine in other countries as well as the epidemiology and public health issues within the country.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

FM 5505 - FAMILY MEDICINE IN HONDURAS

Minimum Credits: 0

Maximum Credits: 0

This is a four week elective to expose the student to a global health experience in a community based project working with shoulder to shoulder San Jose in Honduras. It will consist of 2 weeks in Pittsburgh and 2 weeks in San Jose del Negrito, Honduras, under the direction of shoulder to shoulder Pittsburgh and the UPMC family medicine global health (GH) team. In select situations a student with fluency in Spanish and prior international travel experience may construct a four week rotation entirely in Honduras. Each student will have an opportunity to practice clinical medicine and preventative care in a low resource setting in rural Honduras. There will be structured educational objectives in public health, tropical medicine and community oriented primary care. The team traveling to San Jose will work with the local nurse and physician in the local clinic setting as well as the various community projects. Each student will be active not only in the clinic setting but in the wider community as the project focuses on community development and community health.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

FM 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0

Maximum Credits: 0

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

FM 5812 - COMMUNITY-BASED PBLC HLTH POLICY

Minimum Credits: 0

Maximum Credits: 0

This is a 4-week elective during which students will learn the basic principles of identifying health problems from a population perspective & developing policies to help solve problems. Activities include required reading, working on existing projects with community based organizations, using health databases to answer questions about the health of communities & preparing a written & oral report based on each person's own assessment of a community, one particular problem within that community, & a rational approach to developing health policies to address it.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

FM 5815 - BIOETHICS CONFERENCE AND READINGS IN BIOETHICS AND FAMILY MEDICINE

Minimum Credits: 0

Maximum Credits: 0

The student will attend at his/her own expense, two (2) weeks of conference (s) in bioethics that is accredited (one week option can be discussed). The rotation is offered for four (4) weeks of credit. Independent readings, writings and discussion with Dr. Zimmerman or other faculty of the readings will be needed to complete the course. The student is encouraged to attend any lectures by the center for bioethics and health law. Objectives: use various ethical theories to analyze bioethical issues related to family medicine; understand perspectives on bioethical issues at the beginning of life and/or the end of life; interact with other professionals from a variety of backgrounds on bioethical issues; identify resources for understanding bioethical issues.

Academic Career: Medical School

Course Component: Seminar

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

FM 5840 - RESEARCH IN FAMILY MEDICINE

Minimum Credits: 0

Maximum Credits: 0

This elective is available to interested and motivated students. This elective provides opportunities to learn basic research methodology which may include approach to experimental design, protocol development, data analysis and evaluation of results. Student may participate in ongoing research in the lab and on patients.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

FM 5899 - INDEPENDENT STUDY FAMILY MEDICINE

Minimum Credits: 0

Maximum Credits: 0

The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

FM 5900 - FAMILY MED INDEPENDENT STUDY

Minimum Credits: 0

Maximum Credits: 0

Students interested in pursuing a particular course of independent study and/or research may choose this elective. Topic to be determined by student and preceptor.

Academic Career: Medical School

Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

FM 5910 - LEADERSHIP/MANAGEMENT/ADMINISTRATION

Minimum Credits: 0

Maximum Credits: 0

This elective will offer the opportunity to develop a wide view of medical leadership and management. Through a series of directed readings, guided experiences, and a "mini-project," students will extend their understanding of clinical managerial sciences: quality management and improvement; utilization management; the US health care system; cost benefit analysis and the distribution of the health care dollar; medical staff administration and function; managed care systems, incentives and trends; measuring physician performance; and introductory accounting and financial management concepts. The student will be evaluated by various faculty members and the course director based on oral examination of the knowledge of the readings, the "mini-project," and engagement in the topic.

Academic Career: Medical School

Course Component: Practicum

Grade Component: H/HS/S/LS/U

Film and Media Studies

FMST 2151 - FILM HISTORY/THEORY

Minimum Credits: 3

Maximum Credits: 3

This course will explore issues relating to film theory, history and research methodology. We will discuss dominant modes of film criticism and explore the creation of "cinema history". We will examine different formulations of this history, tracing how certain explanations of events in cinema have come to prevail, and how certain methods of writing about film have become institutionalized.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FMST 2152 - FILM HISTORY/THEORY 2

Minimum Credits: 3

Maximum Credits: 3

This seminar will focus on the history and theory of cinema from 1960 to the present. While individual theorists and historians will be discussed (e.g. Cavell, Deleuze, Frampton, Kluge, Gunning, Mulvey), there will be special attention paid to historical and theoretical arguments within film studies, such as: psychoanalysis and theories of spectatorship; apparatus theory; historicism and archival research; film and philosophy; theories of genre, adaptation, and performance; neo-formalism and cognitive theory; and the rise of new media, from television to digital cinema and from Imax to video games. These arguments will be explored through major film movements and film-makers, taking up topics such as international art cinema, the changing Hollywood studio system, the role of political cinema, and the growing importance of documentaries.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FMST 2155 - FILM HISTORIOGRAPHY

Minimum Credits: 3

Maximum Credits: 3

This course will look into theories of film history exploring philosophies behind their social, political, economic, technological, and textual stakes. We will analyze how various forms of film history, intellectual and popular, assert their truth and credibility, and discuss how these kinds of claims might be supported and contested. We will explore the problems of writing film history, particularly in eras where little material survives for any kind of study or where language becomes a major barrier.

Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad LG/SNC Basis

FMST 2411 - FILM AND LITERATURE

Minimum Credits: 3

Maximum Credits: 3

This course examines the historic and theoretical relationship between film and literature. Among the topics to be considered are: (1) narrative structure in film vs. literature; (2) parallels between filmic and literature genres; (3) adaptation from literature into film; (4) the case of the writer/director; (5) the influence of cinema on writing; (6) the politics of high vs. low culture distinctions; (7) a comparison of film and literature criticism.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FMST 2415 - WOMEN DIRECTORS IN FILM AND TELEVISION

Minimum Credits: 3

Maximum Credits: 3

This course surveys the history and contributions of women directors working in the film and television industries.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FMST 2416 - CINEMA AND TRAUMA

Minimum Credits: 3

Maximum Credits: 3

Trauma studies now stands at the forefront of contemporary cultural theory, straddling such disciplines as history, psychology, philosophy, and literary criticism. This seminar encourages graduate students to examine and contribute to the rapidly emerging sub-field of cinema/trauma studies. We will focus on the two mid-twentieth century events that continue to anchor many definitions of historical trauma: the Holocaust and Hiroshima. What do films that address these events teach us about the politics and ethics of representing experiences often referred to as unrepresentable? How does cinema force us to refigure debates about the "limits of representation" and the nature of "the event" itself? Is cinema an agent of memory or memory's eraser? A broad range of films will inform our discussion of such questions - documentary and fiction, tragedy and comedy, mass cultural successes and lesser-known art films or genre films, films from the past and present.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FMST 2417 - QUEER THEORY, QUEER CINEMA

Minimum Credits: 3

Maximum Credits: 3

This seminar explores film (also TV and theater) textuality and reception from a "queer" perspective. What is the relationship among queer authors, queer textuality and the subcultures that consume these texts? What place does non-heteronormative sexuality occupy within the production and reception of mass culture? The course will cover: foundational works in the history of sexuality; camp and gay subcultural reception; gay and lesbian authorship of both Hollywood and avant-garde films; the rise of queer television drama; and queer critical practices.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FMST 2418 - CINEMA AND PSYCHE

Minimum Credits: 3

Maximum Credits: 3

From the earliest years of film theory, writers have likened the discourse of cinema to the workings of the human mind. In 1916, for instance, Hugo

Munsterberg (in "the photoplay") drew parallels between film language and recollection, attention, and anticipation. This course (through readings and film screenings) will pursue such comparisons between cinema and the mind, investigating such topics as dream, memory, fantasy, nostalgia, perception, cognition, affect, etc.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FMST 2420 - CINEMA AND COUNTER-HISTORY

Minimum Credits: 3

Maximum Credits: 3

This graduate course focuses on visual media's connection to historicizing. It is concerned with theoretical writings that can be understood as offering versions of the past that run counter to received perceptions about historical forms through visual media. The readings and the films pay specific attention to various, often conflicting, theories, forms, and styles to identify the philosophic, aesthetic, and political stakes in activating the past. Among the texts to be studied that are related to philosophies of history are those of Walter Benjamin, Michel Foucault, Gilles Deleuze, Jacques Ranciere, Hayden White, Carlo Ginzburg, and Fredric Jameson as well texts on Andr Bazin, Jean-Luc Godard. Philip Rosen, Mary Ann Doane, Robert Rosenstone, and Vivian Sobchack. The films proposed for screening are Cabiria, Abel Gance's Napoleon, Scipione Africanus, Roberto Rossellini's the Rise to Power of Louis XIV, Pasolini's Mamma Roma, Kubrick's Paths of Glory, Carry on up the Khyber, Monty Python and the Holy Grail, The Camp at Thiaroye, Hyenas, Morfia, a History of Violence, the White Ribbon, and Il Divo.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FMST 2421 - GLOBAL FILM STARDOM

Minimum Credits: 3

Maximum Credits: 3

Historically, film stardom was examined from an American perspective (where it originated in Hollywood in the first decades of the last century), and theories of stardom emerged from an implicitly Hollywood-based understanding of cinematic fame. Instead, while not ignoring the American cinema, this course will take a global perspective on stardom, in terms of performers, films, and theories. Our approach to stardom will be a combination of the historical, the theoretical, and the textual. This means that in addition to studying individual stars, we will also 1) consider the phenomenon of stardom in terms of its origins and the cultural and national institutional conditions that support it, 2) analyze stardom as a public phenomenon to be understood in the context of specific cultures and audiences, 3) discuss various theories of stardom, celebrity, and public fame, 4) consider the manner in which issues of gender and sexuality impact notions of stardom, and 5) consider the relationship between stardom and spectator subjectivity. Although the course will be focused on cinema stardom, we will also briefly consider theoretical overlaps with the broader category of celebrity studies. In general, when we look at individual stars in the course, we will consider their broad "star text" which involves the interrelationship of screen roles, off-screen information, publicity material, and cultural context. Questions raised will include: what constitutes a "star text" in different historical contexts and ideas about the public and the private? What specifically do the media of photography and film bring to public fame? How does stardom presume and shape norms of identity pertaining to gender, sexuality, social class, race/ethnicity, bodily norms, and other cultural values? What does stardom mean in old and new transnational contexts? What is the relation between stardom, nation, and politics?

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FMST 2422 - MEDIA AND MOBILITY

Minimum Credits: 3

Maximum Credits: 3

Mobility has been one of the central functions and consequences of media technologies, from papyrus in ancient history to mobile phones in the digital era. This seminar seeks to conduct a thorough theoretical mapping between media and mobility, creating a productive framework in which media can be examined through the ways in which they facilitate, mediate, and regulate various modes of mobility of humans, things, and ideas.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FMST 2440 - FILM SOUND: HISTORY, THEORY, AESTHETICS

Minimum Credits: 3

Maximum Credits: 3

Questions framing the course include the relation of sound and image, aural and visual pleasures, soundscapes and theories of shock and modernity, the relation of voice and body to subject formation, sound in silent cinema, the aesthetics of analog and digital sound in cinema, sound technologies and imperialism, theories of non-cinematic audio technology such as radio and gramophone, debates over the ontological status of recorded sound, film sound and space, sound in documentary cinema, and culturally specific theories of sound.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FMST 2485 - FILM AND ETHNOGRAPHY

Minimum Credits: 3

Maximum Credits: 3

This course will engage the visual and narrative strategies of the "ethnographic imagination" addressing issues of cultural representation, truth, visibility, and epistemological implications of how anthropologists and documentary filmmakers construct other cultures. We will start with the history of ethnographic cinema so as to stage a broader inquiry into forms of popular and everyday ethnography that have accompanied anthropological practice since its inception. In addition to problematizing distinctions such as science and entertainment, authenticity and hybridity, non-fiction and fiction, and self and other.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FMST 2508 - TELEVISION STUDIES

Minimum Credits: 3

Maximum Credits: 3

This course will examine the emergence of television studies out of film studies during the 1980s and beyond. We will read key texts and examine approaches that have characterized this new orientation to the study of television: theories of television spectatorship, program and audience history, genre studies, and others. There will be screenings of key texts that have been considered crucial to the development of these ideas. The main emphasis will be to distinguish the televisual from the cinematic.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FMST 2510 - ANIMATION THEORY

Minimum Credits: 3

Maximum Credits: 3

This course will approach animation as a method, a way to rethink film theory beyond the assumption of an essentially photographic medium, and to unearth and explore the previously underdeveloped territories in theorizing and making sense of moving images.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FMST 2520 - FILM COMEDY

Minimum Credits: 3

Maximum Credits: 3

Since the earliest days of the cinema, film comedy has been one of the most profitable, prevalent and persistent genres-ranging from the primitive burlesques of Edison or Lumiere to the popular features of today. While comedy appeals to a viewer's sense of pleasure, it also addresses her intellect, for as Ousmane Sembene once said, comedy "makes people laugh but it also makes them think." That is precisely what we will do in this course: think through comedy. Here, it is interesting to note that, in 2010, the academic journal comic studies began publication.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FMST 2524 - GENRE AND FILM MELODRAMA

Minimum Credits: 3

Maximum Credits: 3

Course will interrogate the cultural impact of melodrama through the media. We will explore the various expressions of melodrama in gothic narratives, the "woman's film", historical films, "tragic" melodramas, family melodramas, and TV docudramas. Topics addressed include questions about common sense/folklore and the nature of mass and popular cultural representation, the problematic nature of genre, the relation between melodrama, history, and the construction of narratives of national identity in relation to race, gender and sexuality.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FMST 2525 - HORROR FILM

Minimum Credits: 3

Maximum Credits: 3

This seminar will investigate the key films and critical discussions surrounding the genre from its beginnings to the present, but not merely to perform a genre survey- instead we will use horror as a lens to ask wide-ranging questions about spectatorship, theory, history, aesthetics, and politics that have shaped and continue to transform film studies in profound ways.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FMST 2526 - WAR AND CINEMA

Minimum Credits: 3

Maximum Credits: 3

This course theorizes the convergence of military and cinematic technologies, focusing on the logistics of perception, bio-politics, and the relation of cinematic/military technologies to the body. Topics include the military, medical, and cinematic uses of the scope and the screen, theories of human vision and ocularcentrism, new conceptions of space and time, the temporal convergence of production and exhibition (speed and acceleration), new media technologies, and the blurred boundaries of war and entertainment.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FMST 2540 - ESSAY FILM/DOCUMENTARY FILM

Minimum Credits: 3

Maximum Credits: 3

This course will explore documentary from critical and creative vantage points. Key theoretical texts from the interdisciplinary field of documentary studies will address the pertinent ethical, formal and thematic concerns.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FMST 2542 - DOCUMENTARY THEORY & PRACTICE

Minimum Credits: 3

Maximum Credits: 3

This course will explore documentary film and video from critical and creative vantage points. Students will be introduced to key discussions from within the interdisciplinary field of documentary studies while also working on individual and collaborative short documentary projects and exercises. Hands-on training in audiovisual recording and editing techniques will be provided. No prior production experience is required.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FMST 2570 - KEY CONCEPTS IN NEW MEDIA

Minimum Credits: 3

Maximum Credits: 3

What exactly is "information"? What is an "interface"? What does it mean when we speak of a "media platform"? These terms and concepts form the backbone of the major theories and discourses in new media, which produce a rich vocabulary that has yet to be rigorously defined. This course aims to provide a theoretical map to navigate the rapidly expanding fields of media studies by critically interrogating a set of key concepts that have been extensively used to deal with the technologies, forms, materials and cultures of new media. We will discuss the meaning, usage, and genealogy of such concepts as "network," "cybernetics," "hardwire," "infrastructure," and "system," which have animated a wide range of researches and debates. By critically engaging with these key concepts, we hope to not only reconstitute a framework for theorizing contemporary media, but to explore the very notion of "media" as a discursive formation.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FMST 2760 - THEORY/TECHNOLOGY/MEDIA FROM PLATO TO VIDEO GAMES

Minimum Credits: 3

Maximum Credits: 3

This course will examine a number of key theoretical debates in the history of visual and verbal media, beginning with the technology of writing itself and moving into the invention of the codex, the printing press, and 19th and 20th century forms of imagistic production. Of particular concern will be modes of competition and symbiosis among various technologies of representation at particular historical moments, such as the relations between speech and print, poetry and theater, painting and photography, and cinema and digital media. Although case studies will be drawn from a number of historical periods, special attention will be paid to the Renaissance and to recent decades, when media of all kinds have come under increasing technological and theoretical pressure. Students will have the opportunity to extend the seminar's concerns to their own areas of research.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Film Studies - Graduate Program

FILMG 2451 - FILM HISTORY/THEORY 1

Minimum Credits: 3

Maximum Credits: 3

This seminar will focus on the history and theory of cinema up to 1960, taking up such topics as: the origins of cinema; the development of narrative; the rise of Hollywood and its global appeal; national and international cinemas; the relation between film and the other arts; the coming of sound; arguments between realist and modernist movements; the avant-garde; and the technological and social history of cinema. These topics will be addressed through consideration of major film movements and significant films. Students will also be introduced to key theorists from this time, including Kuleshov, Vertov, Eisenstein, Balzs, Mnsterberg, Lindsay, Epstein, Kracauer, Benjamin, Arnheim, Bazin, and others.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FILMG 2452 - FILM HISTORY/THEORY 2

Minimum Credits: 3

Maximum Credits: 3

This seminar will focus on the history and theory of cinema from 1960 to the present. While individual theorists and historians will be discussed (e.g., Cavell, Deleuze, Frampton, Kluge, Gunning, Mulvey), there will be special attention paid to historical and theoretical arguments within film studies, such as: psychoanalysis and theories of spectatorship; apparatus theory; historicism and archival research; film and philosophy; theories of genre, adaptation, and performance; neo-formalism and cognitive theory; and the rise of new media, from television to digital cinema and from Imax to video games. These arguments will be explored through major film movements and film-makers, taking up topics such as international art cinema, the changing Hollywood studio system, the role of political cinema, and the growing importance of documentaries.

Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad LG/SNC Basis

FILMG 2902 - DIRECTED STUDY FOR THE MA

Minimum Credits: 1
Maximum Credits: 6

In exceptional circumstances, a student who wishes to pursue a topic for which no course is available can arrange for directed study with a faculty member.

Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

FILMG 2905 - PROSEMINAR IN FILM AND MEDIA STUDIES

Minimum Credits: 1
Maximum Credits: 1

All students in the Ph.D. Film studies program are required to complete a one credit proseminar in film and media studies prior to taking their comprehensive examinations. Enrolled students attend a designated lecture by invited scholars, as well as an associated ninety-minute seminar conducted by a film studies faculty member concerning the work of the speaker or the topic addressed. The faculty member conducting the seminar will typically choose pertinent readings to be completed prior to the lecture and seminar. The proseminar is usually offered twice a year: once during the fall term and once during the spring, with a lecture and its associated seminar scheduled each term. Invited scholars may or may not participate in the seminar meetings. Dates and times of visiting speakers and the associated seminars will be announced well in advance so that students may plan their schedules accordingly. A student in the program may repeat the proseminar for up to three credits. The proseminar in film and media studies seeks to expand and enhance our graduate students' experience of the critical exchange of ideas, by involving them more fully in the contemporary research being conducted by film and media scholars from around the world.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

FILMG 3902 - DIRECTED STUDY FOR THE PHD

Minimum Credits: 1
Maximum Credits: 6

In exceptional circumstances, a student who wishes to pursue a topic for which no course is available can arrange for directed study with a faculty member.

Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

Finance and Economics

BFAE 2801 - ECONOMIC ANALYSIS FOR MANAGERIAL DECISIONS

Minimum Credits: 3
Maximum Credits: 3

This course develops an understanding of how a market-based economic system reconciles the separate needs of consumers and producers and provides an economic framework for managerial decisions. Additionally, the course provides tools of analysis and concepts which are used in the MBA program's functional fields.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BFAE 2850 - HEALTHCARE ECONOMICS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Business Administration (EMBA-MBA)

BFAE 3001 - MICROECONOMICS

Minimum Credits: 3
Maximum Credits: 3
This is a Ph.D. level course in microeconomics with special emphasis on business applications. We will use decision and game theoretic models to analyze the decision making process of business firms. Both the neoclassical and industrial organization theories of the firm will be analyzed. Special attention will be devoted to issues of incomplete information as they pertain to signaling in markets, to the internal organization of the firm and to models of regulation.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

French

FR 2000 - INTRODUCTION TO GRADUATE STUDIES IN MODERN LANGUAGES AND CULTURES

Minimum Credits: 1
Maximum Credits: 1
This one-credit course offers an introduction to graduate study in modern languages and cultures. It will help you adjust to your graduate program and will cover the nuts and bolts of how to take seminars, do readings, teach, balance your various obligations and meet the emotional and life challenges of graduate school. What matters most in teaching is not skills but a sense of personal identity and a strong relationship to the disciplinary knowledge. We will engage with the latest research in positive psychology, resilience, pedagogy, deep learning, creativity, sociology of work and executive coaching. The class will prepare you better to move among different kinds of professional situations within and outside academia.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

FR 2101 - MEDIEVAL FRENCH LITERATURE

Minimum Credits: 3
Maximum Credits: 3
In this course we shall examine some outstanding works representing a variety of genres: the saint's life, the chanson de geste, the Romance, the theater, lyric poetry, the fable, etc. A sense of the evolution of literature in France over the course of five centuries and the rich variety this first flourishing of vernacular writing has to offer will be developed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

FR 2102 - MEDIEVAL TOPICS

Minimum Credits: 3
Maximum Credits: 3
This course, limited in scope, will usually treat an author, but occasionally a movement or group of authors of the period will be treated.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

FR 2105 - SEMINAR: MEDIEVAL TOPIC

Minimum Credits: 3

Maximum Credits: 3

This course, limited in scope, will usually treat an author, but occasionally a movement or group of authors of the period will be treated.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FR 2106 - SEMINAR: CHRISTINE DE PIZAN

Minimum Credits: 3

Maximum Credits: 3

In this course, we read a wide range of the writings of Christine de Pizan (c. 1364-C. 1430), Europe's first professional woman writer. Christine wrote in many genres: from lyric poetry to allegories and political texts. We will focus especially on the creation of an authoritative female poetic voice; Christine's protofeminism; and her role in the politics of her time.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FR 2225 - SEMINAR: SIXTEENTH CENTURY TOPIC

Minimum Credits: 3

Maximum Credits: 3

This course, limited in scope, will usually treat an author, but occasionally a movement or group of authors of the period will be treated.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Gender, Sexuality & Women's Studies

FR 2305 - SEMINAR: 17TH CENTURY TOPIC

Minimum Credits: 3

Maximum Credits: 3

This course, limited in scope, will usually treat an author, but occasionally a movement or group of authors of the period will be treated.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FR 2402 - TOPICS 17TH AND 18TH CENTURY FRENCH CULTURE

Minimum Credits: 3

Maximum Credits: 3

This course, broad in scope, will treat some aspect of 17th and 18th century French culture.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

FR 2409 - 18TH CENTURY THEATRE

Minimum Credits: 3

Maximum Credits: 3

A seminar in the theatre of England, France, Germany, and Italy during the rise of the middle class to economic, political, and cultural power. The course will explore such topics as bourgeois drama, sentimentality, the baroque, and the enlightenment as related to the dramatic theories and

literature, as well as theatre history and practices of the period.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FR 2505 - SEMINAR: 19TH CENTURY TOPIC

Minimum Credits: 3

Maximum Credits: 3

This course, limited in scope, will usually treat an author, but occasionally a movement or group of authors of the period will be treated.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

FR 2510 - FRENCH ROMANTICISM

Minimum Credits: 3

Maximum Credits: 3

This course focuses on some of the most important features of Romantic prose from Rousseau to Flaubert: the relationship between the individual and society, the concern with politics and major historical events, the growing of the literary form of the novel.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

FR 2601 - DISSERTATION WORKSHOP

Minimum Credits: 1

Maximum Credits: 1

This seminar will allow the students to work on their dissertation while receiving continuous feedback from a faculty and their peers. They will share writing strategies, research accomplishments and professional tips.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FR 2605 - SEMINAR: 20TH CENTURY TOPIC

Minimum Credits: 3

Maximum Credits: 3

This course, limited in scope, will usually treat an author, but occasionally a movement or group of authors of the period will be treated.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

FR 2648 - CONTEMPORARY FRENCH CINEMA

Minimum Credits: 3

Maximum Credits: 3

This seminar examines the history of recent French cinema and/or emerging trends in contemporary French film production. Topics covered vary greatly with instructor and term.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FR 2703 - SEMINARS: TOPICS, GENRES, THEMES

Minimum Credits: 3

Maximum Credits: 3

These seminars are subject - rather than author - or century - specific. Examples might be Vichy France, Baroque religious poetry, or Don Juan in French literature.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FR 2710 - INTRODUCTION TO LITERARY AND CULTURAL THEORY

Minimum Credits: 3

Maximum Credits: 3

In this course intended for beginning graduate students in the modern languages, students will survey major movements and concepts in literary and cultural theory of the 20th/21st centuries. These theories have provided us important ways to think about how to read and interpret literature, film, and other cultural artifacts, and, as such, are an important aspect of graduate studies in the humanities. This course is meant to provide students a general background in theory that they can further develop in certain areas as they continue their studies. The course will be taught in English, and all readings will be available in English.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Russian & East European Studies, West European Studies

FR 2715 - TOPICS IN LITERARY AND CULTURAL THEORY

Minimum Credits: 3

Maximum Credits: 3

In this course, students will examine a special topic in literary and cultural theory. The course may be organized around a given theoretician, a theoretical movement, or a problematic. Students are expected to have some background in literary and cultural theory.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FR 2761 - FRENCH STUDIES GENDER STUDIES

Minimum Credits: 3

Maximum Credits: 3

What does it mean to put gender/sexuality studies and French studies into productive dialogue? This course treats selected topics related to gender and sexuality in French/Francophone studies. Texts studied might include film, theater, news media, literature, autobiography, and others. Texts may come from a variety of time periods from the middle ages to the twenty-first century. Gender/sexuality will be understood in a broad sense, including women/feminism, masculinity, queer and trans*.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Gender, Sexuality & Women's Studies

FR 2765 - COMPARATIVE FRANCOPHONE CULTURE

Minimum Credits: 3

Maximum Credits: 3

This seminar examines 'Francophonie' through the juxtaposition of francophone cultural production and theory from different areas of the world

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FR 2766 - TOPICS-MEDITERRANEAN STUDIES

Minimum Credits: 3

Maximum Credits: 3

This seminar focuses on francophone Mediterranean culture and transitional studies

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

FR 2902 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 12

This course enables M.A. Candidates to do research under the direction of a faculty member, on a topic of mutual interest.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

FR 2903 - MA RESEARCH PAPER DIRECTED STUDY

Minimum Credits: 3

Maximum Credits: 3

MA students write a research paper (6000-8000 words), typically during their final semester in the program.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

FR 2910 - COMPREHENSIVE EXAMINATION MA

Minimum Credits: 1

Maximum Credits: 3

This course is intended for ma candidates in their last term of study when they present themselves for the ma comprehensive examination.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

Course Attributes: West European Studies

FR 2970 - TEACHING OF FRENCH

Minimum Credits: 3

Maximum Credits: 3

This course will review the theory and practice of French language teaching. This will include all aspects of language teaching and testing, cultural understanding, bilingual education, and the teaching of reading.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

FR 2973 - ISSUES IN FOREIGN LANGUAGE ED

Minimum Credits: 3

Maximum Credits: 3

The course deals with current issues in foreign language teaching in terms of procedures and techniques. This course is a more practical approach to the theories of foreign language methodology.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Global Studies

FR 2975 - ADVANCED TOPICS IN FOREIGN LANGUAGE LEARNING AND TEACHING

Minimum Credits: 3

Maximum Credits: 3

In this course intended for experienced foreign language teachers, students will focus on pedagogical issues encountered in advanced-level teaching in the areas of language, literature, and culture.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

FR 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 12

This independent course is for ma students who have completed, or are completing in their last term of study, all course requirements for the ma degree.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

Course Attributes: West European Studies

FR 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1

Maximum Credits: 15

Students register for this course while doing research for their Ph.D. Dissertations.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Attributes: West European Studies

FR 3902 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 12

This course enables Ph.D. Students to do research under the direction of a faculty member, on a topic of mutual interest.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

FR 3905 - TEACHING APPRENTICESHIP

Minimum Credits: 1

Maximum Credits: 12

Available to Ph.D. students who will work with a faculty member in teaching an upper level literature, language or civilization course.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

FR 3910 - COMPREHENSIVE EXAMINATION

Minimum Credits: 1

Maximum Credits: 12

This course is intended for Ph.D. Candidates the term they present themselves for their Ph.D. Comprehensive examination.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

Course Attributes: West European Studies

Full-Time Administrative Study

FTADMA 0000 - FULL-TIME ADMINISTRATIVE STUDY

Minimum Credits: 0

Maximum Credits: 0

While this course carries no credits and no grade, students who enroll in "Full-time Administrative Study" are considered by the university to have full-time registration status.

Academic Career: Graduate

Course Component: Full Time Dissertation

Grade Component: Print No Grade

Full-Time Dissertation Study

FTDA 3999 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0

Maximum Credits: 0

Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full-time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.

Academic Career: Graduate

Course Component: Full Time Dissertation

Grade Component: Print No Grade

FTDB 3999 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0

Maximum Credits: 0

Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full-time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.

Academic Career: Graduate

Course Component: Full Time Dissertation

Grade Component: Print No Grade

FTDC 3999 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0

Maximum Credits: 0

Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full-time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.

Academic Career: Graduate

Course Component: Full Time Dissertation
Grade Component: Print No Grade

FTDF 0000 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0

Maximum Credits: 0

Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.

Academic Career: Graduate

Course Component: Full Time Dissertation

Grade Component: Print No Grade

FTDG 0000 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0

Maximum Credits: 0

Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.

Academic Career: Graduate

Course Component: Full Time Dissertation

Grade Component: Print No Grade

FTDH 0000 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0

Maximum Credits: 0

Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.

Academic Career: Graduate

Course Component: Full Time Dissertation

Grade Component: Print No Grade

FTDI 0000 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0

Maximum Credits: 0

Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full-time on their dissertation may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.

Academic Career: Graduate

Course Component: Full Time Dissertation

Grade Component: Print No Grade

FTDJ 0000 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0

Maximum Credits: 0

Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full-time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.

Academic Career: Graduate

Course Component: Full Time Dissertation
Grade Component: Print No Grade

FTDK 0000 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0

Maximum Credits: 0

Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.

Academic Career: Graduate

Course Component: Full Time Dissertation

Grade Component: Print No Grade

FTDL 0000 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0

Maximum Credits: 0

"Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status."

Academic Career: Graduate

Course Component: Full Time Dissertation

Grade Component: Print No Grade

FTDN 0000 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0

Maximum Credits: 0

Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.

Academic Career: Graduate

Course Component: Full Time Dissertation

Grade Component: Print No Grade

FTDO 0000 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0

Maximum Credits: 0

Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Print No Grade

Course Requirements: School of Law (PLAW)

FTDP 0000 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0

Maximum Credits: 0

Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.

Academic Career: Graduate

Course Component: Full Time Dissertation

Grade Component: Print No Grade

FTDQ 0000 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0

Maximum Credits: 0

Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.

Academic Career: Graduate

Course Component: Full Time Dissertation

Grade Component: Print No Grade

Course Requirements: School of Pharmacy students only.

FTDR 3999 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0

Maximum Credits: 0

Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.

Academic Career: Graduate

Course Component: Full Time Dissertation

Grade Component: Print No Grade

FTDS 0000 - FULL-TIME DISSERTATION STUDY

Minimum Credits: 0

Maximum Credits: 0

Doctoral candidates who have completed all credit requirements for the degree, including any minimum dissertation credit requirements, and are working full time on their dissertations may register for this course. While the course carries no credits and no grade, students who enroll in "full-time dissertation study" are considered by the university to have full-time registration status.

Academic Career: Graduate

Course Component: Full Time Dissertation

Grade Component: Print No Grade

Course Requirements: School of Medicine students only.

FTIK 0000 - FULL-TIME INTERNSHIP STUDY

Minimum Credits: 0

Maximum Credits: 0

While this course carries no credits and no grade, students who enroll in "full-time internship study" are considered by the university to have full-time registration status.

Academic Career: Graduate

Course Component: Internship

Grade Component: Print No Grade

LAW 2919 - SJD DISSERTATION RESEARCH

Minimum Credits: 9

Maximum Credits: 9

The JSD candidate will work closely with his/her faculty adviser to produce a dissertation overview, which will provide a complete projection of the body of the dissertation. The jst candidate will work with his/her faculty adviser to select a dissertation committee and must publicly defend the dissertation overview before the entire dissertationcommittee.

Academic Career: Graduate

Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

Full-Time Study

FTA 0000 - FULL TIME STUDY

Minimum Credits: 0

Maximum Credits: 0

While this course carries no credits and no grade, students who enroll in "full-time study" are considered by the university to have full-time registration status.

Academic Career: Graduate

Course Component: Internship

Grade Component: Print No Grade

Gender, Sexuality, and Women's Studies

GSWS 2058 - FEMINIST SOCIAL WORK

Minimum Credits: 3

Maximum Credits: 3

This course focuses on gender and social work, beginning with a critical examination of the concept of feminist practice, with attention to oppression, power, and privilege in helping relationships and in women's lives more broadly. It explores meanings of gender as it intersects with race/ethnicity, class, sexuality, age, and ability in the lives of women in general and specifically as social workers and clients. Taught in a seminar format, this course examines topics such as work, welfare, family, violence, justice system involvement, health, mental health, and women as agents of change and is appropriate for students concentrating in micro or macro levels of practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Attributes: Gender, Sexuality & Women's Studies

GSWS 2150 - TRANSNATIONAL FEMINISMS

Minimum Credits: 3

Maximum Credits: 3

This class will look at the situation of women in international perspective. We will examine how feminist organizations operate in difficult national and local contexts and how women's rights have been addressed through international organizations such as the United Nations and the World Court. Through case studies, we will consider a number of contentious issues in global feminism, including sexual assault, sex tourism, and the global assembly line, and the role of feminism in national liberation movements.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

GSWS 2240 - SPECIAL TOPICS

Minimum Credits: 3

Maximum Credits: 3

This graduate course addresses a current topic in gender, sexuality, or women's studies. Topic varies by instructor.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: Gender, Sexuality & Women's Studies

GSWS 2242 - FEMINIST THEORY

Minimum Credits: 3

Maximum Credits: 3

This course is an interdisciplinary introduction to feminist theory. It will examine a wide range of feminist theories and theories of gender, drawing from works in history, social sciences, philosophy, legal studies, and literary theory.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Attributes: Gender, Sexuality & Women's Studies, Global Studies

GSWS 2252 - THEORIES OF GENDER AND SEXUALITY

Minimum Credits: 3

Maximum Credits: 3

This course provides an overview of important tendencies and controversies in gender and sexuality studies, emphasizing emerging directions in scholarship as well as foundational readings. Gender and sexuality studies are interdisciplinary fields in conversation with feminist theory and queer theory as well as a host of academic disciplines. Drawing on readings from a variety of disciplines (including sociology, anthropology, history, law, political science, philosophy, and literary studies) and sampling a range of methodologies, this course works through some of the key moments, movements, and problems that have shaped and continue to shape contemporary thinking about gender and sexuality. The course also serves as a graduate-level introduction to the skills and practices of reading, discussing, and writing in a variety of theoretical idioms.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Attributes: Gender, Sexuality & Women's Studies

GSWS 2262 - GENDER, ETHICS, AND THE BODY

Minimum Credits: 3

Maximum Credits: 3

This seminar explores what it means to take a feminist approach to something, particularly ethics, and what it means to examine the gendered nature of something, particularly bodies, ethics, and even feminist approaches themselves.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Gender, Sexuality & Women's Studies

GSWS 2270 - QUEER THEORIES

Minimum Credits: 3

Maximum Credits: 3

Study of recent theories of sexuality, emphasizing work in lesbian, gay, transgender, and queer studies. Consideration of the development of 'queer' as critical category (including its limitations), and of the history of queer theory and LGBT studies.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Gender, Sexuality & Women's Studies

GSWS 2902 - DIRECTED STUDY

Minimum Credits: 3

Maximum Credits: 3

Individual study on a topic related to gender, sexuality, or women's studies under supervision of a faculty member from the program. A variety of individual research and reading projects not covered in other courses may be undertaken.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

Course Attributes: Gender, Sexuality & Women's Studies

Geology

GEOL 2000 - RESEARCH AND THESIS MS DEGREE

Minimum Credits: 1

Maximum Credits: 12

This course is designed to permit graduate students the opportunity to accomplish research necessary for the completion of a master's degree in geology.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: Geology and Planetary Science (MS) or Geology and Environmental Sci (MS)

GEOL 2001 - SCIENTIFIC COMMUNICATION

Minimum Credits: 3

Maximum Credits: 3

The Scientific Communication course is required for all new MS and PHD students in Geology and Environmental Science. It is designed to introduce students to the department and develop communication skills. The goal of the class is to provide a foundation for students to develop a proposal and research strategy for their thesis project.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Geology and Planetary Science(PHD or MS) or Geographical Information Sys (MS) or Geology and Environmental Sci (PHD or MS)

GEOL 2002 - MINEROLOGY/METROLOGY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: GEOL 0800 or 0820 or 0860

GEOL 2006 - ENVIRONMENTAL MODELING

Minimum Credits: 3

Maximum Credits: 3

Models allow scientists and others to represent features and behaviors of environmental systems in order to promote inquiry, develop insight, test hypotheses, and consider solutions to problems. The class will use primary literature and hands on experiences with computer models to introduce environmentally relevant modeling tools. Topics covered will include process-based models of disease, climate, ice, ecosystems, ecosystem services, hydrology, predator-prey systems, and competition among species for resources. Students will have the opportunity to conduct original research projects either by developing their own environmental model or by using existing models. No programming experience is required. Students should have some upper level undergraduate coursework in environmental studies.science, biology, geology, physics or chemistry and be comfortable thinking quantitatively.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

GEOL 2015 - GEOLOGY COLLOQUIUM

Minimum Credits: 1

Maximum Credits: 1

Geology colloquium is a required course for MS and PhD students in geology and planetary science each term. It is a formalization of the seminar series with weekly guest speakers from industry, academia, and government. Each seminar will focus on a different research topic in the earth sciences and describe active and on-going projects of immediate interest to students.

Academic Career: Graduate

Course Component: Colloquium

Grade Component: Grad SN Basis

GEOL 2020 - ANSWERING REGIONAL CHALLENGES IN WATER SUSTAINABILITY

Minimum Credits: 3

Maximum Credits: 3

A graduate-level seminar class devoted to examining local/regional challenges in water sustainability. Course components will include guest presentations by water practitioners, hands on data synthesis and analysis, group/class projects, and development of infographics and briefing sheets for key water challenges.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

GEOL 2021 - ADVANCED PETROLOGY

Minimum Credits: 3

Maximum Credits: 3

The origin and characteristics of the common igneous rocks and minerals are studied in light of natural and synthetic rock systems. Main topics covered are equilibrium relations of the main silicate systems, petrogenesis of the principal igneous rock types and their relation to plate tectonic regimes, and generation and source of magma.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

GEOL 2045 - STATISTICS FOR EARTH SCIENCE

Minimum Credits: 3

Maximum Credits: 3

A statistics course geared toward environmental science and geology majors with an emphasis on applying data analysis and statistical techniques to environmental data. Topics will include: visualizing data, summary statistics, correlation, selected parametric statistics (t-tests, general linear models), selected non-parametric methods, statistical inference, and experimental design.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

GEOL 2049 - PALEOCLIMATOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course presents the different types of data used to study the earth's climatic history and long-term climatic variability. Particular emphasis is given to the climatic changes during the last Cenozoic -- the so called glacial ages. Topics of discussion include time scales of climatic change, types of paleoclimatic records and their limitations, numerical climate models, the causes of climatic change, and the importance of paleoclimatic research in forecasting the future.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

GEOL 2054 - SOILS: GEOBIOCHEMICAL LANDSCAPES

Minimum Credits: 4

Maximum Credits: 4

An overview of soils with a strong emphasis on landscape scale process. The course consists of lecture and laboratory/field work. The lecture will include description of physical and chemical soil properties and processes, discussion of major soil classifications and description of ramifications at the landscape scale.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

GEOL 2060 - GEOMORPHOLOGY

Minimum Credits: 4

Maximum Credits: 4

This course is a survey of the major landform features found on the earth's surface. Each landform type is first described qualitatively and then examined in terms of the processes, such as stream flow or glacial activity, which cause its development. The purpose of the course is to familiarize students with geomorphic principles.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

GEOL 2110 - PLATE TECTONICS

Minimum Credits: 3

Maximum Credits: 3

The geometry and kinematics of plate tectonics are developed together with the geophysical evidence for plate motions in the first half of the course. The second half involves a geological examination of convergent, divergent, and transform-dominated terranes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

GEOL 2120 - BASIN ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

The integrated study of sedimentary basins as geodynamic entities, including tectonic environment, geologic history and associated strength of the lithosphere, rock weathering and erosion, and sediment transport. The class will give students a background in driving mechanisms for basin formation and subsidence, sedimentary record preservation and alteration, sedimentary geometry, facies and petrology and provide a basic understanding of the continuum mechanics equations that approximate basin formation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: GEOL 1100 and GEOL 1020; LVL: Graduate or PhD

GEOL 2150 - SURFACE WATER HYDROLOGY

Minimum Credits: 4

Maximum Credits: 4

This course shall provide an Earth systems science overview of the processes that govern the hydrologic cycle including precipitation, evapotranspiration, runoff and discharge, infiltration, and groundwater. The course shall emphasize the movement of water through the atmosphere, over the land surface, and within the unsaturated and saturated zones.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

GEOL 2151 - GROUNDWATER GEOLOGY

Minimum Credits: 4

Maximum Credits: 4

This course focuses on physical and chemical processes controlling water movement and composition in sub-surface environments. The lab focuses on practical field methods for the characterization of groundwater.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

GEOL 2446 - ADVANCED GEOGRAPHICAL INFORMATION SYSTEM

Minimum Credits: 3

Maximum Credits: 3

Using advanced geographical information systems technologies and geospatial analysis techniques students will extend their knowledge of geographical information systems to include raster, geostatistical, network, model, and 3d/4d based analysis completing complex analysis of real world data sets.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: GEOL 2449

GEOL 2447 - GEOPHYSICAL WELL LOGGIN'

Minimum Credits: 3

Maximum Credits: 3

This course introduces the ersiarcview tool. Numerous computer workstation based assignments introduce the student to gis landbases and gis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

GEOL 2449 - GIS, GPS, AND COMPUTER METHODS

Minimum Credits: 3

Maximum Credits: 3

The goals of this course are to gain expertise in spatial analysis and geographical information systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Global Studies

GEOL 2460 - APPLIED REMOTE SENSNG AND GPS TECHNIQUES

Minimum Credits: 3

Maximum Credits: 3

Designed as a follow on to the introduction to remote sensing course this advanced class emphasizes field-oriented problems, data collection, and validation. The ultimate goal is to explore the connection between remotely-gathered imagery and the real-world factors which influence those data. Students taking the course should have had at least 1 semester of high school or college physics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

GEOL 2461 - ADVANCE REMOTE SENSING

Minimum Credits: 3

Maximum Credits: 3

This course is offered in conjunction with the introduction to remote sensing (geol-1460) - this course provides a foundation in the theory and techniques of remote sensing and geospatial data visualization spanning the electromagnetic spectrum from the ultraviolet to microwave wavelength

region. Topics will include light/matter interaction, optics and sensor design, image analysis using commercial software, as well as current applications of remote sensing to science and engineering problems. The course and integrated image-processing laboratory are designed to provide you with an appreciation of current remote sensing issues, the geologic and human processes that impact remotely-gathered data, and how those processes can be measured using remote sensing. Students taking this course will participate in an independent research project involving remote sensing theory/data analysis. Students with no prior remote sensing background will also be required to participate in the geol-1460 lecture and computer labs.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Geology and Planetary Science(PHD or MS) or Geographical Information Sys (MS) or Geology and Environmental Sci (PHD or MS)

GEOL 2468 - QUANTITATIVE RESEARCH METHODS IN EARTH SCIENCE IN MATLAB

Minimum Credits: 4

Maximum Credits: 4

Quantitative methods are essential for solving problems in Geologic and Environmental Sciences and are often implemented by programming in specialized software. This course focuses on methods for quantitative data exploration and hypothesis testing with Mat lab. The course will introduce students to programming with Mat lab, and use Mat lab to implement and explore a variety of quantitative methods, including: uni- and multi- variate statistics, dimensional analysis, signal processing, spatial extrapolation, and numerical modeling. Classes will include lectures and group assignments that will use various methods to detect patterns in data, pose hypotheses regarding these patterns, and test them.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

GEOL 2469 - TOPOGRAPHIC ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

Topographic analysis: Landscape topography can reveal valuable information about the processes, evolution, and external conditions that formed a landscape. This class will introduce students to different methods of topographic analysis and the information they can provide. It will include examination of algorithms for analysis of digital elevation models (DEMs), ways for filtering DEMs for features of interest, and analysis of different topographic attributes and how they relate to factors such as climate, tectonics, and anthropogenic modifications. Methods will be executed and developed using Matlab and ArcGis. The class will focus on the analysis of a specific environment (the specific environment/s will vary from year to year and may include: urban areas, mountain-ranges, Arctic vs Tropical topography etc.). It will use the analyses methods we will learn, together with literature on this specific environment to explore questions regarding the topographic characteristics and environmental conditions that prevail in this environment. Knowledge of Arc GIS and Matlab required.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

GEOL 2470 - DYNAMIC EVOLUTION OF EARTH'S SURFACE

Minimum Credits: 4

Maximum Credits: 4

Earth's topography is shaped by interactions between surface, tectonics and climatic processes. This course combines literature reviews with analytical and numerical models to examine how these processes act to modify Earth's surface over long time periods.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

GEOL 2501 - ORGANIC GEOCHEMISTRY

Minimum Credits: 3

Maximum Credits: 3

This is mainly a lecture course that will examine the carbon cycle and the life cycle of the organisms that are responsible for the eventual

accumulation of organic materials in sediments. The processes involved in the simultaneous preservation and transformation of organic materials into coal, petroleum, natural gas, kerogen and other dispersed organics will be reviewed in light of modern concepts of thermal maturation processes. The structures of naturally-occurring organic materials in sediments will be discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

GEOL 2510 - AQUATIC AND SEDIMENTARY GEOCHEMISTRY

Minimum Credits: 3

Maximum Credits: 3

THIS COURSE WILL EXAMINE THE CHEMISTRY AND GEOCHEMISTRY OF MODERN AND ANCIENT AQUATIC AND SEDIMENTARY SYSTEMS, INCLUDING OCEANS AND FRESH WATERS. STUDENTS WILL GAIN AN UNDERSTANDING OF THE BIOGEOCHEMICAL PROCESSES OCCURRING IN AQUATIC SYSTEMS, AND THE GEOCHEMICAL SIGNATURES THEY LEAVE IN THE SEDIMENTARY RECORD.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: (CHEM 0110 and GEOL 0055) or GEOL 0800 or 0860

GEOL 2515 - ENVIRONMENTAL GEOCHEMISTRY

Minimum Credits: 3

Maximum Credits: 3

This course explores the complex interactions of earth's rock, water, air, and life systems that determine the chemical characteristics of our environment. We will examine the distribution, cycling, and transport of chemical compounds in the atmosphere, hydrosphere, and terrestrial environment on local and global scales. Topics will include water chemistry, organic and inorganic pollution and related toxicology, hazardous wastes, acid rain, acid mine drainage, photochemical smog, ozone depletion, and global climate change. A class project involves chemical analysis of student-provided water samples.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

GEOL 2520 - RADIOGENIC ISOTOPE GEOLOGY AND GEOCHRONOLOGY

Minimum Credits: 3

Maximum Credits: 3

Introduction to isotope systematics (including mass dependent fractionation, radioactive decay, generation of cosmogenic nuclides, and nucleosynthesis), and application of isotope systems to problems in geochronology, geology, hydrology, oceanography, biology, and Cosmo chemistry.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

GEOL 2525 - STABLE ISOTOPES

Minimum Credits: 3

Maximum Credits: 3

This course will provide students with a thorough introduction to the stable isotope systematics of light elements (hydrogen, carbon, nitrogen, oxygen, and sulfur). The course examines the fundamental concepts of isotope equilibrium and kinetics, physiochemical and biogenic mechanisms of isotope exchange, and the principles of mass spectrometry and stable isotope extraction techniques.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: CHEM 0110 and GEOL 2520

GEOL 2640 - ADV GEOHAZARDS & RISK MGMNT

Minimum Credits: 3

Maximum Credits: 3

The geological and natural processes that affect the human environment in catastrophic ways are examined in this class in terms of science, prediction, mitigation, avoidance and the policy/safety issues involved. These problems commonly result from human activity modifying and impinging the natural geologic processes. Detailed topics covered include the four primary hazards that are common in the united states: earthquakes, hurricanes, wildfires, and flooding.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

GEOL 2750 - VOLCANOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course focuses on a specific but different topic of volcanology each time it is offered. The course is offered dependent on student demand. Courses that have been offered in the past include: describing and interpreting pyroclastic rocks, exploring explosions and glaciovulkanism. All the courses include discussion in the classroom, especially of recent volcanological literature, study of hand samples and microscope study of thin-sections.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

GEOL 2853 - WATERSHED HYDROLOGY AND BIOGEOCHEMISTRY

Minimum Credits: 3

Maximum Credits: 3

Understanding the science of watersheds is critical to improving water quality. This course will examine surface water hydrology, biogeochemistry, and management of watersheds. In addition, we will focus on how varying land uses influence the dynamics of hydrology and biogeochemistry across these systems. Student will develop an understanding of the biogeochemistry of various major elements in watersheds, including nitrogen, carbon, sulfur, and mercury, and how these elemental fluxes are exchanged through atmospheric-terrestrial-aquatic interactions. Students will be expected to demonstrate critical thinking, communication, and analytical skills through student-led lectures, journal discussions, and projects.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

GEOL 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 12

This course permits graduate students to explore specific topics in the geological sciences. The course is designed in a more flexible format than a directed study, stressing a higher degree of independent library research.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

GEOL 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1

Maximum Credits: 12

This course is designed to permit graduate students the opportunity to accomplish research necessary for the completion of a PhD degree in geology.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: Geology and Planetary Science (PHD) or Geology and Environmental Sci (PHD)

GEOL 3010 - PLANETARY PETROLOGY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

GEOL 3410 - EXPLORATION GEOPHYSICS

Minimum Credits: 3

Maximum Credits: 3

This course focuses on exploration geophysics including reflection seismic, well log, gravity, electromagnetic, magnetic, electrical, and other methods.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

GEOL 3853 - ECOSYSTEMS: LAND-WATER-ATMOSPHERE INTERACTIONS

Minimum Credits: 3

Maximum Credits: 3

Understanding the science of watersheds is critical to improving water quality. This course will examine surface water hydrology, biogeochemistry, and management of watersheds. In addition, we will focus on how varying land uses influence the dynamics of hydrology and biogeochemistry across these systems. Student will develop an understanding of the biogeochemistry of various major elements in watersheds, including nitrogen, carbon, sulfur, and mercury, and how these elemental fluxes are exchanged through atmospheric-terrestrial-aquatic interactions. Students will be expected to demonstrate critical thinking, communication, and analytical skills through student-led lectures, journal discussions, and projects.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

GEOL 3901 - TOPICS IN SEDIMENTOLOGY

Minimum Credits: 3

Maximum Credits: 3

This is a course designed to permit the teaching of new and significant developments in the field of sedimentology. It permits maximum flexibility enabling presentation of subject matter not normally treated in formal geology courses.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

GEOL 3902 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 12

This is a course designed to permit graduate students an opportunity to explore facets of research possibly leading to project/thesis/dissertation topic.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

GEOL 3904 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 12

This is a course designed to permit graduate students an opportunity to explore facets of research possibly in the area of information science systems

related to their project/thesis/dissertation topic.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

GEOL 3906 - TOPICS IN GEOLOGY

Minimum Credits: 2

Maximum Credits: 2

This is a course designed to permit the teaching of new and significant developments in the field of geology. It permits maximum flexibility enabling presentation of subject matter not normally treated in formal geology courses.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

GEOL 3908 - TOPICS GEOLOGY

Minimum Credits: 3

Maximum Credits: 3

This is a course designed to permit the teaching of new and significant developments in the field of geology. It permits maximum flexibility enabling presentation of subject matter not normally treated in formal geology courses.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

GEOL 3924 - TOPICS IN GEOMORPHOLOGY

Minimum Credits: 2

Maximum Credits: 2

This is a course designed to permit the teaching of new and significant developments in the integrated fields of geomorphology, tectonics, and climate. The theory, techniques and applications are emphasized as is the use of current data sets through a combination of readings, lectures and analyses. Field trip is associated with this course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

GEOL 3925 - TOPICS IN PALEOLIMNOLOGY

Minimum Credits: 3

Maximum Credits: 3

This graduate class will focus on the study lake sediments as archives of climatic change. Lake deposits form a significant part of the geologic record and contain high resolution records of past climatic and environmental changes in continental environments. Because lake deposits are the product of diverse geochemical experiments they provide a framework to discuss numerous problems which are of general interest in both chemical sedimentology and general sedimentology. Readings assigned from current journal articles.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

GEOL 3931 - TOPICS IN PALEOENVIRONMENTAL

Minimum Credits: 1

Maximum Credits: 1

This is a course designed to permit the teaching of new and significant developments in the field of paleo environmental analysis. It permits maximum flexibility enabling presentation of subject matter not normally treated in formal geology courses.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

GEOL 3946 - PYTHON SCRIPTING

Minimum Credits: 3

Maximum Credits: 3

The goal of this course is to gain expertise in programming methods using environmental systems research incorporated arcobjects and the visual studio .net programming environment of microsoft. Arcobjects is a software technology based on the com protocol and can be used within any compliant programming language. Our goal in this class is to gain fundamental skills in visual basic programming using the microsoft developers studio visual basic environment through applied examples and homeworks. After students have gained some programming expertise they will immediately begin programming the arcgis desktop using arcobjects technology.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: GEOL 2449

GEOL 3948 - TOPICS IN GIS 2

Minimum Credits: 1

Maximum Credits: 3

This is a course designed to permit the teaching of new and significant development in the field of GIS. It permits maximum flexibility enabling presentation of subject matter not normally treated in formal geology courses.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: GEOL 2449

GEOL 3949 - ANALYTICAL APPLICATIONS IN THE GEOSCIENCES

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad SN Basis

Course Requirements: LVL: GRAD

GEOL 3951 - TOPICS IN GEOCHEMISTRY 2

Minimum Credits: 1

Maximum Credits: 1

This is a course designed to permit the teaching of new and significant developments in the field of geochemistry. It permits maximum flexibility enabling presentation of subject matter not normally treated in formal geology courses.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

GEOL 3952 - TOPICS IN BIOGEOCHEMISTRY & GEOBIOLOGY

Minimum Credits: 1

Maximum Credits: 1

This is a course designed to permit the teaching of new and significant developments in the field of geochemistry. It permits maximum flexibility enabling presentation of subject matter not normally treated in formal geology courses.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

GEOL 3953 - TOPICS IN GEOCHEMISTRY: GEOCHEMISTRY

Minimum Credits: 3

Maximum Credits: 3

This course will focus on modeling fluid-rock interaction under low (Earth surface) to moderate (hydrothermal) temperature conditions. We will cover basic equilibrium and kinetic reactions, sorption and ion exchange, dissolution and precipitation, and reactive transport modeling. Students will use The Geochemist's Workbench® software as a tool to generate stability diagrams, to understand and manipulate equilibrium systems, and to produce more complex reactive transport models on systems of interest to their research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

GEOL 3954 - TOPICS IN HYDROLOGY

Minimum Credits: 2

Maximum Credits: 3

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

GEOL 3956 - TOPICS IN NITROGEN BIOGEOCHEMISTRY

Minimum Credits: 1

Maximum Credits: 1

This is a course designed to permit the teaching of new and significant developments in the field of nitrogen biogeochemistry. It permits maximum flexibility enabling presentation of subject matter not normally treated in formal geology courses.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

GEOL 3957 - EXPLORING NITROGEN IN THE EARTH'S PAST

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

GEOL 3970 - REMOTE EXPLORATION OF THE MOON AND MARS

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the theory, technology and science of the recent remote sensing data sets from the moon and mars. Numerous missions from rovers to orbiters have produced datasets that span the electromagnetic spectrum, and these will be the focus of this graduate-level, seminar-style class. Students should have had a remote sensing course and will also complete an independent study utilizing either lunar or mars remote sensing data.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

GEOL 3971 - TOPICS IN REMOTE SENSING: ORBITAL IMAGING OF THE EARTH

Minimum Credits: 3

Maximum Credits: 3

Orbital remote sensing of the earth has been a reality since the first imaging satellites were launched in the early 1960's. Hundreds of satellites and

thousands of sensors are now currently in orbit measuring diverse data sets important for geological, weather, environmental, and climate processes. This graduate-level, seminar style course will explore many of these missions and sensors by the way of directed journal articles and in-depth discussions. Students will also complete an independent project using one or more of these datasets and present the results at the end of the semester.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

GEOL 3974 - TOPICS: IGNEOUS PROCESSES IN VOLCANOLOGY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

GEOL 3980 - TOPICS IN IGNEOUS PETROLOGY

Minimum Credits: 2

Maximum Credits: 2

This course is designed to permit the teaching of new and significant developments in the field of geophysics. It permits maximum flexibility enabling presentation of subject matter not normally treated in formal geology courses.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

German

GER 2000 - MA THESIS RESEARCH

Minimum Credits: 1

Maximum Credits: 15

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Attributes: West European Studies

GER 2110 - INTRODUCTION TO LITERARY AND CULTURAL THEORY

Minimum Credits: 3

Maximum Credits: 3

This course offers selected readings in 20th century literary theory, with emphasis on the German tradition. We examine such "schools" of literary theory as psychoanalytic (Freud), Marxist (Lukacs, Benjamin, Brecht), and reception theory (Jauss, Iser). Each is discussed within its historical context; moreover, the implications of each is tested in relation to a selected work of literature. In addition, we study the critical reception of these schools of thought, as well as their relevance to contemporary debates.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Russian & East European Studies, West European Studies

GER 2112 - THEORY IN CULTURAL STUDIES

Minimum Credits: 3

Maximum Credits: 3

From its inception, cultural studies has examined culture as practice and artifacts through the categories of social class, gender, race/ethnicity, collective and individual identity, ideology and power by utilizing theoretical models from across the disciplines. This seminar allows students to

familiarize themselves with key theoretical moments that shaped cultural studies and explore critically the significance of theory in cultural studies.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

GER 2612 - GOETHE'S FAUST

Minimum Credits: 3

Maximum Credits: 3

This course examines parts I and II of Goethe's Faust as a unified work. Brief consideration is given to the Faust legend and the play's compositional stages, but Goethe's final authoritative text is its chief concern. The seminar format encourages close textual analysis. In connection with a selective review of important secondary literature, students are urged to form a synthetic view of the drama. The class also explores such issues as the figurative basis of human aspiring and Goethe's non-mimetic techniques of dramatic representation.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

GER 2860 - POST-WAR LITERATURE AND CULTURE

Minimum Credits: 3

Maximum Credits: 3

Major literary and cultural documents from the present-day German speaking countries are analyzed both formally and thematically in order to understand them in their social and historical contexts. As topics vary, this course may be repeated for credit.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Russian & East European Studies

GER 2882 - TOPICS IN GERMAN CINEMA

Minimum Credits: 3

Maximum Credits: 3

This course will use the German cinema to examine the relationship between films, social change, and questions of national identity and to assess the emergence of certain artistic movements, film genres, and models of authorship along these lines. Depending on the semester in which it is taught, the course will address these issues through topics like the representation of the masses, gender anxieties, film and the other arts, the historical film, film auteurs, images of the other, or war and cinema.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

GER 2892 - APPARATUS THEORY

Minimum Credits: 3

Maximum Credits: 3

Apparatus Theory now, more than ever! Once the heart of Anglo-American Screen Theory, Apparatus Theory generated lively debates about the relation of the moving image and the mechanisms of production that brought it to the screen. Having run into certain impasses regarding gender and ideology, AT became quiescent in the English-speaking world. Outside, however, it continued to develop in new dynamic directions. This seminar will review the multifaceted history of AT and deploy it in analyses of a series of international moving images from mainstream to experimental. The course will be in English. Films will have English subtitles. Public screenings will take place separately outside seminar meetings. Students are asked to sign up for the lab at that time.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

GER 2902 - DIRECTED M.A. STUDY

Minimum Credits: 1

Maximum Credits: 15

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

GER 2904 - MA PRACTICUM

Minimum Credits: 1

Maximum Credits: 1

This practicum is for students involved in organized graduate coursework (not independent or directed study) that is less than a 3-credit seminar, but that merits academic credit (i.e. Mini-seminars, lectures, films, or similar events).

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad SN Basis

GER 2970 - TEACHING OF GERMAN

Minimum Credits: 3

Maximum Credits: 3

This course examines and evaluates current pedagogical theories in language teaching and gives practical information on subjects such as teaching the four basic skills, lesson planning, vocabulary building, pattern drills, games, student-teacher interaction, textbook evaluation, testing, grading, visual aids, and culture. Theoretical discussions are augmented by practical sessions devoted to micro teaching demonstrations.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

GER 2975 - ADVANCED TOPICS IN FOREIGN LANGUAGE LEARNING AND TEACHING

Minimum Credits: 3

Maximum Credits: 3

In this course intended for experienced foreign language teachers, students will focus on pedagogical issues encountered in advanced-level teaching in the areas of language, literature, and culture.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

GER 2990 - M.A. INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 15

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

GER 3000 - PH.D. DISSERTATION RESEARCH

Minimum Credits: 1

Maximum Credits: 15

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis
Course Attributes: West European Studies

GER 3110 - PROSEMINAR IN LITERARY THEORY

Minimum Credits: 3

Maximum Credits: 3

This course offers selected readings in 20th century literary and cultural theory. We examine such "schools" as psychoanalysis, marxism, feminism, queer theory, reception theory, cultural studies, post-colonial studies, among others. Each is discussed within its historical context. Students will be encouraged to apply these readings to their own research and writing.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Attributes: Russian & East European Studies

GER 3112 - THEORY IN CULTURAL STUDIES

Minimum Credits: 3

Maximum Credits: 3

From its inception, cultural studies has examined culture as practice and artifacts through the categories of social class, gender, race/ethnicity, collective and individual identity, ideology and power by utilizing theoretical models from across the disciplines. This seminar allows students to familiarize themselves with key theoretical moments that shaped cultural studies and explore critically the significance of theory in cultural studies.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

GER 3612 - GOETHE'S FAUST

Minimum Credits: 3

Maximum Credits: 3

This course examines parts I and II of Goethe's Faust as a unified work. Brief consideration is given to the Faust legend and the play's compositional stages, but Goethe's final authoritative text is its chief concern. The seminar format encourages close textual analysis. In connection with a selective review of important secondary literature, students are urged to form a synthetic view of the drama. The class also explores such issues as the figurative basis of human aspiring and Goethe's non-mimetic techniques of dramatic representation.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

GER 3820 - KAFKA

Minimum Credits: 3

Maximum Credits: 3

This course examines Kafka's major works with explicit reference to the modernist tradition. Their consummate treatment of such issues as man's relationship to authority, his increasing alienation in a mass society, guilt and punishment in a world that has lost its gods, the discursive nature of truth, the threat of totalitarianism, and the place of art in a fallen world constitute the thematic core of the course. Competing theoretical perspectives on Kafka are also examined.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

GER 3860 - POST-WAR LITERATURE AND CULTURE

Minimum Credits: 3

Maximum Credits: 3

Major literary and cultural documents from the present-day German speaking countries are analyzed both formally and thematically in order to

understand them in their social and historical contexts. As topics vary, this course may be repeated for credit.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Russian & East European Studies

GER 3882 - TOPICS IN GERMAN CINEMA

Minimum Credits: 3

Maximum Credits: 3

This course will use the German cinema to examine the relationship between films, social change, and questions of national identity and to assess the emergence of certain artistic movements, film genres, and models of authorship along these lines. Depending on the semester in which it is taught, the course will address these issues through topics like the representation of the masses, gender anxieties, film and the other arts, the historical film, film auteurs, images of the other, or war and cinema.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

GER 3892 - APPARATUS THEORY

Minimum Credits: 3

Maximum Credits: 3

Apparatus Theory now, more than ever! Once the heart of Anglo-American Screen Theory, Apparatus Theory generated lively debates about the relation of the moving image and the mechanisms of production that brought it to the screen. Having run into certain impasses regarding gender and ideology, AT became quiescent in the English-speaking world. Outside, however, it continued to develop in new dynamic directions. This seminar will review the multifaceted history of AT and deploy it in analyses of a series of international moving images from mainstream to experimental. The course will be in English. Films will have English subtitles. Public screenings will take place separately outside seminar meetings. Students are asked to sign up for the lab at that time.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

GER 3902 - PH.D. DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 15

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

GER 3904 - PHD PRACTICUM

Minimum Credits: 1

Maximum Credits: 1

This practicum is for students involved in organized graduate coursework (not independent or directed study) that is less than a 3-credit seminar, but that merits academic credit (i.e. Mini-seminars, lectures, films, or similar events).

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad SN Basis

GER 3975 - ADVANCED TOPICS IN FOREIGN LANGUAGE LEARNING AND TEACHING

Minimum Credits: 3

Maximum Credits: 3

In this course intended for experienced foreign language teachers, students will focus on pedagogical issues encountered in advanced-level teaching in the areas of language, literature, and culture.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

GER 3990 - PH.D. INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 15

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

Gerontology

GERON 2000 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 6

A student initiated educational experience, guided by a faculty member, that significantly supplements the core curriculum of the certificate and provides specialized, focused training in aging.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

Course Requirements: PROG: Univ Center Social & Urban Res

GERON 2001 - ETHICS AND AGING

Minimum Credits: 3

Maximum Credits: 3

This course offers an overview of ethical issues in aging. Early sessions will explore the ethical implications of stereotypes and myths regarding aging. Turning to the context of health care, students will identify and analyze moral dilemmas that arise in the long-term and end-of-life care of older adults. Concepts and topics to be critically examined include: autonomy, dependency, elder abuse, and just resource allocation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Univ Center Social & Urban Res

GERON 2002 - PREVENTION AND HEALTHY AGING

Minimum Credits: 3

Maximum Credits: 3

Prevention and healthy aging is an online course that provides the guidance and rationale for promoting health, prevention, and effective risk factor management in the adult population (50+) in respect to rising health care costs, decreasing benefits, and the aging of our population. This course offers a general overview of various aging issues (physical, cognitive, social, cultural, and economic) that impact the individual, community, and society. This course will prepare students to integrate optimal preventive practice into their professional context and translate evidence-based strategies into community outreach services that are designed to prevent or delay the common conditions of aging and ones that emphasize the importance of healthy behaviors throughout the lifespan.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Univ Center Social & Urban Res

Course Attributes: World Wide Web

GERON 2003 - INTERGENERATIONAL STUDIES

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Univ Center Social & Urban Res

GERON 2004 - MENTAL HEALTH AND MENTAL ILLNESS IN LATE-LIFE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Univ Center Social & Urban Res

GERON 2005 - PERSPECTIVES IN AGING

Minimum Credits: 3

Maximum Credits: 3

Designed as an upper level course for students to learn about the aging process in our society.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Univ Center Social & Urban Res

GERON 2006 - MULTI-DISCIPLINARY ASPECTS OF DEMENTIA

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Univ Center Social & Urban Res

GERON 2007 - CAREGIVING IN AGING

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

GERON 2008 - HUMAN PERFORMANCE, NUTRITION AND AGING

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

GERON 2009 - AGING AND COMMUNICATION

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

GERON 2010 - SEMINAR IN AGING

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

GERON 2011 - NAVIGATING GRIEF AND LOSS IN OLDER ADULTS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

GERON 2012 - ETHICS AND AGING FOR SCHOOL OF HEALTH AND REHABILITATION SCIENCES STUDENTS

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

Greek

GREEK 2250 - GREEK SEMINAR: EPISTOLOGRAPHY

Minimum Credits: 3
Maximum Credits: 3
This seminar combines a general introduction to ancient epistolography with specific topical inquiries, such as the epistolary relationships between tyrant and sage, letters of moral instruction or letters that are embedded into genres including epic, historiography, tragedy and novel. Our focus throughout will be on questions concerning the authenticity, narrative strategy and reception of the letters under focus.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

GREEK 2902 - DIRECTED STUDY FOR M.A. STUDENTS

Minimum Credits: 1
Maximum Credits: 9
Directed study on classical topics for students in the M.A. Program.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

GREEK 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 9

In this course a student undertakes study in Greek in consultation with a member of the faculty.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

GREEK 2992 - PHD READING EXAMINATION

Minimum Credits: 0

Maximum Credits: 0

Permits graduate students from other departments to demonstrate competence in the reading of ancient Greek through examination.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

GREEK 2995 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

Directed study on Greek topics for students in the graduate program.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Health Informatics

HI 2210 - HEALTH INFORMATION AND THE HEALTH CARE SYSTEM

Minimum Credits: 3

Maximum Credits: 3

This course will introduce the student to the healthcare system and health information management as well as the integrity of the health data that is used by healthcare organizations. It will also introduce the student to the importance of the quality of healthcare and health information and the need for risk management and patient safety in healthcare organizations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HI 2231 - TALENT MANAGEMENT AND HUMAN RESOURCES

Minimum Credits: 3

Maximum Credits: 3

This course is a practical guide to human resource management in health care, and covers topics such as recruitment, compensation and benefits, training, discipline, termination, legal issues, labor unions, and multi-human interactions that emerge in the workplace. It is also an overview of the laws and regulations that guide every decision related to managing people in the complex society that we exist in today.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HI 2250 - FOUNDATIONS OF HEALTH INFORMATICS

Minimum Credits: 3

Maximum Credits: 3

This course introduces health informatics, providing an overview of the important topics and a foundation for other courses in the master's and certificate programs in health informatics. Students will learn what health informatics is, the challenges in health informatics, career in and profession of health informatics. Students will be briefly introduced to important concepts in health informatics including computing and networking in health informatics, digital health, data analytics and machine learning, data science, health technology intervention, electronic health record, healthcare standard, privacy and security, and bioinformatics and digital imaging.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HI 2410 - HEALTH VOCABULARY, TERMINOLOGY AND CLASSIFICATION SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

This course aims to evaluate the reference terminologies that are currently used in health care settings (SNOMED-CT, LOINC) as well as applications of data capture technologies (such as natural language processing, voice recognition, document imaging). Further, the course intends to introduce the students to computer assisted coding technology applications and evaluate the use of health care terminologies, vocabularies and classification systems found both nationally and internationally. A more focused review on format, guidelines and application for ICD-10-CM, ICD-10-PCS and HCPCS/CPT will take place. Students will utilize online coding tools to obtain hands-on practice with each of these 3 systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HI 2450 - SECURITY, PRIVACY, LEGAL, AND ETHICAL ISSUES IN HEALTH INFORMATION SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

This course is designed to introduce basic knowledge of security, privacy, legal and ethical issues in health information systems. In the first half of the course, the major focus will be on security techniques, including basic concepts, encryption and decryption methods, program operating systems, databases, and network security. In the second half of the course, we will shift our attention to the application of the concepts of privacy and security in the healthcare industry. Legal and ethical issues around the privacy and security of health information will also be discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HI 2451 - DATABASE DESIGN AND BIG DATA ANALYTICS

Minimum Credits: 3

Maximum Credits: 3

The ability to capture, organize, and analyze data is critical to healthcare organizations and to biomedical research. Database is arguably the most important tool in supporting data capture, organization, and analysis of outcomes, both for regular, transactional data as well as big data. This course will provide students with opportunities to learn data and big data management skills: principles in database, approaches to manage data, as well as provide a place to discuss and analyze key issues in data management. The course will have two sections. The first section will emphasize on the theoretical and technical aspects of database, specifically in data modeling, design of database, as well as learning the 'language' to manage database. The second section will address advanced topics in database and big data, including transforming data, data warehousing and data mining, as well as analysis and visualization of data.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HI 2452 - DIGITAL HEALTH

Minimum Credits: 3

Maximum Credits: 3

The advancement of informatics in health has allowed a convergence of digital technologies with health and healthcare, with the goal of improving

the efficiency and effectiveness of health services as well as making medicines more personalized and precise. These technologies include solutions for both healthcare providers and patients, ranging from Electronic Health Records, Telemedicine, Mobile Health, Wearable Devices, as well as many emerging Internet-of-Things devices and sensors. Interventions through digital health require a multi-disciplinary domain team involving both informatics and social sciences. This course will provide students with opportunities to explore, analyze, and discuss key issues, principles (both from technical and social science perspectives), approaches, and policies surrounding digital health. The final assignment of this course will task student to work with key health service stakeholders (who would actually share their knowledge throughout the course as well) to investigate and propose a practical digital health solution to tackle a specific health issue.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HI 2454 - DATA SCIENCE IN HEALTH INFORMATICS

Minimum Credits: 3

Maximum Credits: 3

This is an introductory course to data science. Data sources, types, data collection methods, data processing and analysis methods, and analysis result interpretation will be covered in this course. Students will learn these skills by finishing several assigned projects. By finishing the course, students will have the skills to analyze various types of data sets using different methods and have the ability to interpret the meaning the results.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HI 2632 - LEADERSHIP AND PROJECT MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

Leadership and Project Management is a course designed to introduce and develop leadership behaviors as well as manage the project management process. The goal of this course is to advance the capabilities in meeting current healthcare organizations challenges through both leader and leadership development. It is not intended to provide a background on the evolution of thought on leadership or leadership theory. The course takes a developmental "not training" approach by providing a leadership development framework that helps guide one in acquiring the characteristics and behaviors associated with good leadership. This course will study how technology, people, and economics of software projects interact and the impact these elements have on managing software projects.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Health and Physical Activity

HPA 2040 - HEALTH AND WELLNESS FOR INFANT, TODDLERS AND YOUNG CHILDREN

Minimum Credits: 3

Maximum Credits: 3

This class provides the future pre-k ' grade 4 classroom teacher with a knowledge base in motor development, health and physical education curriculum planning, and appropriate selection of health knowledge and skills and physical activities for infants, toddlers, and young children. Included are labs and field experiences in the pre-k-grade 4 classroom setting.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPA 2267 - PHYSIOLOGICAL BASIS-FITNESS AND SPORT CONDITIONING

Minimum Credits: 3

Maximum Credits: 3

This course is aimed at developing an understanding of the physiological adaptations to fitness or long term physical training with emphasis on metabolic, strength and conditioning principles. Through the awareness of the body's responses to chronic and acute exercise. The student will be

able to organize and design a physical training or fitness program for young adults, athletes and special populations. This course provides preparation for the American college of sports medicine health fitness instructor or national strength and conditioning exams.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Health and Physical Activity (HPRED-MS)

HPA 2268 - PHYSICAL ACTIVITY AND HEALTH

Minimum Credits: 3

Maximum Credits: 3

The purpose of this course is to expose the student to the topics related to the role of physical activity in the prevention and treatment of chronic diseases and additional health-related outcomes according to the most current literature. Students will become aware of all aspects of physical activity epidemiology, including the different methods to measure physical activity, evaluating the strengths and weaknesses of each, and understanding the analysis of physical activity data and research. In addition, this class will cover the physiology and mechanisms through which physical activity and exercise may affect the primary and secondary prevention and/or treatment of various health conditions, and will examine the risks and benefits associated with physical activity participation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Health and Physical Activity (MS)

HPA 2269 - OBESITY PREVENTION AND TREATMENT

Minimum Credits: 3

Maximum Credits: 3

This course will provide students opportunities to understand issues related to obesity. Topics may include prevalence rates, dietary considerations, exercise considerations and special population considerations. Behavioral strategies to enhance obesity treatment outcomes will also be addressed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Health and Physical Activity (HPRED-MS)

HPA 2320 - PSYCHOSOCIAL ASPECTS OF HEALTH

Minimum Credits: 3

Maximum Credits: 3

This course will increase students' understanding of the diverse personal, socio-cultural, and institutional factors that influence health, physical activity, and nutrition-related behaviors, and ultimately intervention design and approach. The course will cover the social determinants of health and health disparities, theoretical models of health behavior change, and intervention/behavior change strategies and tools. Students coming away from this course will have a better understanding of how to apply health behavior change models to promote physical activity and healthy eating in diverse populations through tailored interventions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Health and Physical Activity (MS)

HPA 2322 - EVIDENCE BASED HEALTH PROGRAM PLANNING

Minimum Credits: 3

Maximum Credits: 3

Team based course designing health promotion programs at local large, medium and small organizations. The course presents students an opportunity to design a real health promotion program that has the potential to impact their career trajectory. Students are encouraged to seize the opportunity with enthusiasm. To maximize the opportunity students need to be flexible and demonstrate initiative to travel to the organizational site to meet according to staff schedules. The course is linked with the HPA 2990 course offered in the Spring.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

HPA 2371 - ADVANCED EXERCISE PHYSIOLOGY

Minimum Credits: 3
Maximum Credits: 3

Theory experiences relating to the mechanisms by which the body adapts physiologically to selected conditions of muscular performance within the context of (1) physical education and sport, (2) work environments and (3) disease prevention and rehabilitation.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HPA 2373 - INTRODUCTION TO EXERCISE ASSESSMENT AND PROGRAMMING

Minimum Credits: 3
Maximum Credits: 3

This course examines exercise therapy for the cardiac patient and individuals with chd risk factors. Topics include functional capacity assessment (central and peripheral adaptations, graded exercise testing, electrocardiography), exercise prescription (dosage, format, energy cost, case studies), exercise supervision (phase 1, 2 and 3, practical leadership experiences, emergency procedures, nutritional counseling, psychological considerations) and factors that influence the exercise responses are presented.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health and Physical Activity (MS)

HPA 2374 - EXERCISE TESTING, PRESCRIPTION, AND SUPERVISION

Minimum Credits: 3
Maximum Credits: 3

An introductory lecture, laboratory course in cardiac rehabilitation. Topics presented include: the pathophysiology and epidemiology of coronary artery disease, coronary anatomy, basic and advanced electrocardiography, principles of graded exercise testing, exercise prescription and supervision, nuclear diagnostic techniques, current considerations in pharmacological treatment of coronary artery disease and cardiac rehabilitation in a clinical setting.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health and Physical Activity (HPRED-MS)

HPA 2375 - RESEARCH AND EXPERIMENTAL DESIGN IN EXERCISE PHYSIOLOGY

Minimum Credits: 3
Maximum Credits: 3

This course focuses on the development of experimental design and methodologies in exercise physiology research. The designs are explored within the context of ergogenic aids, training strategies, selected disease states, temperature regulation, and isokinetic strength and energy metabolism.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Health and Physical Activity (NCDEG, MS, PHD) or Health Physical/Recreation Ed (MED)

HPA 2380 - BEHAVIOR CHANGE AND HEALTH COACHING

Minimum Credits: 3
Maximum Credits: 3

This course focuses on applying evidence-based behavioral strategies to interactions with health-fitness participants and patient populations to enhance engagement, adherence, and sustainability of lifestyle behaviors related to health. The course will include interaction strategies with patients,

listening skills of health coaches, strategies to enhance compliance, strategies for working with non-compliant patients, and application to specific health-fitness and healthcare setting.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPA 2381 - CLINICAL EXERCISE AND PHYSICAL ACTIVITY PHYSIOLOGY 1

Minimum Credits: 3

Maximum Credits: 3

This is an advanced course in clinical exercise physiology designed to provide knowledge and understanding of the most recent advances in exercise physiology for the healthy adults as well as for special populations across the lifespan. Emphasis will be placed on mechanisms underlying metabolic and cardiorespiratory responses and adaptation to exercise and on the metabolic determinants of human adaptation and performance under normal conditions as well as during various environmental and physiological changes. Additional emphasis will be on taking in depth look at the acute and chronic responses to exercise in children and adolescents, pregnancy, and older adults. Instruction includes both didactic and laboratory experiences.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: HPRED-MS

HPA 2382 - CLINICAL EXERCISE AND PHYSICAL ACTIVITY PHYSIOLOGY 2

Minimum Credits: 3

Maximum Credits: 3

This course is an extension of the Clinical Exercise and Physical Activity Physiology 1 course. This is an advanced course in clinical exercise physiology designed to provide knowledge and understanding of the most recent advances in the application of exercise physiology to clinical populations. Particular emphasis is placed on the acute and chronic responses to exercise in patients at risk for or having cardiovascular, endocrine, pulmonary, and metabolic diseases. Additional topics include clinical exercise physiology for cancer, disorders of the bone/joints, and neuromuscular disorders. Instruction includes both didactic and laboratory experiences.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPA 2383 - ADVANCED CLINICAL HEALTH AND PHYSICAL ACTIVITY ASSESSMENT

Minimum Credits: 3

Maximum Credits: 3

This course includes training on advanced assessment of fitness and health-related measures that can be implemented across various settings including clinical, public health, health-fitness, worksite, etc. Measures will include fitness, physical activity and sedentary behavior, body composition, and a variety of health-related measures. Instruction will include both didactic and laboratory-based experiences.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPA 2384 - MOVEMENT SCIENCE IN HEALTH AND PHYSICAL ACTIVITY

Minimum Credits: 3

Maximum Credits: 3

This course examines human movement across the lifespan (youth, adults, older adults), health conditions, and exercise-related activities. Student will learn how to assess movement patterns and how to apply this knowledge to prevention, treatment, and rehabilitation situations. This course will be a combination of classroom and laboratory experiences.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: HPRED-MS

HPA 2385 - PRACTICUM IN HEALTH AND PHYSICAL ACTIVITY

Minimum Credits: 3

Maximum Credits: 3

Supervised experience for the master's degree student. Student placement is to a clinical setting, applied health-fitness setting, or health promotion setting that is appropriate to the pursuit of the intended degree. Students are also required to attend didactic and online course-related sessions with the instructor throughout this experience. Students intending to take this course need to coordinate the placement with the supervising faculty instructor at least 1 term in advance of registering for this course to allow for appropriate placement.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

HPA 2386 - HEALTH AND PHYSICAL ACTIVITY PROMOTION AND MARKETING

Minimum Credits: 3

Maximum Credits: 3

This course provides students with the conceptual background and practical skills necessary to address how to introduce and market health and physical activity programs and initiatives, and how to identify and implement channels of distribution of these programs and initiatives. This course will include both didactic and practical experiences for students to obtain and apply the necessary knowledge.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPA 2387 - MEDIA AND TECHNOLOGY IN HEALTH AND PHYSICAL ACTIVITY

Minimum Credits: 3

Maximum Credits: 3

This course address the application of media and technology in health and physical activity program implementation. Examples include the application of video, audio, online programming, etc. Students will have opportunities to uses the various technologies across various applications related to health and physical activity programming.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: HPRED-MS

HPA 2390 - NUTRITION IN SPORT AND EXERCISE

Minimum Credits: 3

Maximum Credits: 3

A lecture and laboratory class in which the principles of nutrition are applied to sports performance and exercise. Topics presented include energy release and substrate utilization, energy metabolism during exercise, fluid intake and athletic performance, body composition, ergogenic aids, vitamins and minerals, the pre-game meal, sports anemia, nutritional considerations for the diabetic individual, lipid metabolism and coronary heart disease.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Health and Physical Activity (MS)

HPA 2410 - STATISTICS IN HPA RESEARCH

Minimum Credits: 3

Maximum Credits: 3

A general knowledge of computer hardware/software and its use in physical education research is the major focus of this class. Software packages are examined for word processing and statistical analysis. An introduction to basic programming is given.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Health and Physical Activity (MS)

HPA 2420 - CHILD IN SPORT

Minimum Credits: 3

Maximum Credits: 3

An in-depth and critical look at youth sports in America and its effect on the developing child. The interdisciplinary focus draws from the social, behavioral and biological sciences to provide information for evaluation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPA 2990 - RESEARCH SEMINAR IN HPA

Minimum Credits: 3

Maximum Credits: 3

This course is required of all non-thesis master's degree candidates and includes the development and presentation of an original research paper. The student works in cooperation with a graduate advisor in their area of content specialization. The nature of acceptable projects includes the following: data based research; expanded literature review; development of software and/or hardware, development of instructional materials (i.e., Video tapes, slide series, films, etc.); Journal article.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

HPA 2996 - CLINICAL INTERNSHIP

Minimum Credits: 3

Maximum Credits: 3

Supervised clinical experience for the master's degree student. The student is placed in a clinical setting appropriate to his/her degree interests and career goals and must complete a minimum of 25 hours of clinical work per credit hour. Supervision is provided by the cooperating clinical supervisor and the university clinical advisor.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad Letter Grade

HPA 2998 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

The student proposes and carries out a project under the direction and supervision of an appropriate member of the faculty.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad HSU Basis

HPA 2999 - MASTER'S THESIS RESEARCH

Minimum Credits: 1

Maximum Credits: 9

He student prepares a proposal for an original research project, has that project approved by an appropriate faculty thesis committee, completes proposed project, and defends the completed report in a thesis final oral examination.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

HPA 3114 - EVIDENCE BASED LIFESTYLE PROGRAM DESIGN AND EVALUATION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Health and Physical Activity (HPRED-EDD)

HPA 3115 - HEALTH PROMOTION POLICY AND PROGRAM IMPLEMENTATION

Minimum Credits: 3

Maximum Credits: 3

This course investigates the impact of legislation, policies, and implementation on individuals' and populations' physical activity (pa) and nutrition. Centering on students' conceptualizations of their problem of practice, this course will explore: a) pa and nutrition program implementation and challenges to implementation, b) evidence-based policies, practices, interventions, and services and c) advocacy partnerships and organizations. This course will also integrate discussions of social justice and diversity in pa and nutrition policy and program implementation. Students will analyze these problems and their causes with the goal to craft and advocate for policies that promote pa and nutrition health equity for individuals and populations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Health and Physical Activity (HPRED-EDD)

HPA 3116 - RESOURCE AND FUNDING ACQUISITION FOR HEALTH PROMOTION PROGRAMMING

Minimum Credits: 3

Maximum Credits: 3

The course presents the process of developing and submitting extramural grants related to health, physical activity and nutrition. Students develop an idea and write a grant proposal linked to a funding source with the aim of providing higher quality, more efficient and less expensive health promotion and health care to populations. The potential funding sources are public sector, private sector, and non-profit sector. Furthermore, students incorporate into the grant proposal alternative funding strategies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: HPRED-EDD (Health and Physical Activity)

HPA 3117 - HEALTH PROMOTION PROGRAM TRANSLATION AND SUSTAINABILITY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Educational Administration Ed.D.

HPA 3374 - ADVANCED LABORATORY TECHNIQUES

Minimum Credits: 3

Maximum Credits: 3

This course provides a framework that aids the advanced graduate student in acquiring knowledge and technical laboratory skills pertinent to exercise physiology research. Content includes: cardiac output, maximal oxygen uptake, isokinetic exercise testing, hydrostatic weighing, techniques for assessing core and skin temperature and plasma volume changes, combined arm and leg exercise and water immersion exercise.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Health and Physical Activity (HPRED-MS)

HPA 3377 - CHRONIC DISEASE CASE STUDIES

Minimum Credits: 3

Maximum Credits: 3

His course integrates selected elements of the knowledge base in the areas of exercise science, graded exercise testing electrocardiography, pharmacology and exercise prescription in order to develop an effective and realistic therapeutic plan for individuals who have coronary disease or are at risk for its development. The principal learning experiences for the course will center on the development, interpretation and presentation of cardiovascular case studies for intervention.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Health and Physical Activity (MS or PhD)

HPA 3400 - ADVANCED RESEARCH METHODS IN MOVEMENT SCIENCE

Minimum Credits: 1

Maximum Credits: 1

Provides the Ph.D. student with a team oriented process to develop, implement, present and publish experimental research in exercise physiology and health-fitness.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Health and Physical Activity (PhD)

HPA 3404 - COLLEGE TEACHING PRACTICUM

Minimum Credits: 3

Maximum Credits: 3

This course provides the Ph.D. Student the opportunity to teach an undergraduate specialization course in this area of expertise while exploring appropriate teaching methodology and theory.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

HPA 3405 - GRANT WRITING IN HEALTH AND PHYSICAL ACTIVITY

Minimum Credits: 3

Maximum Credits: 3

The objective of this course is to provide guidance to doctoral level students on the process of developing a grant proposal for extramural funding. This course will be modeled from the NIH submission and review process.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Health and Physical Activity (HPRED-PHD) and (HPRED-EDD)

HPA 3406 - PROFESSIONAL WRITING IN HPA

Minimum Credits: 3

Maximum Credits: 3

The purpose of this course is to expose the student to the process of developing professional abstracts and manuscripts that can be submitted for peer-review related to health and physical activity. This course will focus on developing empirically-based abstracts, manuscripts, the submission process, the peer-review process, and considerations for resubmission. The culminating experiences will include the submission of an abstract and manuscript for professional presentation and publication.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HPA 3995 - SPECIAL TOPICS

Minimum Credits: 3

Maximum Credits: 3

A flexible curriculum oriented to special research topics of interest to faculty or current issues of concern to educators. Focused on areas within either developmental movement and sport studies or exercise physiology.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Health and Physical Activity

HPA 3998 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

The student proposes and carries out a project under the direction and supervision of an appropriate member of the faculty.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad HSU Basis

HPA 3999 - DOCTORAL DISSERTATION RESEARCH

Minimum Credits: 1

Maximum Credits: 15

The student prepares a proposal for a detailed research study, has that proposal approved by an appropriate faculty dissertation committee, completes the proposed study, and defends the completed draft in a dissertation final oral examination.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Health and Rehabilitation Scs

HRS 1000 - INTRODUCTION TO RESEARCH

Minimum Credits: 3

Maximum Credits: 3

The study of the nature of research and the applications of the scientific approach in the research procedures. The course focuses on concepts, design techniques and interpretations, as well as limiting factors and ethical considerations.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: Letter Grade

Course Requirements: PROG: Sch Hlth & Rehabilitation Scs; PLAN: Clinical Dietetics -Nutrition (BS, BOH, BS-H) or (NDNUTR-ND) or (NS-BS)

HRS 1020 - ANATOMY AND PHYSIOLOGY

Minimum Credits: 4

Maximum Credits: 4

Introduces the structure of human cells, tissues, organs and organ systems, and functions associated with them. Range of topics extends from gross anatomical features to considerations of chemical processes that serve as the basis for cellular controls, gene expression and energy metabolism.

Emphasis on relationship of structure to function and on understanding how structural or functional disturbances can become the basis for disease

processes.

Academic Career: UGRD

Course Component: Lecture

Grade Component: Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 1023 - HUMAN PHYSIOLOGY

Minimum Credits: 4

Maximum Credits: 4

This course has been designed in an effort to provide pre-clinical students with a foundational scientific knowledge base and conceptual understanding of physiological processes. Each organ system, and its contribution to the maintenance of homeostasis, will be discussed. Further, the essential components of each system will be explored, to the extent that life is supported. Some disease states will be discussed, in order to exhibit certain processes.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: Letter Grade

Course Requirements: PLAN: Clinical Dietetics-Nutrition(BS or BSH or BPH)

HRS 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HRS 2004 - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN

Minimum Credits: 4

Maximum Credits: 4

This course is designed to provide the student with a comprehensive theoretical foundation of the phenomena that produce alterations in human physiologic function in diverse populations across the life span. Information gained in this course will prepare the student for subsequent courses related to the diagnosis and management of disease processes associated with pathophysiologic dysfunction/alterations in people of various ethnic/cultural groups across the life span.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2008 - ENTREPRENEUR SKILLS FOR NUTRITION PROFESSIONALS

Minimum Credits: 3

Maximum Credits: 3

This course will focus on the components of business planning, implementation and marketing for dietetics related products and services in a variety of settings. Working in teams and independently, students will identify potential products and services, develop business and marketing plans including financial and staffing considerations and present their plan to a panel of their peers and potential "buyers".

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: (Coordinated Master in Dietetics); or SUBPLAN: (Clinical Dietetics & Nutrition) or (Wellness and Human Performance)

HRS 2017 - INJURY EPIDEMIOLOGY

Minimum Credits: 3

Maximum Credits: 3

This introductory course in injury epidemiology will address injury epidemiology, and concepts in basic epidemiology and biostatistics related to injury surveillance, prevention and control. The epidemiological perspective of injuries will address the concepts in the Haddon's matrix and classic epidemiologic triad; current injury epidemiology research needs and injury as a public health issue. Topics addressed will include epidemiology of injuries in developed and developing countries, and injuries in vulnerable populations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Sports Medicine (MSSPM-SP)

HRS 2022 - HUMAN ANATOMY

Minimum Credits: 3

Maximum Credits: 3

Emphasizes the understanding and application of knowledge of human anatomy in diagnostics of clinical conditions commonly encountered by an occupational therapist. The practical component includes the use of prosected cadavers, skeletal models, and palpation of surface anatomical features in live models.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Occupational Therapy (MOT)

HRS 2079 - CHILDREN W/DISABILITIES: CLIN 1

Minimum Credits: 2

Maximum Credits: 2

Course provides an interdisciplinary clinical training experience to graduate students from nursing, medicine, public health, psychology, social work, education, early intervention, nutrition, physical therapy, speech/language pathology, occupational therapy, and audiology. Students have the opportunity to learn about the impact of disabilities on children, families, schools, communities, and society thru clinical activities as part of the university, community leaders for individuals with disabilities (UCLID) center's leadership training program.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2084 - SPECIAL TOPICS IN OSTEOARTHRITIS

Minimum Credits: 1

Maximum Credits: 2

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

HRS 2089 - CHILDREN W/DISABILITIES: CLIN 2

Minimum Credits: 2

Maximum Credits: 2

Course provides an interdisciplinary clinical training experience to graduate students from nursing, medicine, public health, psychology, social work, education, early intervention, nutrition, physical therapy, speech/language pathology, occupational therapy, and audiology. Students have the opportunity to learn about the impact of disabilities on children, families, schools, communities, and society thru clinical activities as part of the university, community leaders for individuals with disabilities (UCLID) center's leadership training program.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

HRS 2090 - LEADERSHIP SEMINAR IN MATERNAL AND CHILD HEALTH 2: FROM BIOLOGY TO POLICY

Minimum Credits: 1

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

HRS 2128 - LEADERSHIP

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HRS 2305 - ADVANCED NEUROSCIENCE

Minimum Credits: 4

Maximum Credits: 4

This course will provide the student with an in-depth study of neuroanatomical structures and functions. Brain anatomy, function, and interrelationships especially as they relate to movement dysfunction will be reviewed. The clinician will have an opportunity to "revisit" how anatomy and movement are interrelated.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: SBPLAN: Musculoskeletal Phys Therapy (Health and Rehabilitation Scs-MS) or Neuromuscular Physical Therapy (Health and Rehabilitation Scs-MS)

HRS 2306 - MOTOR LEARNING AND CONTROL OF MOVEMENT/HEALTH PROMOTION

Minimum Credits: 3

Maximum Credits: 3

Principles of motor learning and motor control will be discussed as they relate to persons with disability. Models of disability will be shared with ideas of how to incorporate some of the principles of motor learning/control into interventions. Health promotion and fitness for persons with neuromuscular disorders will be emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: SBPLAN: Musculoskeletal Phys Therapy (Health and Rehabilitation Scs-MS) or Neuromuscular Physical Therapy (Health and Rehabilitation Scs-MS)

HRS 2307 - FALLS AND BALANCE DYSFUNCTION: PHYSICAL THERAPY MANAGEMENT AND INTERVENTION

Minimum Credits: 3

Maximum Credits: 3

This course will provide students with the knowledge and skills to provide advanced assessment and management of persons with balance and vestibular disorders, including those at risk for falls. Students will discuss and practice using assessment tools. Lecture, laboratory practice, case studies, and discussion will be included. This course is offered on 4-5 weekends throughout the semester.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: [HRS 2314 (MIN GRADE: 'C') and SBPLAN: Musculoskeletal Physical Therapy] or [HRS 2305 (MIN GRADE: 'C') and SBPLAN: Neuromuscular Physical Therapy]

HRS 2308 - CLINICAL PRACTICE SEMINAR

Minimum Credits: 2

Maximum Credits: 2

This course will cover basic concepts of physical examination of the patient with neuromusculoskeletal dysfunction. Fundamental examination skills and knowledge will be covered, including issues related to screening, review of systems, history, physical examination and clinical decision making. An introduction to radiology and diagnostic imaging will be provided. Concepts related to pain and the inflammatory process, bone healing and remodeling, and how these concepts impact clinical practice will also be covered.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: SBPLAN: Musculoskeletal Phys Therapy (Health and Rehabilitation Scs-MS) or Neuromuscular Physical Therapy (Health and Rehabilitation Scs-MS)

HRS 2309 - ANALYSIS OF NEUROMUSCULAR SIGNS AND SYMPTOMS IN CLINICAL DECISION MAKING

Minimum Credits: 3

Maximum Credits: 3

This course will focus on the analysis of the process and knowledge necessary for identifying the neuromuscular tissue or system representing the origin of disorders in patients. Signs and symptoms from history and physical examination will be the focus with appropriate ancillary testing necessary to confirm hypotheses regarding neuromusculoskeletal pathology. The intent is for clinicians to be able to differentiate clusters of signs and symptoms and to make appropriate clinical decisions regarding same.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: [HRS 2314 (MIN GRADE: 'C') and SBPLAN: Musculoskeletal Physical Therapy] or [HRS 2305 (MIN GRADE: 'C') and SBPLAN: Neuromuscular Physical Therapy]

HRS 2310 - ADVANCED MUSCULOSKELETAL DISSECTION ANATOMY

Minimum Credits: 2

Maximum Credits: 2

This course will provide students with an opportunity to study and dissect specified anatomical regions of the human musculoskeletal system and present their dissection to the class with particular emphasis given to clinical applications of that anatomy. Students will be given guidelines and basic instruction in the dissection process and will then work independently throughout the semester to complete their dissections. Through this experience students will gain a mastery of select regions of musculoskeletal anatomy and a greater understanding of the clinical applications of that anatomy.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

HRS 2312 - SEMINAR IN NEUROLOGIC PHYSICAL THERAPY

Minimum Credits: 2

Maximum Credits: 2

A series of papers will be presented with interactive discussion related to novel interventions. Students will be responsible for reviewing the paper and presenting the case to the class. Each student will "teach" the class once and lead the discussion. Topic areas will be assigned by the instructor.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: SBPLAN: Musculoskeletal Phys Therapy (Health and Rehabilitation Scs-MS) or Neuromuscular Physical Therapy (Health and Rehabilitation Scs-MS)

HRS 2313 - PHYSICAL THERAPY SPECIAL TOPICS SEMINAR

Minimum Credits: 2

Maximum Credits: 2

This course is designed to foster discussion of current physical therapy clinical issues, such as prospective payment for medical rehabilitation, healthcare trends, reimbursement regulations, legislative policies, practice environments, strategies for maintaining continued competence, and emerging professional issues.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2314 - FUNDAMENTALS OF NEUROSCIENCE FOR THE ORTHOPEDIC CLINICIAN

Minimum Credits: 4

Maximum Credits: 4

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HRS 2356 - CONCEPTS AND PRINCIPLES RELATED TO SENSORY MOTOR CONTROL 1

Minimum Credits: 3

Maximum Credits: 3

Topical areas of the neurological sciences will be presented including introductory neuropathology, neuro-diagnostic techniques, and clinical manifestations of certain diseases of the nervous system. Topics will include: reflexes; the pain experience and pain management; somatosensory changes in peripheral and central nervous system diseases; motor dysfunction associated with peripheral and central nervous system diseases; articular neurology; sensorimotor learning principles.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: HRS 2305 (MIN GRADE 'C'); SBPLAN: Neuromuscular Physical Therapy (Health and Rehabilitation Scs-MS)

HRS 2361 - EVIDENCE BASED PRACTICE: CLINICAL CONSIDERATIONS LUMBOPELVIC SPINE

Minimum Credits: 3

Maximum Credits: 3

Course content will include evaluation and treatment of the musculoskeletal conditions involving the lumbopelvic complex including the hip joint utilizing advanced orthopedic physical therapy skills. Emphasis will be placed upon enhancing clinical decision making and integrating manual therapy skills within the overall plan of care for the patient. Classes will include lecture, laboratory, and clinical experiences.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: SBPLAN: Musculoskeletal Phys Therapy (Health and Rehabilitation Scs-MS) or Neuromuscular Physical Therapy (Health and Rehabilitation Scs-MS)

HRS 2362 - EVIDENCE BASED PRACTICE: CLINICAL CONSIDERATIONS LOWER EXTREMITY

Minimum Credits: 3

Maximum Credits: 3

Course content will include evaluation and treatment of musculoskeletal conditions involving the foot, ankle, and knee. Emphasis will be placed upon enhancing clinical decision making and integrating manual therapy skills within the overall plan of care for the patient. Classes will include lecture, laboratory, and clinical experiences.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: SBPLAN: Musculoskeletal Phys Therapy (Health and Rehabilitation Scs-MS) or Neuromuscular Physical Therapy (Health and Rehabilitation Scs-MS)

HRS 2364 - EVIDENCE BASED MEDICAL AND PHYSICAL THERAPY INTERVENTIONS FOR PERSONS WITH NEUROMUSCULAR DISEASE

Minimum Credits: 3

Maximum Credits: 3

This course will focus on an evidence based comparison of newer vs. Older 'techniques' used in the field of neurologic rehabilitation. Students will be asked to explore the evidence basis that supports or refutes use of these various approaches and techniques currently in use. Newer approaches to neurological rehabilitation will also be discussed-these include: constraint induced movement therapy, virtual reality, robotics, and deweighting. Lab and clinic visits will be incorporated into this course so that students will be able to see some of the techniques 'in action'.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: SBPLAN: Musculoskeletal Phys Therapy (Health and Rehabilitation Scs-MS) or Neuromuscular Physical Therapy (Health and Rehabilitation Scs-MS)

HRS 2365 - CASE STUDIES OF PERSONS WITH NEUROMUSCULAR DISORDERS

Minimum Credits: 3

Maximum Credits: 3

A series of cases will be presented with interactive discussion related to interventions that have been shown to demonstrate evidence and efficacy to address the person's functional limitations and impairments. Students will be responsible for preparing for the case prior to each session and will bring 'evidence' to support ideas for intervention. Innovative physical therapy and medical interventions will be discussed. Lecture and interactive discussion are the teaching methods of choice. Advanced clinicians will participate in the course to bring 'real life' cases to the course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: SBPLAN: Musculoskeletal Phys Therapy (Health and Rehabilitation Scs-MS) or Neuromuscular Physical Therapy (Health and Rehabilitation Scs-MS)

HRS 2372 - ADVANCED CLINICAL PRACTICE: THE LOWER QUARTER

Minimum Credits: 3

Maximum Credits: 3

This course will integrate advanced clinical applications of therapeutic technique and rationale for the assessment and treatment of the neuromuscular system. This course will synthesize clinical application of mobilization and manipulation techniques for the lumbopelvic spine and the lower extremities, the assessment and treatment of muscular and soft tissue imbalances, and the application of medical exercise training.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: SBPLAN: Musculoskeletal Phys Therapy (Health and Rehabilitation Scs-MS) or Neuromuscular Physical Therapy (Health and Rehabilitation Scs-MS)

HRS 2373 - ADVANCED MUSCULOSKELETAL CLINICAL PRACTICE

Minimum Credits: 3

Maximum Credits: 3

This course will integrate advanced clinical applications of therapeutic technique and rationale for the assessment and treatment of the neuromuscular system. This course will synthesize clinical application of mobilization and manipulation techniques for the cervicothoracic spine and the upper extremities, the assessment and treatment of muscular and soft tissue imbalances, and the application of medical exercise training.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: SBPLAN: Musculoskeletal Phys Therapy (Health and Rehabilitation Scs-MS) or Neuromuscular Physical Therapy (Health and Rehabilitation Scs-MS)

HRS 2374 - CLINICAL ROUNDS AND CASE PRESENTATION

Minimum Credits: 1

Maximum Credits: 1

Weekly rounds will be presented by various speakers/clinicians/researchers in both the fall and spring terms. These presentations will consist of case presentations, relevant clinical and/or research updates pertaining to the clinical practice of physical therapy.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: SBPLAN: Musculoskeletal Phys Therapy (Health and Rehabilitation Scs-MS) or Neuromuscular Physical Therapy (Health and Rehabilitation Scs-MS)

HRS 2380 - EVIDENCE BASED PRACTICE: CLINICAL CONSIDERATIONS FOR CERVICAL AND THORACIC SPINE

Minimum Credits: 3

Maximum Credits: 3

This course will include evaluation and treatment of musculoskeletal conditions involving the cervical spine, the temporomandibular joint, the thoracic spine and rib cage. Emphasis will be placed upon enhancing clinical decision making and integrating manual therapy skills into the plan of care for the patient. Classes will consist of lecture, laboratory, and clinical experiences.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: SBPLAN: Musculoskeletal Phys Therapy (Health and Rehabilitation Scs-MS) or Neuromuscular Physical Therapy (Health and Rehabilitation Scs-MS)

HRS 2381 - EVIDENCE BASED PRACTICE: CLINICAL CONSIDERATIONS FOR UPPER EXTREMITY

Minimum Credits: 3

Maximum Credits: 3

This course will include evaluation and treatment of the musculoskeletal conditions involving the shoulder, elbow, wrist and hand. Emphasis will be placed upon enhancing clinical decision making and integrating manual therapy skills within the overall plan of care for the patient. Classes will include lecture, laboratory, and clinical experiences.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: SBPLAN: Musculoskeletal Phys Therapy (Health and Rehabilitation Scs-MS) or Neuromuscular Physical Therapy (Health and Rehabilitation Scs-MS)

HRS 2391 - PHYSICAL THERAPY CLINICAL ROTATION 2

Minimum Credits: 1

Maximum Credits: 3

This clinical opportunity will provide students the ability to observe and participate in assessment and management of various musculoskeletal disorders. Students will have an opportunity to work with an experienced clinician to learn more about advanced skills in the treatment of neuromuscular dysfunction in the out-patient setting.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PREQ: HRS 2305 (MIN GRADE 'C'); SBPLAN: Neuromuscular Physical Therapy (Health and Rehabilitation Scs-MS)

HRS 2392 - PHYSICAL THERAPY CLINICAL ROTATION 3

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

HRS 2416 - INTRODUCTION TO HEALTH INFORMATION & THE HEALTH CARE SYSTEM

Minimum Credits: 3
Maximum Credits: 3

An introduction to Health Information Management and the historical development of the health care field with emphasis on the organizational structure of health institutions, as well as federal, state, and local agencies and allied health associations. Student will be introduced to Health Information Management operations and key functions, with an overview of the American Health Information Management Association (AHIMA). Emphasis will be placed on the use of technology in health care, Electronic Health Record, and data quality. An in-depth look at privacy, confidentiality and security will occur. The laboratory experience provides students with hands-on opportunities to apply the theory and concepts of health information. The content, format, purpose, confidentiality, adherence to regulations/standards and technology applications for health information will be emphasized. Laboratory activities, group discussions, and case studies will supplement basic instructions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Health and Rehabilitation Scs or SBPLAN: Health Information Systems (Health and Rehabilitation Scs-MS)

HRS 2420 - INTRO TO HEALTH INFORMATICS

Minimum Credits: 3
Maximum Credits: 3

Introduction to the basic concepts of the analysis, design, implementation, and evaluation of health information systems. The student will be provided opportunity to develop skills and ability in defining information needs, interpreting the capabilities of health information systems, setting forth the feasible alternatives, and guiding the appropriate diffusion of information science technology into the health care system.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2421 - SECURITY, PRIVACY, LEGAL AND ETHICAL ISSUES IN HEALTH CARE

Minimum Credits: 3
Maximum Credits: 3

Students in this course will explore legal, security, and privacy issues related to health information systems. Data availability, integrity and confidentiality of databases and networks, computer security, public key infrastructure, encryption/decryption techniques, and data recovery will be addressed as well as risk assessment, security policies, HIPAA, privacy, applicable health laws, and ethical issues in the management of health information.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2422 - COMPUTER PROGRAMMING FOR HEALTH INFORMATICS

Minimum Credits: 3
Maximum Credits: 3

This course is designed to introduce advanced computer programming technologies. The course will provide students with skills of solving real health informatics problems using computer programs. This course is not designed as first computer programming class. The instructor assumes that students have taken and are familiar with one or a few programming languages (such as BASIC, C/C++, JAVA, C#, PERL, PYTHON, RUBY) prior to taking this class. One or multiple programming languages may be used in this class to solve health informatics problems. This course is hands-on and project-oriented.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2423 - CLOUD COMPUTING, HL7 AND ANALYTICS IN HEALTH CARE

Minimum Credits: 3

Maximum Credits: 3

Information technology (IT) is in an era of change from local servers, rigid data structures, and centralized computing to a remote distributed cloud computing architecture. Health care IT likewise is following this pattern. To optimize health care strategies, the use of information technology is playing an ever increasing role. Modern medicine is driven by use of information and IT capabilities. This course will discuss HL7 and other common protocols for data exchange. Data analytics will also be covered with some data mining and OLAP (Online Analytic Processing) and data visualization. Understanding of the underlying principles of networks, data storage, data protection, "big data" and the capabilities of modern computer architecture and software will be covered. This course has a primary focus of creative use of common IT tools and applying them in ways related to health care computing, information processing and management. Natural Language Processing, Precision Medicine and genomics will be discussed and applied to medical applications and data analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2424 - DATABASE DESIGN AND MANAGEMENT IN HEALTH CARE

Minimum Credits: 3

Maximum Credits: 3

Objectives are to provide students with an in-depth knowledge of database design and provide skills on how to use available database management systems. First part emphasis on how to analyze a healthcare problem and model its data effectively using the entity-relationship model. Students learn to implement the model using relational DBMS. Commercial systems Access, RDB, Sybase, DBase IV systems are studied. Students gain practical experience by designing and implementing database projects in a healthcare setting.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2425 - DATA ANALYTICS: APPLICATION IN GENOMICS AND PERSONALIZED CARE

Minimum Credits: 3

Maximum Credits: 3

This course is designed as an introductory-level course to data analytics and its application in genomics. In this course, students will learn techniques on data collection, data processing, modeling, data visualization, and result interpretation. Specific examples from genomics will be used to demonstrate the details of these techniques. Students will work on individual projects to extensively practice their data analytics skills. A number of web-based data analysis tools will be used in this course; therefore, students are not required to write their own data analysis programs.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2426 - EVALUATION OF CLASSIFICATION SYSTEMS, REFERENCE TERMINOLOGIES & DATA CAPTURE TECHNOLOGIES IN HC

Minimum Credits: 3

Maximum Credits: 3

This course aims to evaluate the reference terminologies that are currently used in health care settings (SNOMED-CT, LOINC) as well as applications of data capture technologies (such as natural language processing, voice recognition, document imaging). Further, the course intends to introduce the students to computer assisted coding technology applications and evaluate the use of health care terminologies, vocabularies and

classification systems found both nationally and internationally.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HRS 2428 - CONCP SOFTWR PROJ ENGR HLTH CARE

Minimum Credits: 3

Maximum Credits: 3

This course will examine how health care organizations manage the software development process. This course will study how technology, people and economics of software projects interact and the impact these elements have on managing software projects. Topics include: system life cycle models, requirements management, and system design and software quality assurance. The student will have the opportunity to learn about industry implementation data standards and the impact of regulations for planning and managing health information systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: SBPLAN: Health Information Systems (Health and Rehabilitation Scs-MS) or Healthcare Supervision Mgt (Health and Rehabilitation Scs-MS)

HRS 2429 - FOUNDATIONS OF CLINICAL AND PUBLIC HEALTH INFORMATICS

Minimum Credits: 3

Maximum Credits: 3

A survey of fundamental concepts and activities on information technology applied to health care. Topics include computer-based medical records, knowledge-based systems, telehealth, decision theory and decision support, human-computer interfaces, systems integration, the digital library, bioinformatics, and educational applications. Department-specific applications such as pathology, radiology, psychiatry and intensive care are also discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2431 - EVALUATION METHODS IN HEALTH INFORMATICS

Minimum Credits: 3

Maximum Credits: 3

This course will study the application of well-established evaluation techniques specific to problems in health informatics. No previous knowledge of health informatics evaluation is required or presumed. This interactive course will provide students with opportunities to discuss and analyze the key issues, principles, and approaches in health informatics evaluation. Emphasis of the course will be on theoretical, clinical, technical, and pragmatic issues of health informatics evaluation. Course will address issues such as design, development, and standards of evaluations. Case study analyses will be used to facilitate active learning. This is a hybrid course; i.e., it has on-line modules as well as face-to-face classes. This course is open to graduate students and has no prerequisites.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HRS 2432 - TELEMEDICINE, TELEREHABILITATION, AND E-HEALTH

Minimum Credits: 3

Maximum Credits: 3

This course is designed to prepare students for a telemedicine project leadership role. This highly interactive course will provide the students with opportunities to discuss and analyze the key issues, principles and approaches, in telemedicine. Students will study how technology, people, economics and policies of telemedicine, telerehabilitation & e-health interact and the impact these have on healthcare systems. This is a hybrid course, i.e., it has Online modules as well as Face-to-Face classes. Case studies, telemedicine lab visits and projects will be used to facilitate active learning. This course is open to graduate students and has no prerequisites.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2433 - CLASSIFICATION SYSTEMS IN HEALTH CARE

Minimum Credits: 3

Maximum Credits: 3

An introduction to the principles of taxonomy, purposes of classifying diseases and operations. An in-depth study of ICD-10-CM, ICD-10-PCS and CPT-4 will be undertaken along with a summary review of ICD-9-CM. The interaction of Diagnosis Related Groups (DRG's) with classification systems will be emphasized. Data quality, the Uniform Hospital Discharge Data Set as well as coding/sequencing guidelines for both inpatient and outpatient coding will be examined. This laboratory will provide students with "hands-on" experience in ICD-10-CM, ICD-10-PCS and ICD-9-CM Coding, proper application of UHDDS guidelines, DRG assignment and CPT-4 coding. Laboratory practice exercises will provide the principal method of instruction with great emphasis on learning ICD-10-PCS. The impact of coding accuracy and its relationship to reimbursement will be stressed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: SBPLAN: Health Information Systems (Health and Rehabilitation Scs-SP)

HRS 2434 - BUSINESS ISSUES AND DATA ANALYTICS IN HEALTH CARE

Minimum Credits: 2

Maximum Credits: 2

This course focuses on analytics and management of business issues within the health care industry. Professional skills, such as negotiations, productivity tracking, and data analysis are explored. Practical application of leadership techniques and analytics is assisted through the use of published case studies, which allow students to thoroughly navigate common business issues and dilemmas in health care management.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: SBPLAN: Health Information Systems (Health and Rehabilitation Scs-MS) or Healthcare Supervision Mgt (Health and Rehabilitation Scs-MS)

HRS 2435 - FINANCIAL MANAGEMENT IN HEALTH CARE

Minimum Credits: 3

Maximum Credits: 3

Introduction to selected finance and accounting topics of health care professional, supervisor and department head. No previous knowledge of accounting or financial management required. First half emphasis on basic financial accounting concepts to provide organization-level understanding language, concepts, processes and functions of financial management. Second half emphasizes managerial accounting principles and techniques including cost accounting and budgeting. Focus shifts to departmental level financial management and role of supervisor process include budget development and control.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2439 - HEALTH INFOR SYSTEMS INTERNSHIP

Minimum Credits: 3

Maximum Credits: 3

Supervised practical experience providing an opportunity for students to learn new skills and to apply previously learned skills and theories in the analysis, design, implementation, and evaluation of health information systems.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2445 - HUMAN RESOURCE MGT/LABOR RELTN

Minimum Credits: 3

Maximum Credits: 3

Course encompasses supervisory management and labor relations concepts, processes, and issues presented within a broad human resource management perspective. Topics include human resource planning, employee recruitment and selection, performance appraisal, compensation management, collective bargaining, contract administration, and the legal/regulatory framework affecting human resource management.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: SBPLAN: Health Information Systems (Health and Rehabilitation Scs-MS) or Healthcare Supervision Mgt (Health and Rehabilitation Scs-MS)

HRS 2454 - LEAN SIX SIGMA AND OTHER IMPROVEMENT METHODOLOGIES IN HEALTH CARE

Minimum Credits: 3

Maximum Credits: 3

This class will explore the concepts of process management and improvement methodologies including Six Sigma, Lean/Toyota production system/operational excellence, theory of constraints, PDCA, Baldrige and others and their application to healthcare management. The student should be prepared for the American Society for Quality (ASQ) lean six sigma green belt at the end of the class. The focus will be on practical applications in addition to the art, theory, principles, statistics and science of these concepts. The foundation of the class will be understanding the key contributions of each of these approaches.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HRS 2456 - REIMBURSEMENT SEMINAR

Minimum Credits: 1

Maximum Credits: 1

An introduction to topics relating to reimbursement in the health care environment. The course will build on topics covered in Classification Systems including the role of coding in reimbursement and minimizing health care fraud. Additional areas include payment methodologies, revenue, and payment cycle management, claims audits, compliance, value-based purchasing and outpatient prospective payment systems. Clinical Documentation Improvement Programs and the increased use of CAC programs will also be explored.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: SBPLAN: Health Information Systems (Health and Rehabilitation Scs-MS)

HRS 2457 - QUALITY MANAGEMENT

Minimum Credits: 2

Maximum Credits: 2

Focuses on principles and approaches to assessment of quality in health care and how this impacts the role of the health information manager. Theoretical and pragmatic issues related to quality management, utilization review, and risk management is addressed. Responsibilities of governing board, medical staff and other health care personnel in relation to quality management and improvement is examined. Requirements of accrediting and licensing agencies related to quality management is presented. This quality management laboratory focuses on the practical applications of managing the quality of health care, resource use, and risk. Students will design, implement, and present a quality management study at designated clinical facilities. Also, several in-class/online assignments will be required

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: SBPLAN: Health Information Systems (Health and Rehabilitation Scs-MS) or Healthcare Supervision Mgt (Health and Rehabilitation Scs-MS)

HRS 2465 - LEADERSHIP SKILL DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

Various areas related to a leader's personal development in the health-care environment will be explored. The course will include didactic and experiential work in the following topics: stress management, self-assessment, caring concepts, mentoring, creative problem solving, and personal styles of learning or teaching, leadership.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2475 - DISABILITY RELATIONS AND SERVICES INTERNSHIP

Minimum Credits: 1

Maximum Credits: 6

Supervised practical experience, usually in a clinical facility or agency, permitting the student to observe and participate in existing specialized programs and to develop, apply, and evaluate new clinical procedures.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2480 - DIMENSIONS OF AGING: CULT & HLTH

Minimum Credits: 2

Maximum Credits: 2

This course provides an overview of the aging experience from a cross-cultural and public health perspective. An understanding of the aging process and the different strategies that people use in the Western and non-Western societies to cope with this universal phenomenon will be the theme of the course. Within this framework, multiple facets of aging including the demographic, biological, environmental and socio-cultural aspects are identified and discussed. This course will provide core knowledge for professionals who will work with/on behalf of the aged.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

Course Attributes: Global Studies

HRS 2482 - LEGAL ASPECTS OF HEALTH CARE

Minimum Credits: 2

Maximum Credits: 2

Discusses principles of hospital law and aspects of handling confidential and health records information. Actual cases and statutes are discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: SBPLAN: Health Information Systems (Health and Rehabilitation Scs-MS) or Healthcare Supervision Mgt (Health and Rehabilitation Scs-MS)

HRS 2490 - ELECTRONIC HEALTH RECORDS

Minimum Credits: 3

Maximum Credits: 3

This course addresses theoretical and pragmatic issues related to EHR technology, such as design and development, standards and clinical

terminologies, privacy and security issues, model EHR systems, evaluation of EHR software systems, and outcomes research using the EHR. The responsibilities of the health information management professional, as well as the requirements of accrediting and licensing agencies related to EHR, will also be discussed. The responsibilities and involvement of various members of the health care team in the development, use, evaluation, and dissemination of EHR technology will be emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: SBPLAN: Health Information Systems (Health and Rehabilitation Scs-MS) or Healthcare Supervision Mgt (Health and Rehabilitation Scs-MS)

HRS 2501 - FUNCTIONAL ASSESSMENT

Minimum Credits: 3

Maximum Credits: 3

Course focuses on functional assessment from the perspective of body structures and functions, activity and participation as defined by the international classification of functioning, disability, and health of the world health organization. Students may focus on infants, children, adults, or older adults.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: SBPLAN: Occupational Therapy (Health and Rehabilitation Scs-MS) or Occupational Therapy (Rehabilitation Science-PHD)

HRS 2502 - HUMAN PERFORMANCE: ANALYSIS

Minimum Credits: 4

Maximum Credits: 4

Course focuses on diagnostic decision-making using neuroscience concepts as an exemplar. Clinical reasoning is emphasized while developing knowledge and skills for the evaluation of individuals with neurological impairments.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: SBPLAN: Occupational Therapy (Health and Rehabilitation Scs-MS) or Occupational Therapy (Rehabilitation Science-PHD)

HRS 2503 - HUMAN PERFORMANCE: ADAPTATION

Minimum Credits: 3

Maximum Credits: 3

Course focuses on locating and synthesizing evidence supporting rehabilitation interventions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: SBPLAN: Occupational Therapy (Health and Rehabilitation Scs-MS) or Occupational Therapy (Rehabilitation Science-PHD)

HRS 2504 - DIRECTED READINGS IN OT

Minimum Credits: 3

Maximum Credits: 3

This course focuses on research design for evidence hierarchies in the context of occupation therapy research.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: SBPLAN: Occupational Therapy (Health and Rehabilitation Scs-MS) or Occupational Therapy (Rehabilitation Science-PHD)

HRS 2510 - FUNDAMENTALS EVIDENCED-BASED OT

Minimum Credits: 3

Maximum Credits: 3

Course focuses on the skills for asking occupational therapy clinical questions, searching for the best evidence to answer questions, and critically appraising the evidence. It emphasizes the research methodologies associated with hierarchies of evidence.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: SBPLAN: Occupational Therapy (Health and Rehabilitation Scs-MS) or Occupational Therapy (Rehabilitation Science-PHD)

HRS 2514 - HUMAN PERFORMANCE: COMPENSATION

Minimum Credits: 3

Maximum Credits: 3

Course examines the interface between functional impairment, activity, and societal participation. Emphasis is on person-task environment analysis and adaptation to compensate for dysfunction during self-care, home management, school/ work, and play/leisure occupations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: SBPLAN: Occupational Therapy (Health and Rehabilitation Scs-MS)

HRS 2525 - SPECIAL TOPICS SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Course focuses on the principles and practices of therapeutic use of self, clinical reasoning, and evidence-based practice as they are applied in diverse practice environments (e.g., Hospital, school systems, community agencies).

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: SBPLAN: Occupational Therapy (Health and Rehabilitation Scs-MS)

HRS 2555 - BIOMECHANICS OF BALANCE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Requirements: PROG: Sch Hlth & Rehabilitation Scs or School of Medicine or Swanson School of Engineering; LEVEL: Graduate

HRS 2579 - OT AND HEALTH POLICY

Minimum Credits: 2

Maximum Credits: 2

Course content focuses on healthcare trends, reimbursement regulations, legislative policies, practice environments, strategies for maintaining continued competence, and emerging professional issues.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: SBPLAN: Occupational Therapy (Health and Rehabilitation Scs-MS)

HRS 2582 - ANAL CLIN DATA/EVDNC FUNCT CHNG

Minimum Credits: 3

Maximum Credits: 3

Course focuses on how to design and carry out single-subject design studies and use quantitative methods of analysis (acceleration line, 2 SD band, c-statistic) to document functional changes in client performance.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: SBPLAN: Occupational Therapy (Health and Rehabilitation Scs-MS) or Occupational Therapy (Rehabilitation Science-PHD)

HRS 2583 - OT MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HRS 2590 - SPECLZD PRECEPTORSHIP: CLINICAL

Minimum Credits: 1

Maximum Credits: 6

Course provides experiential learning in a specialized area of occupational therapy practice (e.g., pediatrics, assistive technology, home healthcare, hand therapy, case management) for the purpose of developing advanced skills related to a specialty practice area.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

HRS 2591 - SPECLZD PRECEPTSHIP: EDUCATION

Minimum Credits: 1

Maximum Credits: 6

Course provides experiential learning in the teaching-learning process applied to entry-level professional education, distance education, client/patient education, consumer education, or knowledge application to clinical settings.

Academic Career: Graduate

Course Component: Credit Laboratory

Grade Component: Grad LG/SU3 Basis

HRS 2592 - SPECIALIZED PRECEPTORSHIP: MANAGEMENT

Minimum Credits: 1

Maximum Credits: 6

This course addresses the role of the occupational therapist as manager of occupational therapy services. The focus is on the principles and practices of administration and supervision as they are applied in diverse practice environments (e.g., hospital, school systems, and community agencies).

Academic Career: Graduate

Course Component: Credit Laboratory

Grade Component: Grad LG/SU3 Basis

HRS 2594 - SPECLZD PRECEPTORSHIP: RESEARCH

Minimum Credits: 1

Maximum Credits: 6

Course provides experiential learning in coordinating occupational therapy research, including obtaining IRB approval, getting informed consent, participating in data collection, and managing data quality.

Academic Career: Graduate

Course Component: Credit Laboratory
Grade Component: Grad LG/SU3 Basis

HRS 2600 - NUTRITION RESEARCH SEMINAR

Minimum Credits: 1

Maximum Credits: 3

An opportunity for students to investigate and formulate potential research topics. Students will be exposed to possible research ideas, discuss technical requirements and identify proper format for presenting research projects, written and verbal.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2621 - ADVANCED SEMINAR IN CLINICAL DIETETICS

Minimum Credits: 3

Maximum Credits: 3

In-depth study of the nutritional management of hospitalized patients. Students will be required to research the appropriate literature, to survey current practices, and to make presentations at a seminar session.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2623 - ADVANCED MEDICAL NUTRITION THERAPY 1

Minimum Credits: 3

Maximum Credits: 3

This is the first of a two-course sequence in advanced medical nutrition therapy. This course will build on the student's knowledge of medical nutrition therapy from her/his undergraduate coursework and will focus on the application of the nutrition care process at the practitioner level. The course will cover pathophysiology and treatment, nutrition implications, nutrition assessment and diagnosis, and nutrition interventions for acute and chronic diseases based on evidence-based research and guidelines. Teaching approaches for the course include lectures, guest speakers, assigned readings, in-class discussions, and problem-based learning through case studies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Coordinated Mster in Dietetics (MS) or Nutrition and Dietetics (MS)

HRS 2624 - ADVANCED MEDICAL NUTRITION THERAPY 2

Minimum Credits: 2

Maximum Credits: 2

This is the second of a two-course sequence in advanced medical nutrition therapy. This course will build on the student's knowledge of medical nutrition therapy from her/his undergraduate coursework and HRS 2623 and will focus on the application of the nutrition care process at the practitioner level. The course will cover pathophysiology and treatment, nutrition implications, nutrition assessment and diagnosis, and nutrition interventions, including nutrition support, for acute and chronic diseases based on evidence-based research and guidelines. Teaching approaches for the course include lectures, guest speakers, assigned readings, in-class discussions, and problem-based learning through case studies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Coordinated Mster in Dietetics (MS)

HRS 2625 - NUTRITION COUNSELING METHODS

Minimum Credits: 3

Maximum Credits: 3

This is an advanced course that emphasizes counseling as a supportive process, characterized by a collaborative counselor-patient relationship that involves behavior and attitudinal change. It will focus on the conceptual foundations and philosophy of behavior change theories, with an emphasis on motivational interviewing, including application in practice to provide the learner with a collection of evidence-based strategies and counseling skills to promote behavior change in patients/clients.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Coordinated Mster in Dietetics (MS) or Health and Rehabilitation Scs (MS) or SBPLAN: Wellness and Human Performance or Clinical Dietetics & Nutrition

HRS 2626 - SPECIAL TOPICS IN EATING BEHAVIOR

Minimum Credits: 3

Maximum Credits: 3

This class will introduce students to a range of eating behaviors, eating disturbances and body weight issues in the general populations. A primary aim of the course is expose students to the many factors that influence eating behaviors including lifestyle, environment, sport, and pathology. A second aim is to enable students to synthesize and evaluate current research on disordered eating in the general population, and in athletes, with the goal of coming to understand the role of the scientific literature in evidence-based practice. A third aim of this course is to empower students to develop, implement and evaluate presentations and programs on special topics related to eating behavior.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2627 - DIET & EXERCISE CHRONIC DISEASE MGT

Minimum Credits: 3

Maximum Credits: 3

Theory and practical application of the use of diet and exercise therapies in the prevention and treatment of chronic diseases including, diabetes mellitus, hypertension, coronary heart disease, obesity, and arthritis/osteoporosis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2628 - NUTRITION AND PERFORMANCE WITH LAB

Minimum Credits: 3

Maximum Credits: 3

A lecture and laboratory class in which the principles of nutrition are applied to sports performance and exercise. Topics presented include energy release and substrate utilization, energy metabolism during exercise, fluid intake and athletic performance, body composition, vitamins and minerals, nutrition for training and competition, sports specific considerations, fitness and nutrition assessment in athletes, and special issues, such as vegetarian diets, and environmental obstacles.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2629 - DIETARY SUPPLEMENTS FOR HEALTH AND PERFORMANCE

Minimum Credits: 3

Maximum Credits: 3

This course will integrate classroom lecture and discussion to help students learn how research evidence supports or negates the use of dietary supplements for health and performance. Emphasis of course will be interpreting research evidence on dietary supplements, ergogenic aids and other

performance enhancing methods, and adapting the evidence into clinical practice recommendations/guidelines.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2631 - NUTRITION FOCUSED PHYSICAL EXAMINATION

Minimum Credits: 3

Maximum Credits: 3

Introduction to professional knowledge and skills in nutrition focused physical examination. The course is based on the knowledge/application of the NCP and Model in professional practice. Learning experiences will include formal class presentations, class discussions, case-based problem solving and simulation laboratory sessions. Knowledge based learning leading to examination technique simulations for anthropometric measurements for body composition, nutrition focused physical examination for malnutrition diagnosing and examination techniques, e.g., vital signs, head and neck exam, intra and extra-oral exams, heart and lung auscultation, as well as, abdominal auscultation and palpation are included. At the completion of the course competency in application of nutrition focused physical examination techniques will be assessed on an individual basis.

Academic Career: Graduate

Course Component: Credit Laboratory

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Coordinated Mster in Dietetics (MS) or Nutrition and Dietetics (MS)

HRS 2632 - PRINCIPLES OF NUTRITION EDUCATION AND COUNSELING

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Coordinated Mster in Dietetics (MS)

HRS 2633 - PROFESSIONAL DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

This course provides students with opportunities to explore through study, discussion and practical application, the issues and trends that are affecting food and nutrition professionals and the profession of dietetics. Included is an introduction to the history and structure of the profession of dietetics and to existing and emerging roles.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Coordinated Mster in Dietetics (MS)

HRS 2634 - FOOD SERVICE MANAGEMENT WITH LAB

Minimum Credits: 3

Maximum Credits: 3

This course presents the basic principles and skills of food service management and leadership. Learning experiences include lectures, discussions, and required field trips. Please note, no other courses can be scheduled during the break between the morning and afternoon class sessions as this time will be needed for travel to field trips sites.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Coordinated Mster in Dietetics (MS)

HRS 2635 - PROFESSIONAL DEVELOPMENT

Minimum Credits: 2

Maximum Credits: 2

This course provides students with opportunities to explore through study, discussion and practical application, the issues and trends that are affecting food and nutrition professionals and the profession of dietetics. Included is an introduction to the history and structure of the profession of dietetics and to existing and emerging roles.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HRS 2637 - PRACTICAL APPLICATIONS OF MEDICAL NUTRITION THERAPY 1

Minimum Credits: 1

Maximum Credits: 2

This weekly conference is designed to prepare students for their planned, supervised practice experiences to be completed at the assigned clinical facility. Teaching approaches for the course include lectures/presentations, group discussions, student presentations, guest lectures, and problem-based learning through case studies. Class exercises are designed to simulate supervised practice assignments and provide opportunity for the student to apply didactic content to the practice of food service management and the nutrition care process used in patient care. Class participation is an important component of the course. Group discussions are used to report on events and share experiences in order to broaden the class's perspective on dietetics practice in the acute care setting.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Letter Grade

Course Requirements: PLAN: Coordinated Mster in Dietetics (MS)

HRS 2638 - PRACTICAL APPLICATIONS OF MNT 2

Minimum Credits: 1

Maximum Credits: 1

This weekly conference is designed to prepare students for their planned, supervised practice experiences to be completed at the assigned clinical facility. Teaching approaches for the course include lectures/presentations, group discussions, student presentations, peer review exercises, and problem-based learning through case studies. Class exercises are designed to simulate supervised practice assignments and provide opportunity for the student to apply didactic content to the nutrition care process used in patient care. Class participation is an important component of the course. Group discussions are used to report on events and share experiences in order to broaden the class's perspective on dietetics practice in the acute care setting.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Coordinated Mster in Dietetics (MS)

HRS 2639 - PEDIATRIC AND CHILDHOOD NUTRITION

Minimum Credits: 3

Maximum Credits: 6

This course provides students with an evidence-based understanding of the anatomical, physiological, and biochemical changes that occur during pregnancy, human lactation, and development from infancy to adolescence. Students will learn about nutritional and lifestyle factors associated with fertility, pregnancy outcomes, and other high-risk groups in the pediatric population. Students will obtain advanced knowledge on the medical nutrition therapy for management of diseases specific to these life-stages. Teaching approaches for the course include lectures, guest speakers, assigned readings, in-class activities and discussions, and site visits.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad HSU Basis

HRS 2640 - SUPERVISED PRACTICE : COMMUNITY NUTRITION

Minimum Credits: 2

Maximum Credits: 2

This course is a combination of dietetics related classroom, observation and supervised practice experiences in community settings. Emphasis is on delivering food and nutrition services in community based settings with a focus on wellness. Core rotations are in the following areas: child and adult day care, WIC and breastfeeding support, congregate and home delivered meals (Meals-On-Wheels), schools, the Western Pennsylvania School for Blind Children, food banks and pantries and community-based wellness programs. Students are required to complete the core rotations and to meet course requirements through special projects in sites of their choice across the lifecycle. Course minimum: 120 hours.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Coordinated Mster in Dietetics (MS)

HRS 2641 - SUPERVISED PRACTICE: FOOD SERVICE MANAGEMENT

Minimum Credits: 2

Maximum Credits: 2

This course will provide supervised practice experience in the area of food service management. The purpose of the learning activities and assignments is to provide the student with the opportunity to apply knowledge and skill in food service management in a health care setting. The student will observe and then model the functions of a food service manager. Through the combination of planned learning activities and professional interaction, the students will demonstrate increasing level of proficiency in food service management by completing a Food Service Management Staff Relief. management of food service to hospitalized patients. The student will function as a Food Service Supervisor at the site and will independently conduct all phases of the job role for the last three days of the rotation. The student will attend and participate in any food service management meetings or hospital management meetings attended by food service managers.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Coordinated Mster in Dietetics (MS)

HRS 2642 - SUPERVISED PRACTICE: CLINICAL 1

Minimum Credits: 5

Maximum Credits: 5

This course will provide supervised practice experience in the area of clinical dietetics. This course is designed to follow the topic sequence and content of HRS 2623: Advanced Medical Nutrition Therapy 1. It provides the students with the opportunity to apply their knowledge of the nutrition care process and medical nutrition therapy (MNT) to the practice of dietetics in the acute care setting. This involves planned learning experiences with a variety of patients at various stages of the health/illness continuum. Students will have opportunity to observe and then model the functions of a clinical dietitian. Through the combination of planned learning activities and professional interaction, the students will demonstrate increasing level of proficiency in providing comprehensive nutritional care to individuals within the practice setting. This course is the first of two courses which will provide clinical dietetics supervised practice experience. In this course the initial skills required for the nutrition care process will be mastered: nutrition assessment, diet interviewing, developing a care plan, written documentation, and nutrition education/counseling. Supervised practice experience caring for patients with the following disease states will be provided: feeding difficulties, energy imbalances, cardiovascular diseases, diabetes mellitus, and renal disease. During this course the student will begin to develop and construct their Quality Improvement (QI) Research project. This project will give each student the opportunity to work independently on a QI project at the primary clinical site. The project should focus on an area that is relevant to the site's Clinical Nutrition Department and/or the field of clinical dietetics. This is a two term project that will continue into HRS 2643: Supervised Practice: Clinical II.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Coordinated Mster in Dietetics (MS)

HRS 2643 - SUPERVISED PRACTICE: CLINICAL 2

Minimum Credits: 5

Maximum Credits: 5

This course is the second of two courses which will provide supervised practice experience in the area of clinical dietetics. This course is designed to follow the topic sequence and content of HRS 2624: Advanced Medical Nutrition Therapy 2. It provides the students with the opportunity to apply their knowledge of nutrition assessment and medical nutrition therapy to the practice of dietetics in the acute care setting. This involves planned learning experiences with a variety of patients of all ages at various stages of the health/illness continuum. Students will have opportunity to observe and then model the functions of a clinical dietitian. Through the combination of planned learning activities and professional interaction, the students

will demonstrate increasing level of proficiency in providing comprehensive nutritional care to individuals within the practice setting. Students will be assigned to their same primary site as the fall term; however selected rotations outside of the primary site may be necessary to provide appropriate learning activities. This course will build on skills mastered in HRS 2642 and will provide the students supervised practice experiences to develop and master new skills including calculating and assessing enteral and parenteral nutrition regimens. Supervised practice experience caring for patients with the following disease states/conditions will be provided: gastrointestinal, pancreatic, and liver disorders, cancer, critical illness, and patients requiring nutrition support. During this course the student will complete their Quality Improvement (QI) Research project. This project will give each student the opportunity to work independently on a QI project at the primary clinical site. The project should focus on an area that is relevant to the site's Clinical Nutrition Department and/or the field of clinical dietetics. This is a two term project that will build on the project content from HRS 2642.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Coordinated Mster in Dietetics (MS)

HRS 2644 - SUPERVISED PRACTICE: MANAGEMENT OF NUTRITION CARE

Minimum Credits: 2

Maximum Credits: 2

The supervised practice experience activities for HRS 2644: Management of Nutrition Care are planned to provide the student with the opportunity to assume increased responsibility for the management of nutrition care to hospitalized patients. In this course, the student will function as a clinical dietitian at the clinical site and will independently conduct all phases of the nutrition care process. Students will continue in the same primary supervised practice facility where they were assigned for Supervised Practice: Clinical 1 and 2.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Coordinated Mster in Dietetics (MS)

HRS 2645 - SUPERVISED PRACTICE MANAGEMENT IN LONG-TERM CARE

Minimum Credits: 2

Maximum Credits: 2

This course provides supervised practice experience in a long-term care setting. The course will provide supervised practice experience in the areas of food service management and also clinical dietetics to allow the student to carry out the nutrition care process for patients/residents in this population.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Coordinated Mster in Dietetics (MS)

HRS 2646 - INTRODUCTION TO FUNCTIONAL NUTRITION WITH LAB

Minimum Credits: 3

Maximum Credits: 3

This introductory course to functional nutrition is based on a food first approach to promotion of optimal health. Lectures and class activities will explore the scientific basis of medicinal foods and herbs used in cooking. Students will demonstrate practical application by incorporating 'health promoting foods and herbs' into meal planning and preparation with the goal of optimizing health for the prevention and treatment of diet and lifestyle related diseases.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Cord Mster in Nutr and Dietics (CMD-MS) or Wellness and Human Performance (MSNUTR-SP)

HRS 2650 - EXERCISE PHYSIOLOGY

Minimum Credits: 3

Maximum Credits: 3

The purpose of this course is to provide graduate students, within the field of rehabilitation science, the knowledge of theoretical and applied aspects of exercise physiology. An in-depth understanding of how the body responds when exposed to acute and chronic bouts of exercise will be provided through lectures and laboratories. Topics discussed will include physiological responses and adaptations of the cardiovascular, respiratory, metabolic, and neuromuscular systems to exercise; assessing cardiorespiratory fitness, body composition, anaerobic performance and muscular fitness; designing exercise programs for health and wellness and special populations; sport performance; environmental considerations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HRS 2655 - RESEARCH METHODS AND APPLIED STATISTICS

Minimum Credits: 3

Maximum Credits: 3

This introductory course in research methods and applied statistics will address research study design and descriptive and inferential statistics related to the research process. Inferential statistics will include one-sample, two-sample and multi-sample inference. Topics covered will include issues related to measuring variables (reliability/validity), an introduction to epidemiology and measures of association, and interpreting scientific literature. The course will include hands-on practice in running statistical tests previously taught in class. This course provides awareness about research methods and statistical analysis considerations needed by health sciences students. There are no pre-requisites.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HRS 2660 - ADVANCED HUMAN PERFORMANCE AND TESTING

Minimum Credits: 3

Maximum Credits: 3

This course will provide students with advanced knowledge in the field of human performance training and evaluation through classroom lectures and laboratory/field experiences. Topics include developing and testing strength, speed, power, agility, endurance, stability, and flexibility.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HRS 2661 - SPORTS SCIENCE PRACTICUM 1

Minimum Credits: 3

Maximum Credits: 3

This course will provide supervised practical experience in the area of sports science. It provides the students with the opportunity to apply their knowledge of sports science, performance, and testing/monitoring in an athletic setting. This involves planned learning experiences with an athletic team at various stages of the training program and season. Students will have opportunity to observe and then model the functions of a performance specialist. Through the combination of planned learning activities and professional interaction, the students will demonstrate an increasing level of proficiency in providing and evaluating comprehensive training to athletes and teams within the athletic setting. This course is the first of three courses which will provide sports science practical experience. In this course the initial skills required of a sports scientist will be mastered: sport/athlete assessment, performance testing, developing a training plan, athlete monitoring/tracking, and data management. During this course, the student will begin to develop and construct their Capstone project. This project will give each student the opportunity to work independently on a sports science or performance outcome with their practicum site. The project should focus on an area that is relevant to the field of sports science or the site's Sports Science/Performance Department's goals. This is a 3 term project that will continue into HRS 2627: Sports Science Practicum 2 and HRS 2630: Sports Science Practicum 3.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

HRS 2662 - SPORTS SCIENCE PRACTICUM 2

Minimum Credits: 3

Maximum Credits: 3

This course is the second of three courses which will provide supervised practical experience in the area of sports science. It provides the students

with the opportunity to apply their knowledge of sports science, performance, and testing/monitoring in an athletic setting. This involves planned learning experiences with an athletic team at various stages of the training program and season. Students will have opportunity to observe and then model the functions of a performance specialist. Through the combination of planned learning activities and professional interaction, the students will demonstrate increasing level of proficiency in providing and evaluating comprehensive training to athletes and teams within the athletic setting. Students will be assigned to their same primary site as the fall term; however, selected rotations outside of the primary site may be necessary to provide appropriate learning activities. This course will build on skills mastered in HRS 2626 and will provide the students supervised practical experiences to develop and master new skills including calculating and assessing athlete data and training regimens. During this course, the student will continue their Capstone project. This project will give each student the opportunity to work independently on a sports science or performance outcome with their practicum site. The project should focus on an area that is relevant to the field of sports science or the site's Sports Science/Performance Department's goals. This is a three-term project that will build on the project content from HRS 2626.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

HRS 2704 - FUNDMS REHAB ENGR AND TECHN 1

Minimum Credits: 3

Maximum Credits: 3

Introduction to fundamental principles and practices related to multiple areas of assistive technology. The technology area includes: seating and wheelchair mobility, augmentative communication, environmental control, computer access, transportation safety, prosthetics, worksite ergonomic, and man/machine modeling. In addition, common terminology, disability, ethics, and models of service delivery related to assistive technology are discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Prosthetics and Orthotics (MS) or Health and Rehabilitation Scs (MS) or SBPLAN: Rehabilitation Sci & Tech (Health and Rehabilitation Scs-MS)

HRS 2705 - PRACT REHAB ENGR & ASSISTV TECHN

Minimum Credits: 3

Maximum Credits: 3

Develop the clinical skills needed to apply and re solutions to help persons with disabilities achieve their goals in the area of productivity, education, employment, communication, and environmental access. Students will match knowledge of products gained in HRS 2704 to the needs of individuals. Taught using a model for assessing the individual, the context, the technology-user interface and an interdisciplinary team approach. A 3 hour a week commitment to serving learning & a journal is integrated with lectures, guide learning and semester case-based learning project.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2706 - INTRODUCTION TO REHABILITATION ENGINEERING DESIGNS

Minimum Credits: 4

Maximum Credits: 4

Material at introductory graduate level. Fundamentals of biomechanics with specific application to rehabilitation. Basic mechanics (Newton's laws, statics, and dynamics) and vector algebra (forces, moments, and equilibrium) will form the first part of the course. The middle section focuses on kinematics and kinetics applied to biomechanics. The final section examines work/energy methods and stress/strain problems. Sets are assigned regularly and there are lab exercises/demonstrations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2708 - INDIVIDUAL, SOCIAL, AND CULTURAL EXPERIENCE OF DISABILITY

Minimum Credits: 3

Maximum Credits: 3

Course investigates psychological and sociological issues of impairment with regard to viewing disability not as solely located within the individual, but instead as the outcome of interaction between the impaired individual and society. Course focuses on the experience of being disabled, with emphasis on both adjustment to disability and relationship to community. Foundations of stigmatization and discrimination towards people with disabilities and their pervasive ness and effect throughout all domains of life will be examined.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2709 - MANUEL WHEELCHAIR DESIGN

Minimum Credits: 2

Maximum Credits: 2

Covers the basic nomenclature used to describe and order wheelchairs. Wheelchair adjustment, assembly, training and operation will be covered. Students will be introduced to wheelchair standards and government controls. The focus on manual wheelchairs. Various types of manual wheelchairs will be used during the course. Students will participate in lectures and laboratory experiences.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2711 - COMPUTER ACCESS

Minimum Credits: 3

Maximum Credits: 3

This course surveys the hardware and software that can make personal computers accessible to persons with mobility and sensory disabilities. Topics include keyboard modifications, expanded and mini keyboards, key set redefinitions, virtual keyboards, direct selection and scanning strategies, mouse emulation and an intro to the use of augmentative communication aids for computer access. Both Macintosh and intel computers will be addressed. Course time will be equally divided between lecture/theory and hands-on set up of actual computer systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2717 - REHABILITATION TECHNOLOGY SEMINAR

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

HRS 2718 - PROJECT BASED TECHNOLOGY DESIGN

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HRS 2722 - NEUROCOGNITIVE, SPEECH/LANGUAGE, AND SENSORY PROFILES IN AUTISM SPECTRUM DISORDER

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HRS 2724 - ASSISTIVE TECHNOLOGY FUNDING AND POLICY

Minimum Credits: 3
Maximum Credits: 3
Course for students to develop knowledge and skill in the process and strategies to find and acquire assistive technology devices and services for people with disabilities as well as understand the underlying policies that govern funding. Course focus on funding sources, legislative policy, clinical assessment, documentation procedures, use of evidence, strategies for preparing letters of necessity and advocacy efforts.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PREQ: HRS 2704 and 2705: PROG: Sch Hlth & Rehabilitation Scs

HRS 2727 - CAPSTONE FOR PROSTHETICS AND ORTHOTICS

Minimum Credits: 1
Maximum Credits: 2
The capstone for P&O course is completed as part of the research requirement for the MSPO program. This course is taken in two different semesters as students work to formulate ideas and further conceptualize that idea into a cohesive research project under the guidance of faculty. The capstone is then presented to peers and faculty prior to graduation.
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

HRS 2747 - JOB PLACEMENT PRACTICUM

Minimum Credits: 1
Maximum Credits: 6
Practicum involves a minimum of 100 clock hours of supervised rehabilitation counseling vocational interventions, with specific involvement in placement of rehab consumers in employment. Practicum designed to provide specific experience and supervision in job development and placement and work adjustment activities.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis

HRS 2748 - ASSISTIVE TECHNOLOGY PRACTICUM

Minimum Credits: 1
Maximum Credits: 6
Practicum involves a minimum of 100 clock hours of supervised assistive technology experience including assessment, development, training, evaluation and follow-up regarding rehab technology. Practicum designed to provide specific experience and supervision in the provision of assistive technology to rehab consumers.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis

HRS 2771 - FUNCTIONAL ANATOMY AND KINESIOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course is the study of the structure and function of the human body, with special emphasis on the musculoskeletal and peripheral nervous

systems. Cadavers and anatomical models will be utilized. Palpation of anatomical landmarks, actions of individual muscles and muscle groups, and normal joint motions will be studied using the students' own surface anatomy. The concepts of measuring muscle strength and length, measurement of joint range of motion, and identification of postural or structural deviations will be introduced. The roles of muscles and types of muscle contraction during movement and exercise will be discussed. The basics of normal gait will be studied, and some common pathological gaits will be discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Prosthetics and Orthotics (MS)

HRS 2772 - PATHOLOGY IN ORTHOTICS AND PROSTHETICS

Minimum Credits: 2

Maximum Credits: 2

This course is designed to provide a general overview of the pre-disposing factors and direct causes of disease, as well as their effects on the human body. It will also include a systemic approach to the basic disease processes, in terms of etiology, symptomatology, general pathological changes, diagnostic procedures, and types of treatment. Universal precautions to be used in patient care will also be discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Prosthetics and Orthotics (MS)

HRS 2773 - INTRODUCTION TO MATERIALS, EQUIPMENT, AND FABRICATION

Minimum Credits: 2

Maximum Credits: 2

This course will introduce the student to the concepts of general material properties, the common materials used in orthotics and prosthetics, and the specific properties of these materials. The student will be introduced to equipment and fabrication techniques as well as safety precautions for handling and using materials and equipment.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Prosthetics and Orthotics (MS)

HRS 2774 - REHABILITATION BIOMECHANICS FOR THE HEALTH CARE PROFESSIONS

Minimum Credits: 3

Maximum Credits: 3

This course is a basic introduction to biomechanics of human motion for individuals in the health and rehabilitation fields. It is designed for individuals with a non-technical background, but a basic knowledge of mathematics, physics, and kinesiology is expected and will be utilized. Topics covered include statics, dynamics, anthropometry, motion analysis, electromyography, and soft-tissue biomechanics. Applications to rehabilitation will be emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Prosthetics and Orthotics (MS) or Health and Rehabilitation Scs (MS) or SBPLAN: Rehabilitation Sci & Tech (Health and Rehabilitation Scs-MS)

HRS 2775 - INTRODUCTION TO EVIDENCE - BASED PRACTICE IN ORTHOTICS AND PROSTHETICS

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Prosthetics and Orthotics (MS)

HRS 2776 - PROFESSIONAL ISSUES IN PROSTHETICS AND ORTHOTICS

Minimum Credits: 1

Maximum Credits: 1

Issues and organizations relevant to the practice of orthotics and prosthetics will be presented and discussed.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Prosthetics and Orthotics (MS)

HRS 2777 - PRACTICE MANAGEMENT IN PROSTHETICS AND ORTHOTICS

Minimum Credits: 2

Maximum Credits: 2

This course will provide knowledge of all the facets of running or managing the business end of an orthotics and prosthetics department or company.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Prosthetics and Orthotics (MS)

HRS 2778 - RESEARCH SEMINAR IN PROSTHETICS AND ORTHOTICS

Minimum Credits: 1

Maximum Credits: 1

This course includes reading and discussion of research related to the practice of orthotics and prosthetics. Case studies, along with the evidence for the chosen or alternative orthotic or prosthetic treatments, will be presented by students and faculty. Students will formulate a research or scholarly paper topic related to orthotics and prosthetics, identify a mentor, and begin research on the topic.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Prosthetics and Orthotics (MS)

HRS 2779 - PATIENT MANAGEMENT IN ORTHOTICS AND PROSTHETICS

Minimum Credits: 1

Maximum Credits: 1

Study of new concepts, devices, and manufacturing techniques in orthotics and prosthetics.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Prosthetics and Orthotics (MS)

HRS 2781 - UPPER EXTREMITY ORTHOTICS

Minimum Credits: 3

Maximum Credits: 3

Review of conditions and symptoms indicating treatment with upper extremity orthotics. Review of evidence for effectiveness of treatment. Patient evaluation for prescription and design of upper extremity orthoses. Fabrication of upper extremity orthoses, including techniques for taking measurements and impressions. Fitting, evaluation of effectiveness, and modification of upper extremity orthoses.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Prosthetics and Orthotics (MS)

HRS 2783 - SPINAL ORTHOTICS

Minimum Credits: 3

Maximum Credits: 3

Topics to be covered include: conditions and symptoms indicating treatment with spinal orthotics; evidence for effectiveness of treatment; patient evaluation for prescription and design of spinal orthoses; fabrication of spinal orthoses, including techniques for taking measurements and impressions; fitting, evaluation of effectiveness, and modification of spinal orthoses.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Sch Hlth & Rehabilitation Scs

HRS 2785 - LOWER EXTREMITY ORTHOTICS 1

Minimum Credits: 5

Maximum Credits: 5

Review of conditions and symptoms indicating treatment with lower extremity orthotics. Review of evidence for effectiveness of treatment. Patient evaluation for prescription and design of lower extremity orthoses. Fabrication of lower extremity orthoses, including techniques for taking measurements and impressions. Fitting, evaluation of effectiveness, and modification of lower extremity orthoses.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Prosthetics and Orthotics (MS)

HRS 2786 - LOWER EXTREMITY ORTHOTICS 2

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HRS 2828 - STUDY ABROAD PROGRAM IN PROSTHETICS AND ORTHOTICS

Minimum Credits: 1

Maximum Credits: 1

The objectives of the course are to let the students to observe and practice prosthetics and orthotics techniques of fabrication and clinical assessment in the treatment of patients with limited sources in Ecuador. Review of conditions and symptoms indicating treatment with lower extremity prosthetics below and above the knee as well as upper extremity prosthetics below and above the elbow, lower extremity orthotics for the foot, ankle, knee and hip as well as spinal orthoses. Review of evidence for effectiveness of treatment. Patient evaluation for prescription and design of spinal orthoses, upper and lower extremity prostheses and orthoses. Impressions, measurements and fabrication of the prosthetic and orthotic devices. Fitting, delivery and evaluation of effectiveness. A local prosthetics and orthotics company in that country will provide the logistic support of equipment and tools during the program. This experience will reinforce the concepts and knowledge acquired during the past terms in prosthetics and orthotics, and also prepares those who decide to take advantage of this opportunity with better tools of experience before their residence.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

HRS 2866 - PSYCHOLOGY OF SPORT

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2867 - PATHOKIN ORTHOPADC/ATHL INJURIES

Minimum Credits: 3

Maximum Credits: 3

Course will provide a detailed and sequential approach to the assessment and treatment procedures utilized for management of orthopedic related athletic injuries. Course is divided into regional techniques appropriate for management of specific athletic injuries. Course will present techniques which should be utilized to functionally assess the athlete's readiness to return to preinjury activities following rehab of the orthopaedic injury.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: SUBPLAN: Sports Medicine

HRS 2868 - SEMINAR IN SPORTS MEDICINE

Minimum Credits: 3

Maximum Credits: 3

Course designed to address a variety of current issues and technical advancements in sports medicine. Course divided into three units including a medical, legal, and ethical issues in sports medicine unit. The second unit will focus on the unique and newly developed technical advances in the field supported by the current research. Final unit will address the research and clinical application of isokinetic testing devices.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2869 - ANATOMICAL BASIS SPORTS MEDICINE

Minimum Credits: 3

Maximum Credits: 3

Course will include dissection of the human cadaver and will emphasize the musculoskeletal, articular, nervous, and vascular systems. Dissection experiences will be supplemented with classroom lectures. The role of anatomical structures as they relate to athletic injury mechanism, evaluation, and rehabilitation will be emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: SBPLAN: Sports Medicine (Health and Rehabilitation Scs-MS)

HRS 2881 - UPPER EXTREMITY PROSTHETICS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HRS 2883 - TRANS-TIBIAL PROSTHETICS

Minimum Credits: 5

Maximum Credits: 5

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Prosthetics and Orthotics (MS)

HRS 2885 - TRANS-FEMORAL PROSTHETICS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

HRS 2901 - INTRO TO RESEARCH METHODOLOGY

Minimum Credits: 3

Maximum Credits: 3

Designed to introduce research concepts to the HRS student. Content emphasis is placed on the basic concepts and terminology associated with research methodology. Through the readings and discussion it is hoped that the student will develop an idea of the role of research design measurement and statistics in the research process and thus gain the ability to interpret and evaluate published research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2902 - TOPICS IN HEALTH CARE

Minimum Credits: 3

Maximum Credits: 3

The purpose of this course will be to present to all graduate students in SHRS a thorough review of the most current and pertinent issues confronting the health-care industry today. Discussion and assignments will be designed to require students to investigate critical issues which affect health-care delivery, quality of service, cost of health care, manpower utilization, and the effects of various federal and state legislation on health-care delivery.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2903 - ISSUES IN THE HEALTH SYSTEM

Minimum Credits: 2

Maximum Credits: 2

This course will present current and predicted future issues faced by America in the maintenance of the good health of its citizens. Options for resolution of the issues will be identified and pros and cons investigated and discussed both from the standpoint of the lay public and from that of the health professional. The course is required for all advanced degrees, and the enrollment will be composed of students from all professions represented in SHRS.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: School of Health and Rehabilitation Sciences

HRS 2905 - ETHICAL ISSUES IN HEALTH CARE

Minimum Credits: 3

Maximum Credits: 3

This course examines a variety of complex ethical issues which confront health-care practitioners and researchers as they work with clients and colleagues within the health-care system and society. By analyzing actual cases, health-care workers are enabled to make informed choices when faced with these issues.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2906 - HIST MED AND HEALTH CARE

Minimum Credits: 3

Maximum Credits: 3

This course examines the origins and evolution of both traditional medical systems and alternative health-care patterns in West civilization from the earliest society to the present. Particular attention is placed on the impact of religion, warfare, and other societal factors on the development of medicine. Special sessions cover the role of the physician in defining society's treatment of women, minorities, and the mentally retarded.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

Course Attributes: Global Studies

HRS 2907 - CLINICAL INVESTIGATIONS

Minimum Credits: 2

Maximum Credits: 2

This course will focus on all aspects of clinical investigation, including developing and populating a clinical data base for the purposes of quality improvement, clinical description and clinical research. Interviewing skills, diagnosis, management, outcome and keeping up to date will be covered in depth with a particular focus on evidence-based practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: SBPLAN: Musculoskeletal Phys Therapy (Health and Rehabilitation Scs-MS) or Neuromuscular Physical Therapy (Health and Rehabilitation Scs-MS)

HRS 2908 - MUSCULOSKELETAL ASSESSMENT AND INJURY PREVENTION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: SUBPLAN: Sports Medicine

HRS 2910 - STATSTCL APPLCS/HEALTH & REHAB

Minimum Credits: 3

Maximum Credits: 3

Provides an introduction to statistical concepts, methods and applications useful for health care and rehabilitation professionals. Emphasis on application of statistical tools to support clinical and managerial decision making and identifying statistical tests and methods appropriate for the data and research design. Use of a computer-based statistical package will be required.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2915 - TELEMEDICINE, TELEREHABILITATION, AND E-HEALTH

Minimum Credits: 3

Maximum Credits: 3

This course provides a combination of didactic survey and applied skill development/experiential case-based learning. The curriculum includes: history of telemedicine, telehealth and tele rehabilitation; survey of research findings related to tele rehabilitation; guidelines for implementation of rehabilitation services using tele rehabilitation technology; review of policy related to tele rehabilitation; funding and reimbursement issues and strategies; privacy and security of tele rehabilitation; standards for tele rehabilitation; review and experience with tele rehabilitation technologies including but not limited to tele video ((pots, high bandwidth ISDN, IP conferencing) web-based resources (e.g., Email, discussion boards, instant messaging, listserv), data logging and body media, pdas and other devices (e.g., GPS), etc., And a case-based tele rehabilitation trial experience.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 2920 - ADMINISTRATIVE INTERNSHIP

Minimum Credits: 1

Maximum Credits: 6

Supervised practical experience providing an opportunity to learn new skills in administration of a service or facility and permitting the application of previously learned skills and theories.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

HRS 2921 - CLINICAL INTERNSHIP

Minimum Credits: 1

Maximum Credits: 6

Supervised practical experience, usually in a clinical facility or agency, permitting the student to observe and participate in existing specialized programs and to develop, apply, and evaluate new clinical procedures.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

HRS 2922 - TEACHING INTERNSHIP

Minimum Credits: 1

Maximum Credits: 6

Supervised experience in a health-related educational program permitting the student to develop and present instructional materials, to experiment with innovative methods of instruction, and to evaluate the effectiveness of the presentations.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

HRS 2924 - GRADUATE RESEARCH PROPOSAL

Minimum Credits: 1

Maximum Credits: 6

Graduate student writes thesis proposal, receives committee approval and institutional review board (IRB) approval for thesis study.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

HRS 2925 - GRADUATE RESEARCH

Minimum Credits: 1

Maximum Credits: 6

An original in-depth investigative study of a selected area of professional interest. A research report suitable in format and content for publication is required.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

HRS 2926 - SCHOLARLY PAPER

Minimum Credits: 1

Maximum Credits: 6

A research oriented paper based on work the student has done in his or her area of study. Students will be encouraged to submit honors papers for publication or presentation at a national or state professional meeting. The adviser and an appropriate faculty reader will supervise the student's work on the scholarly paper.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad HSU Basis

HRS 2927 - STATISTICAL METHODS FOR HEALTH SCIENCE RESEARCH 1

Minimum Credits: 3

Maximum Credits: 3

Statistical methods for health science research i. This is the first of a two-course series in statistical methods. Topics covered include measurement, frequency distributions, histograms, bar graphs, stem-and-leaf displays, boxplots, scatterplots, measures of central tendency, measures of variability, point estimation, interval estimation, sampling distributions, one and two-sample tests of hypotheses for means and an introduction to non-parametric tests.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: CSD-PHD (Comm Science and Disorders), or REHSCI-PHD (Rehabilitation Science), or AUDIO-AUD (Audiology), or SLPATH-CSD (Speech-Language Pathology), or PT-DP (Physical Therapy), or OT-CSD (Occupational Therapy) or MACAUD-SP (Audiology)

HRS 2928 - STATISTICAL METHODS FOR HEALTH SCIENCE RESEARCH 2

Minimum Credits: 3

Maximum Credits: 3

This is the second of a two-course series in statistical methods. Topics covered include one and two way analysis of variance, multiple comparisons for main effects and interactions, analysis of co-variance, multiple comparisons for adjusted means, correlation, simple linear regression, multiple regression, and meta-analytic methods.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: CSD-PHD (Comm Science and Disorders), or REHSCI-PHD (Rehabilitation Science), or AUDIO-AUD (Audiology), or SLPATH-CSD (Speech-Language Pathology), or PT-DP (Physical Therapy), or OT-CSD (Occupational Therapy) or MACAUD-SP (Audiology)

HRS 2930 - ADVANCED TOPICS IN STATISTICAL METHODS

Minimum Credits: 3

Maximum Credits: 3

Advanced topics in statistical methods. This course focuses on applied longitudinal data analysis. Topics include: the multilevel model for change, with an emphasis on individual change over time; applied data analysis using the multilevel model with random and fixed effects; evaluation of model fit; and the discrete-time hazard model.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: REHSCI-PHD or CSD-PHD

HRS 2999 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 6

Provides students an opportunity to explore in depth an area of particular interest to them. It is the student's responsibility to find a faculty member willing to undertake such a tutorial.

Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SU3 Basis

HRS 3000 - DOCTORAL SEMINAR

Minimum Credits: 1

Maximum Credits: 1

Faculty and students in the rehabilitation doctoral program will participate in this seminar series. Research will be presented and critiqued by faculty and students. Topics related to grantmanship, ethics in research, and issues related to survival in an academic/research environment will be addressed in this seminar series. Doctoral students must present their research for critique by faculty prior to their dissertation defense.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Rehabilitation Science (PhD)

HRS 3001 - DISSERTATION RES PHD DEGREE

Minimum Credits: 1

Maximum Credits: 12

Students will formulate, design, propose, carry out, analyze, interpret, and write up an approved research project, under the direction of a dissertation committee, and in particular the chairperson.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: Rehabilitation Science (PhD)

HRS 3002 - METHODS OF INQUIRY FOR REHABILITATION SCIENCES I

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PLAN: (REHSCI-PHD) or (CSD-PHD) or; SUBPLAN: (PHDHIM-TR) or (PHDOT-TR) or (PHDPT-TR) or (PHDRST-TR) or (PHDSMN-TR)

HRS 3003 - CORE CONCEPTS IN DISABILITY AND REHABILITATION 1

Minimum Credits: 2

Maximum Credits: 2

This course is the first course in a two-course sequence examining core knowledge in disability and rehabilitation sciences. In this first course, we will review models of disability and rehabilitation. We will focus on aspects of concepts of functioning and disability, including body structures, body functions, activities and participation. We will examine how these concepts are applied in ongoing research within field of rehabilitation sciences. Students will learn through faculty presentations (from among the various research programs throughout the school of health and rehabilitation sciences), facilitated discussion, assigned readings, short written papers, short oral presentations, and peer-review of written products.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PLAN: (REHSCI-PHD) or (CSD-PHD) or; SUBPLAN: (PHDHIM-TR) or (PHDOT-TR) or (PHDPT-TR) or (PHDRST-TR) or (PHDSMN-TR)

HRS 3004 - METHODS OF INQUIRY FOR REHABILITATION SCIENTISTS II

Minimum Credits: 1

Maximum Credits: 1

Course focuses on foundational knowledge regarding methods of inquiry for rehabilitation science. The first segment emphasizes outcome measures and the second segment emphasizes prognostic studies.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PREQ: HRS 3002 (MIN GRADE "B"); PLAN: Rehabilitation Science(PHD) or Comm Science and Disorders(PHD); SUB: PHDHIM-TR or PHDOT-TR or PHDOT-TR or PHDPT-TR or PHDRST-TR or PHDSMN-TR

HRS 3005 - CORE CONCEPTS 2

Minimum Credits: 2

Maximum Credits: 2

This course is the second course in a two-course sequence examining core knowledge in disability and rehabilitation sciences. In this second course, we will focus on individual and contextual factors that influence disability and rehabilitation, and implications for research. We will examine how these concepts are applied in ongoing research within field of rehabilitation sciences. We will also synthesize concepts and principles and discuss their application in individual student research programs. Students will learn through faculty presentations (from among the various research programs throughout the school of health and rehabilitation sciences), facilitated discussion, assigned readings, short written papers, short oral presentations, and peer-review of written products.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PREQ: HRS 3003 (MIN GRADE "B"); PLAN: Rehabilitation Science(PHD) or Comm Science and Disorders(PHD); SUB: PHDHIM-TR or PHDOT-TR or PHDOT-TR or PHDPT-TR or PHDRST-TR or PHDSMN-TR

HRS 3140 - INTRODUCTION TO TRANSLATIONAL RESEARCH IN THE HEALTH SCIENCES

Minimum Credits: 2

Maximum Credits: 2

Course will provide students with a comprehensive survey of the processes involved in translating research discoveries into practices that promote health and prevent disease. The specific topics to be covered include five goals: 1) Introduce students to the NIH roadmap and to discuss the conceptual framework for multidisciplinary and interdisciplinary research. 2) Provide perspectives on objectives outlined at the national level in healthy people 2010/2020 and at the global level by organizations such as the world health organization. 3) Provide an understanding of the models of translational research. 4) Introduce students to the methods of clinical and translational research. 5) Interpret and explain the drug and therapeutic development process. Also, topics include the implementation of new therapies as standards of care and the application of innovative preventive services. Various research methodologies, including those encompassed in the drug development process will be discussed. Course will offer lectures via electronic media and will use a collaborative learning approach to classroom activities.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 3702 - SOFT TISSUE BIOMECHANICS

Minimum Credits: 3

Maximum Credits: 3

Soft tissue responses to external mechanical loading are of interest in the prevention and treatment of pressure-related tissue injuries. These injuries include ulcers occurring on the plantar surface of diabetic feet, wounds at the interface between a PROSTheses and a residual limb and pressure ulcers over the bony prominences of immobile individuals with neuromuscular impairments.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 3703 - ARCHITECTURAL ACCESSIBILITY

Minimum Credits: 2

Maximum Credits: 2

Provides a basic working knowledge of architectural design and construction systems, procedures and terminology related to accessibility and universal design. Topics include: understanding architectural drawings, planning phases of the construction process, translating human needs into construction terms, building codes and ADA accessibility standards. Student project will involve measuring for and designing a home or workplace modification. Access to architectural graphic standards by the American institute of architects is recommended.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 3705 - WHEELCHAIR BIOMECHANICS

Minimum Credits: 1

Maximum Credits: 1

Discuss all areas of wheelchair biomechanics including stability of wheelchairs and propulsion biomechanics. Students will use kinetic and kinematic analysis to determine the forces and moments occurring in upper extremity joints during the propulsive stroke. Clinical correlates to the biomechanical studies will be presented.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 3709 - INTRODUCTION TO REHABILITATION ROBOTICS

Minimum Credits: 3

Maximum Credits: 3

This course is designed as an introduction to topics related to rehabilitation robotics. The course will cover areas including intelligent mobility aids, robotic manipulation aids, and therapeutic robots. Clinical applications of these technologies are also discussed. The course will be a mix of lectures and projects where students can engage in hands-on learning skills relevant to the design and evaluation of rehabilitation robotics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 3710 - CLINICAL APPLICATIONS AND SEATING

Minimum Credits: 4

Maximum Credits: 4

Course will cover the clinical aspects of seating and mobility intervention for four diverse populations. First, the special needs of children will be addressed. Include various disability specific goals of intervention. Second are people with acquired spinal cord lesions. Seating and mobility intervention from the time onset - through rehab to independent living. The final two populations are people with musculoskeletal disorders and the elderly.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: HRS 2704 and 2705; PROG: Sch Hlth & Rehabilitation Scs

HRS 3713 - REHABILITATION ENGINEERING DESIGN

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HRS 3895 - RDG NEUROMUSCLR ASPCT SPRT INJRY

Minimum Credits: 3

Maximum Credits: 3

The course contains in depth study, readings, and critical discussion related to the role of the sensorimotor system in providing joint stability and how these sensorimotor mechanism are altered with orthopedic sport injury.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad HSU Basis

HRS 3896 - RESEARCH SEMINAR SPORTS MEDICINE

Minimum Credits: 3

Maximum Credits: 3

Course is designed to introduce student to critical review of research in sports medicine. Students will critique research problems, methodology, analysis and clinical application of published manuscripts. Course will provide student with an opportunity to present and discuss paradigms and specific research proposals that are being developed for completion of thesis and dissertation requirements.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 3897 - LAB TECHNIQUES SPORTS MEDICINE 2

Minimum Credits: 3

Maximum Credits: 3

Advance graduate level course into the mechanical, neuromuscular and anatomical bases of human movement. Course is to expand the prerequisite knowledge in basic biomechanics as applied to sports medicine. Students will learn quantitative techniques in kinematics, inverse dynamics, and energetic of human movement. Students will also expand on their basic knowledge of programming so as to be able to process data in an autonomous manner.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HRS 3898 - LAB TECHNIQUES SPORTS MEDICINE 1

Minimum Credits: 3

Maximum Credits: 3

Course is designed to provide an overview of clinical research paradigms within sports medicine. Student will be introduced to lab testing techniques related to neuromuscular mechanisms associated with sport and orthopedic injuries and develop lab proficiency with components on neuromuscular profiling. Will provide student with acquire data management and analysis techniques and develop research related writing skills necessary to complete thesis and dissertation requirements as well as provide a basis for future scholarly activities.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

HRS 3999 - DOCTORAL INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 6

Provides students an opportunity to explore in depth an area of particular interest to them. It is the student's responsibility to find a faculty member willing to undertake such a tutorial.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis

Health Policy and Management

HPM 2001 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH

Minimum Credits: 3

Maximum Credits: 3

The core course is designed to give students an overview of the disciplines and competencies associated with the field of health policy and health care management. Understanding the role of leadership in a public health environment is a unifying theme in this course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPM 2003 - POLICY AND DECISION MAKING FOR PUBLIC HEALTH EMERGENCIES AND BIOTERRORISM

Minimum Credits: 3

Maximum Credits: 3

This three-credit graduate course focuses on public health emergencies and bioterrorism at the phases of preparedness, mitigation, and response. The course emphasizes not only biological agents but also all hazards with public health consequences. It addresses the interfaces of policies and laws in the context of federalism, which requires interaction among the federal, state, and local levels of government. The course considers the critical role of private-sector health care providers in addition to governmental decision makers. Students explore past emergencies through history and case studies, conduct directed research on a chosen policy issue, and experience decision-making in the context of a simulated emergency by playing a chosen and previously researched official role. Teaching methods include lectures, case studies, policy research and writing, interdisciplinary classroom discussion, and simulated decision-making.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPM 2004 - COMPARATIVE GLOBAL HEALTH SYSTEMS AND POLICY

Minimum Credits: 2

Maximum Credits: 2

This two credit course will focus on an understanding of the structures and processes of the health system and the health policies at its foundation from the perspective of 'true access' as defined by application of the of the eight-factor model of Lovett-Scott and Prather. The complexity of health systems will be manifest by comparative studies of national health systems ranging from low-to high income nations. A secondary emphasis will be placed on a retrospective analysis of the UN Millennium Development Goals and a prospective view of the UN's post-2015 Development Goals as an aspirational framework for advocating community development and sustainability with implications for global health policy.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPM 2005 - CURRENT ISSUES IN HEALTH LAW

Minimum Credits: 1

Maximum Credits: 1

Current Issues in Health Law is an interdisciplinary course for students of public health and law. In this course, students will be introduced to cutting-edge issues in public health law, health law and policy. The course focuses on developments in health care and public health, particularly as they affect medically under-served populations, with implications for lawyers and public health practitioners as policy makers. It will also introduce students to the variety of settings in which lawyers and public health practitioners are involved in law. Classes will be taught by leading experts in the field as well as student led discussions.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

HPM 2010 - ORGANIZATION STUDIES: THEORY AND APPLICATIONS TO HEALTH CARE SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

Focus on the understanding and application of fundamental concepts, principles and models associated with organization theory within healthcare, rehabilitation, and long-term care. Content will encompass the traditional foci of organization theory, e.g. Structure and functions, authority relationships, coordination and control processes, as well as constructs associated with related disciplines of organization behavior e.g motivation theory, leadership, etc. Emphasis on real-world applications. Organization design discussed in contemporary organization structures and processes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPM 2012 - FINANCIAL MANAGEMENT FOUNDATIONS HEALTH CARE AND PUBLIC HEALTH

Minimum Credits: 3

Maximum Credits: 3

Introduction to selected finance and accounting topics of health care professional, supervisor and department head. No previous knowledge of accounting or financial management required. First half emphasis on basic financial accounting concepts to provide organization-level understanding language, concepts, processes and functions of financial management. Second half emphasizes managerial accounting principles and techniques including cost accounting and budgeting. Focus shifts to departmental level financial management and role of supervisor process including budget development and control.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: PPBHL; PLAN: HPM-MHA or HPM-MPH

HPM 2014 - APPLICATIONS AND ISSUES IN FINANCIAL MANAGEMENT OF HEALTH CARE INSTITUTIONS

Minimum Credits: 3

Maximum Credits: 3

This curriculum is designed to expand on the concepts presented in the financial management foundations for health care and public health course (HPM 2012). The focus of the instruction will be less book-learning and, instead, primarily be comprised of real-life, practical situations faced in today's healthcare industry. Teachings will be a mix of guest speakers from the local area's leaders and the instructor's experiences. The first part of the semester will revolve around understanding what's behind the data contained in an organization's financial statements. The course will also cover alternative revenue opportunities, such as philanthropic initiatives and investment earnings. Once these concepts have been presented, the instruction will change its focus to managing within a healthcare organization concentrating on budgeting, determining how/what programs to invest in or implement, and balance sheet management.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPM 2017 - QUANTITATIVE METHODS: DECISION TECHNOLOGIES AND OPERATIONS MANAGEMENT IN HEALTH CARE

Minimum Credits: 3

Maximum Credits: 3

This course gives an introduction to decision technologies and to the art of successfully using them in practice. Part i: focus on methodologies for optimizing and for predicting the consequences of decisions. Health care applications are considered: resource allocation, scheduling, project management. Part ii: focus on operations management issues in health care. Topics include: forecasting, inventory management and quality control.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Health Policy & Management (MHA or MPH or LAW) or Health Services Res and Policy (PHD)

HPM 2020 - PROFESSIONAL DEVELOPMENT SEMINAR 1

Minimum Credits: 1

Maximum Credits: 1

The Professional Development Seminar is designed to optimally prepare students to enter the health industry workforce. The primary goal of the Professional Development Seminar is to help ensure that all students fully leverage the career services provided by the university, are exposed to the broad array of settings and roles within the health industry, and gain exposure to health industry professionals from our key external stakeholder organizations.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

HPM 2021 - PROFESSIONAL DEVELOPMENT SEMINAR 2

Minimum Credits: 1

Maximum Credits: 1

The Professional Development Seminar is designed to optimally prepare students to enter the health industry workforce. The primary goal of the Professional Development Seminar is to help ensure that all students fully leverage the career services provided by the university, are exposed to the broad array of settings and roles within the health industry, and gain exposure to health industry professionals from our key external stakeholder organizations.

Academic Career: Graduate

Course Component: Seminar

Grade Component: H/S/U Basis

HPM 2025 - HPM PRACTICUM

Minimum Credits: 1

Maximum Credits: 3

The student may register for the HPM practicum upon approval of the faculty of the department of health policy and management. The HPM practicum is designed to provide the student already employed in a healthcare organization with exposure to executive management, leadership, and policy-making processes and activities. Typically, the student will complete the practicum at their employing organization.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

HPM 2028 - MICROECONOMICS APPLIED TO HEALTH

Minimum Credits: 3

Maximum Credits: 3

This course is an introduction to microeconomics, the study of resource allocation with particular emphasis on the role of markets. The course focuses on the competitive model. Examples of the use of economic concepts are drawn primarily from the health and medical care delivery systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPM 2029 - HEALTH MANAGEMENT INFORMATION SYSTEMS

Minimum Credits: 2

Maximum Credits: 2

The purpose of this course is to provide future health care managers and policy-makers a conceptual framework for understanding and managing an integrated health management information system (HMIS). Primary attention will be given to the overall architecture of HMIS and issues related to health information management. The course focuses on the health care manager's role in the design, implementation and control of an effective HMIS. Instructional methods include lectures by regular faculty and guest resources, class discussion, case analyses and an applied field site study.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPM 2037 - ESSAY-HA

Minimum Credits: 1

Maximum Credits: 3

The essay is designed to provide the student with an opportunity to integrate the major components of the health administration learning experience. The student is expected to demonstrate analytical ability and technical proficiency in expository writing.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

HPM 2049 - HUMAN RESOURCES MANAGEMENT FOR HEALTH CARE AND PUBLIC HEALTH PROFESSIONALS

Minimum Credits: 2

Maximum Credits: 2

This course encompasses both personnel administration and labor relations concepts, processes and issues presented within a broad human resource management perspective. The emphasis of the course is on behavioral implications of legal-regulatory, economic, cultural, and technical forces affecting the management of people in health care organizations viewed as an open system. Perspectives of organization theory and behavior, personnel and labor law will be applied to the analysis of human resource/labor relations problems and effective management and supervisory practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPM 2050 - HEALTH SYSTEMS ENGINEERING SEMINAR

Minimum Credits: 1

Maximum Credits: 1

The seminar supplements the education provided by health policy and management and industrial engineering departments by creating a forum for exposure and discussion of healthcare systems engineering issues. Students become aware and are exposed to the role of vendors/consultants that bring solutions for healthcare delivery processes. The standards for professional leadership required for health management are reinforced.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

HPM 2055 - MANAGING HEALTH PROGRAMS AND PROJECTS

Minimum Credits: 2

Maximum Credits: 2

The purpose of this course is to prepare students to effectively manage health programs and projects. The course is lecture/discussion based, but with ample analytical and written assignments. Extensive use is made of internet resources. A conceptual model of core (strategizing, designing, and leading) and facilitative (communicating, managing quality, marketing, and decision-making) management activities is used to structure the course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Health Policy & Management (MPH)

HPM 2063 - THE POLITICS OF HEALTH POLICY

Minimum Credits: 2

Maximum Credits: 2

This 2-credit course is designed to provide an understanding of the key political dimensions of the health policy-making process in the united states. The course is designed for students with an interest in health policy, although no previous formal training in policy or politics is required. We will examine the roles of government institutions and political actors both inside and outside government in developing and implementing health policy. Past and present health care policy debates will be used to illustrate the concepts and theories discussed in class. Students will acquire an understanding of the political processes in which health policies are considered, and gain practical experience executing political strategies in the context of health policy campaigns.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

HPM 2064 - HEALTH POLICY ANALYSIS

Minimum Credits: 2
Maximum Credits: 2

The aims of this course are to provide students with 1) an overview of the U.S. Health care delivery system and current policy challenges, and 2) an introduction to policy analysis tools useful for defining policy problems, assessing alternative solutions and examining effects of health policies. The framework used for achieving these aims will be to consider health policy from the perspective of the main stakeholders in the system: patients, providers, health plans, suppliers (e.g. Pharmaceutical and manufacturing industry), and payers. Course materials include a policy analysis text book, peer-reviewed articles, and case studies of contemporary health policy issues.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HPM 2075 - NAVIGATING THE PHYSICIAN-ADMINISTRATOR RELATIONSHIP

Minimum Credits: 2
Maximum Credits: 2

This course is designed to provide the student with an introduction to the role of physician administrators in the emerging healthcare matrix based organizational model. Physicians, by virtue of their training and clinical experience, bring a background and orientation to administrative roles that differs significantly from the traditional orientation of the non-physician administrator. This often results in a clash of cultures which if not properly managed can negatively impact organizational efficiency. It is imperative that non-physician administrators develop the skill sets that will facilitate the merging of the physician's primarily clinical culture with the non-physician administrator's more traditional business and operational culture in support of an organization's overall mission. The course will emphasize the physician administrator's approach to C-Suite management and provide the student with exposure to and practical knowledge of the administrative and operational issues which commonly engage physician administrators. This course should prepare the student to function within a C-Suite environment that is led or populated by physicians in either a combined clinical and administrative or purely administrative role. Additionally, the student will gain exposure to the myriad of regulatory, quality/safety and patient centric issues for which physician administrators commonly assume overall responsibility. Commonly, while these issues are championed by the physician administrator, the day to day responsibility for the design and implementation of focused resolution strategies becomes the responsibility of the non-physician administrator. This mandates the development of the ability to prioritize, for strategic planning purposes, and to have sufficient competency with the identification and analysis of relevant metrics and the ability to utilize this type of data to formulate effective action plans. This course focuses upon this skill set and is structured to afford the student the opportunity to develop project specific strategies based upon operational metrics for clinical initiatives that impact operational efficiency and excellence. The student will also be provided the opportunity to develop resolution strategies based upon operational metrics for clinical initiatives that impact operational efficiency and excellence.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HPM 2081 - PUBLIC HEALTH AGENCY MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3

The course public health agency management focuses on the areas of knowledge and skills necessary to manage public health agencies. The course covers topics such as core functions and public health practice, legal basis for public health, public health interventions, configuring health departments, fundamentals of management theory and application, agency budgeting and public health constituencies. Classes include a lecture and class discussion of a case study or related question. The class ends with a final group report and group presentation of a class project relative to the development of a county health department.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

HPM 2105 - INTRODUCTION TO THE US HEALTHCARE DELIVERY SYSTEM 1

Minimum Credits: 1

Maximum Credits: 1

Introduction to the US Healthcare Delivery System 1 is a required course for first year HPM MHA and MPH students. This course is the first of a two part sequence that will: provide an historic and current overview of basic elements of the US healthcare delivery system, review HPM practical experiences in the context of professional and leadership competencies, and include current perspectives provided by selected guest healthcare executives.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Health Policy and Management (HPM-MHA or HPM-MPH or HPMLAW-MPH) or Healthcare Systems Engineering (HSEPH-ACM)

HPM 2106 - HEALTH SYSTEMS LEADERSHIP AND PROFESSIONAL DEVELOPMENT 2

Minimum Credits: 1

Maximum Credits: 1

This is a required spring course for the first year MHA that covers additional elements of us healthcare system. Review in great depth of the management residency process, expectations and opportunities continues in this course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Health Policy and Management (MHA or MPH) or Law (LAWMPH-JD)

HPM 2108 - LEADERSHIP, PROFESSIONALISM AND CAREER DEVELOPMENT

Minimum Credits: 1

Maximum Credits: 1

This is a required course for MPH and MHA students related to the fundamentals of three areas: leadership, which focuses on teamwork, managing and leading people, and communication best practices. The second, professionalism, focuses primarily on principles of etiquette, professional dress, communication best practices and setting oneself apart in the professional setting. Finally, career development principles are covered and this touches on career paths, decision making for career success, and optimizing various work and professional organization experiences for professional growth. The course is primarily interactive in lectures and also requires the students to keep a journal for self-reflection on the topics. A dinner etiquette consultant joins the class as well as an executive from the field to give their perspectives on the three main principles. Accountability, communication, leadership, self-development, and professionalism are the competencies covered in the course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPM 2115 - HEALTH POLICY AND MANAGEMENT RESIDENCY

Minimum Credits: 1

Maximum Credits: 1

The course is designed to provide the student with an educational experience in the student's field of interest. It is a field experience performed under the supervision of a preceptor (i.e., A respected professional manager in the health field). Potential sites include a broad range of organizations such as hospitals, multi-unit systems, HMO's, consulting firms, insurance organizations, health policy and planning agencies, and health divisions of corporations.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

HPM 2123 - ADVANCED TOPICS IN DECISION AND COST-EFFECTIVE ANALYSIS IN HEALTHCARE

Minimum Credits: 3

Maximum Credits: 3

This is an intermediate/advanced level course on using simulation models in health decision sciences and cost-effectiveness analyses. Simulation models have been used widely in healthcare to address important policy questions, such as cancer screening recommendations and efficient organ

allocations among transplant patients. The emphasis of this course is on applications and methods that are particularly applicable to issues of medical decision making and public health. Students will learn how to choose a model that best fits their applications. They will learn how to construct, parameterize, and analyze complex decision models, including calibration and validation. In addition, the student will be introduced to state-of-the-art methods in uncertainty analysis, value-of-information analysis, and diagnostic test evaluations. Although advanced topics will be discussed, the focus will not be on programming and mathematical notations will be kept to a minimum. Some familiarity with programming and linear algebra are helpful, but not required. Class sessions will be a combination of lecture format, case discussion, and computer labs with expectations of class participation. It is expected that all students will keep up with the required readings and homework assignments.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPM 2130 - HEALTH LAW AND ETHICS

Minimum Credits: 2

Maximum Credits: 2

The purpose of this course is to introduce students to the legal and ethical issues which impact the administration and delivery of health services. This course is designed to provide students with the practical knowledge needed to identify legal issues inherent in health care and public health administration and to understand the legal ramifications of administrative and management decisions. Through lecture and class discussion four main subject areas are presented: an introduction to the legal system, legal issues in managing health care organizations, regulating quality of care and public health legal authority. Specific course topics include: sources of law, the court system and legal procedures, professional and institutional liability, governmental regulatory methods, antitrust law, corporate compliance programs, emergency care, and issues concerning informed consent, credentialing of medical professionals, confidentiality of health information, and termination of care, family planning, and public health law.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPM 2131 - PUBLIC HEALTH LAW AND ETHICS

Minimum Credits: 2

Maximum Credits: 2

The purpose of this course is to introduce students to public health law and policy and the legal environment in which public health is practiced. The course is designed to familiarize students with the process by which laws are created, interpreted and enforced, and to introduce them to the substantive areas of law most relevant to the field of public health. Through lecture, case analysis, class discussion and student presentations, five main content areas will be presented. 1) The legal basis for public health practice; 2) the law and core public health functions; 3) the law and controlling and preventing diseases, injuries, and disabilities; 4) public health emergency law; and 5) the ethical issues impacting public health practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPM 2133 - LAW IN PUBLIC HEALTH PRACTICE

Minimum Credits: 2

Maximum Credits: 2

Local health departments play increasingly pivotal roles in the provision of community public health services; however, they also are experiencing diminished funding and reduced workforces. This course is the first of its kind offered at the University of Pittsburgh: a practice-based, collaborative learning experience for public health and law students. Together, students will develop interventions to address an issue identified by the Allegheny county health department as requiring the expertise of both cohorts.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: Community Element -General Community Impact

HPM 2134 - INTRODUCTION TO HEALTH CARE COMPLIANCE

Minimum Credits: 2

Maximum Credits: 2

This course will provide an overview of the legal landscape regarding health care compliance and demonstrate the importance of compliance for health care organizations. As one of the most highly regulated industries in the United States, health care entities are required to comply with numerous statutes and regulations at the federal and state level, with harsh penalties for non-compliance. Thus, individuals involved in the administration and delivery of health care must be well-versed in these laws and regulations, as well as the strategies health care entities employ to address particular compliance concerns. Specific topics include fraud and abuse; data privacy and security; the elements of effective compliance programs; audits, investigations, and self-disclosures; and significant compliance risk areas for various health care entities.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPM 2135 - HEALTH POLICY

Minimum Credits: 2

Maximum Credits: 2

An introduction to federal and state legislative, administrative, and budget systems as they affect health services. The course focuses on the study of selected health policies, considering them in their historical perspective, present status, and future direction within their social, economic, and political contexts.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPM 2141 - MANAGERIAL EPIDEMIOLOGY

Minimum Credits: 3

Maximum Credits: 3

Epidemiology is concerned with the measurement of the health of populations and understanding the determinants of that health. It is one of the fundamental disciplines of public health, and provides the basis for much of what we know about health and disease. As a required MHA course managerial epidemiology takes a broad view of the definition of, population, and will include the study of multiple populations of interest, such as the population: cared for in the service area of a hospital, covered by a particular insurance carrier, and larger populations such as a state, nation and the world. The course provides students with the knowledge and skills required to analyze, understand and interpret the data produced by health care organizations and identify the managerial implications of the data by summarizing data appropriately, understand the characteristics of mechanisms (methodologies) that created the data, and know when data observed is a common/expected or rare occurrence.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPM 2143 - PUBLIC HEALTH SYSTEMS: LEGAL, ECONOMIC, AND OPERATIONAL FOUNDATIONS

Minimum Credits: 2

Maximum Credits: 2

This is a required course for the mph degree in health policy & management. The U.S. public health system is comprised of both public-sector and private-sector entities whose interdependencies and competing interests must be understood by those responsible for decision making and problem solving. This course orients students to the governmental and organizational systems that support population health in the United States and, for purposes of comparison and global operations, in other countries as well. The course examines critical public health system problems with emphasis on health disparities and vulnerable populations. Students will hear lectures, engage in case study discussions, and conduct problem-based learning.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPM 2145 - MARKETING HEALTH SERVICES STRATEGY AND BUSINESS PLANS

Minimum Credits: 3

Maximum Credits: 3

Analysis of concepts vital to the creation of superior competitive marketing planning strategies for health services providers. Emphasis, using

principles of epidemiology, on effective measurement of need in service area.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPM 2150 - STRATEGIC MANAGEMENT OF HEALTH SERVICE ORGANIZATIONS

Minimum Credits: 3

Maximum Credits: 3

This "capstone" course for the program stresses the application and integration of knowledge and techniques learned in the context of specific functions and disciplines focuses on identifying strategic issues in complex environments, and formulating realistic responses. The emphasis throughout is on understanding how to improve the major patterns of resource allocation within the organization in order to create lasting value.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPM 2205 - INDEPENDENT STUDY-HA

Minimum Credits: 1

Maximum Credits: 3

Students with major interests in specialized areas participate in individual study, research activities, or advanced readings with a specified faculty member.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis

HPM 2207 - QUALITY ASSESSMENT AND PATIENT SAFETY

Minimum Credits: 3

Maximum Credits: 3

Examines the definition of quality in healthcare from the perspectives of providers, health plans and consumers. Healthcare standards of JCAHO, NCQA, and HEDIS are reviewed. The role of clinical pathways, outcome measures, technology and the internet are explored as they impact the quality of healthcare.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPM 2214 - FUNDAMENTALS OF HEALTHCARE GOVERNANCE

Minimum Credits: 2

Maximum Credits: 2

The purpose of this course is to provide students with a sense of the responsibilities of governing boards of voluntary hospitals and to enable them to interrelate with their boards appropriately and constructively. The substance of interrelationships between governing boards and managements is as varied as are the forms of the organizations to which they relate and the personalities of the individuals involved. Subjective perceptions are often more important than formal rules and effective governance is more art than science. The course provides guidelines to this art.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPM 2215 - COMPUTER METHODS IN DECISION AND COST-EFFECTIVENESS ANALYSIS

Minimum Credits: 1

Maximum Credits: 1

This course expands on topics introduced in cost-effectiveness analysis in health care and in clinical decision analysis and provides additional guidelines for using decision sciences in larger, more complex applications. Topics include modeling clinical processes and systems; discrete event simulation; advanced sensitivity analysis and confidence limits; controversies surrounding the use of cost-effectiveness analyses; and multi attribute

utility theory.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HPM 2216 - HEALTH INSURANCE: FINANCING HEALTH CARE

Minimum Credits: 3

Maximum Credits: 3

Course examines the concerns and practices of private health insurance; the relationships and activities established by the insurance contracts among the insurer, insured, and providers; the insuring process of marketing, underwriting and pricing; the interrelationships of private and public insurance programs; and the varied government activities related to insurance. The objective of this course is to increase understanding of the access, funding, and insuring issues surrounding health care and to explore the alternate strategies being pursued in response to environment.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPM 2217 - CLINICAL DECISION ANALYSIS

Minimum Credits: 1

Maximum Credits: 1

This course provides an introduction to the use of decision sciences in health care. In addition to developing a conceptual understanding of medical decision-making, the course will develop technical skills in decision analysis including the creation/evaluation of decision trees, the use of sensitivity analysis, and the incorporation of specific patient preferences through the use of utility analysis. The advantages and disadvantages of formal mathematical models for the analysis of clinical conditions will be presented. Examples from current medical literature will be discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HPM 2218 - INTEGRATED DELIVERY SYSTEMS NETWORK

Minimum Credits: 2

Maximum Credits: 2

Course will explore three aspects of integrated delivery systems: 1) efforts to develop vertically integrated services 2) integration of physician and hospital services, and 3) integration of payer and providers. Students enrolled in the course will complete an in-depth analysis of a successfully operating integrated system.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPM 2220 - COST EFFECTIVENESS ANALYSIS HEALTH CARE

Minimum Credits: 1

Maximum Credits: 1

Provides an introduction to and develops technical skills in the economic evaluation of health care programs. A brief introduction to the economic foundation of cost effectiveness and cost benefit analysis is followed by an examination of the methodologies involved in performing cost effectiveness analyses. Topics include: definitions of cost and benefits, effect of the perspective of the analysis, calculation of cost-effectiveness ratios, performance of sensitivity analysis, discounting of costs and benefits, and discussions of current controversies in conduct of cost-effectiveness analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HPM 2240 - CASE STUDY ANALYSIS AND PRESENTATION IN HEALTHCARE MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

The purpose of this course is to foster crucial skills for healthcare leaders including persuasive public speaking, assessment and analysis skills of case studies, as well as the ability to work in teams to solve problems. This course focuses not only on the ability to increase skill in these areas but also develop professionally by presenting in front of healthcare executives and conveying messages effectively and creating buy-in on their proposed solutions to problems. The course is a prep course for the students to also attend the University of Alabama at Birmingham case competition in the winter, a prestigious competition of most mha programs in the country. The course will include three cases, analyzed and prepared by students broken into teams, where after preparation and analysis will present to executives in the community for scoring and judging. The team will be selected based on student performance from the course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPM 2275 - HPM SPECIAL STUDIES

Minimum Credits: 1

Maximum Credits: 3

Properly qualified students may undertake advanced study under the guidance of an HPM faculty member(s).

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

HPM 2300 - HEALTH LAW FIELD EXPERIENCE

Minimum Credits: 3

Maximum Credits: 3

Required placement in a law firm or in a house counsel office in a health organization or system, a public health agency, or a health policy agency.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

HPM 2700 - SEMINAR IN HEALTH SYSTEMS LEADERSHIP

Minimum Credits: 2

Maximum Credits: 2

This course will consist of a series of case-based examinations of specific managerial and leadership problems and decisions that have faced local health systems leaders in Western Pennsylvania. Health care reimbursement, licensing and accreditation, and measuring health care quality has become both more complicated and more important as pressures to reduce expenses and improve quality increase. Simultaneously, there has been a steady increase in the number of clinicians who have assumed managerial positions, such as medical directors of clinical units, directors of quality measurement and improvement programs, utilization review and many others, as well as the appearance of clinicians in the "c-suite" of many hospitals and health care organizations. Utilizing adjunct faculty who are currently (or very recently have been) executive leaders in health systems, this course will examine a series of collaborations, problems, conflicts and solutions that developed between health system administrators and clinical leadership in health care organizations in the Western pa area. The mechanics of the course will be a series of cases, based on an actual recent issue in health care management in which the senior adjunct faculty member was involved. Students (individually or in groups) will evaluate the case, prepare a response, and make a short presentation of their 'solution' to the problem to the health system executive and clinical leader involved in that case. An interactive discussion will follow. This is a required course for students in the certificate in health systems leadership and management program, and can be used as an elective course by other students with permission of the instructor.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

HPM 2905 - QUASI-EXPERIMENTAL DESIGN FOR HEALTH SERVICES RESEARCH

Minimum Credits: 3

Maximum Credits: 3

The purpose of this course is to provide students with the research design skills drawn from the social science tradition as applied to the delivery of

health services. This course provides a survey of research design, selection and development of research questions, conceptualization, measurement, and data collection/acquisition. The focus is on the application of quasi-experimental and observational approaches to research in applied health care settings.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPM 3000 - DOCTORAL RESEARCH AND PROFESSIONAL DEVELOPMENT SEMINAR PART 1

Minimum Credits: 1.5

Maximum Credits: 1.5

The purpose of this two-term Doctoral seminar is to provide a forum for HPM Doctoral and MS students to (a) gain exposure to current research in the field of health services research and policy and closely related disciplines, (b) develop and enhance professional competencies in preparation for post-graduate job search and career pathing, and (c) critically review and present topical articles in the field to faculty and peers. Doctoral and MS students will be required to enroll for two terms (3 credits) of this seminar, typically during their 1st year in the Program.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

HPM 3001 - DOCTORAL RESEARCH AND PROFESSIONAL DEVELOPMENT SEMINAR PART 2

Minimum Credits: 1.5

Maximum Credits: 1.5

The purpose of this two-term Doctoral seminar is to provide a forum for HPM Doctoral and MS students to (a) gain exposure to current research in the field of health services research and policy and closely related disciplines, (b) develop and enhance professional competencies in preparation for post-graduate job search and career pathing, and (c) critically review and present topical articles in the field to faculty and peers. Doctoral and MS students will be required to enroll for two terms (3 credits) of this seminar, typically during their 1st year in the Program.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

HPM 3010 - SEMINAR ON ORGANIZATIONAL STUDIES: HEALTHCARE ORGANIZATIONS AND ENVIRONMENTS

Minimum Credits: 3

Maximum Credits: 3

This seminar is intended to facilitate the mastery of conceptual approaches to health care organizations. Through a combination of in-class discussions, self-directed research, written analyses, and oral presentations, students will clarify complex issues and evaluate innovative ideas. The course content will include such topics as organizational design, organizational behavior, and organizational environments. The primary approach to analyzing organizational phenomena will be the theoretical basis of causality, and the level(s) of analysis addressed by the theory.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

HPM 3064 - HEALTH POLICY ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

This course is the doctoral version of HPM 2064. Doctoral students have supplemental reading and writing requirements for this course. The aims of this course are to provide students with 1) an overview of the U.S. Health care delivery system and current policy challenges, and 2) an introduction to policy analysis tools useful for defining policy problems, assessing alternative solutions and examining effects of health policies. The framework used for achieving these aims will be to consider health policy from the perspective of the main stakeholders in the system: patients, providers, health plans, suppliers (e.g. Pharmaceutical and manufacturing industry), and payers. Course materials include a policy analysis text book, peer-reviewed articles, and case studies of contemporary health policy issues.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Health Services Res and Policy

HPM 3065 - ADVANCED HEALTH POLICY ANALYSIS: IMPLEMENTATION, EVALUATION, AND TRANSLATION

Minimum Credits: 2

Maximum Credits: 2

This course is designed to build on the principles learned in HPM 3064: health policy analysis. It is an advanced course for doctoral students in health policy and other disciplines with a focus on policy evaluation, translating the results of policy research for policy makers, and challenges to implementing health policies. Students will be expected to examine four current health policy topics in depth by examining the challenges to policy implementation, critiquing large-scale evaluations of health policies, and tracking the influence of research evidence on the policymaking process. The perspectives of policy analysts, practitioners implementing (or responding to) policies, and policy makers will be examined for each of four topics. The course format will include a combination of student-led discussions and formal presentations, lectures by the instructor, and guest lectures.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

HPM 3125 - INTERMEDIATE HEALTH ECONOMICS

Minimum Credits: 3

Maximum Credits: 3

The purpose of this course is to expand on intermediate microeconomic principles and apply these more sophisticated dynamics to the health care market, both domestic and international. Familiarity with introductory economics and calculus is assumed. Course time will be spent on a combination of lectures and discussions of seminal papers to explore theoretical frameworks and their empirical applications.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPM 3135 - HEALTH POLICY

Minimum Credits: 3

Maximum Credits: 3

This course is the doctoral version of HPM 2135. Doctoral students have supplemental reading and writing requirements for this course. The course assists students in developing or enhancing key 'packets' of knowledge, skills, and abilities (which form competencies) sufficient to permit them to better analyze and credibly predict results of the health policymaking process in the United States and to learn more about how to exert influence in the health policymaking process as part of their professional roles.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPM 3501 - SEMINAR IN HEALTH SERVICES RESEARCH METHODS 1

Minimum Credits: 3

Maximum Credits: 3

This is part one of a two-part course for doctoral students enrolled in health services research and policy. Other doctoral students may register with permission of the instructor. The course will cover two related competencies: research design and writing skills. The second part of the course will continue with grant proposal writing skills. The purpose of the course is to cover basic aspects of research design, selection and development of research questions, conceptualization, measurement, and data collection/acquisition. Students will also gain experience conducting literature reviews, critically reviewing manuscripts and grant proposals, and writing research questions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPM 3502 - SEMINAR IN HEALTH SERVICES RESEARCH METHODS 2

Minimum Credits: 3

Maximum Credits: 3

This is part two of a two-part course for doctoral students enrolled in health services research and policy. Other doctoral students may register with permission of the instructor. The course will cover two related competencies: research design and writing skills. The second part of the course will continue with grant proposal writing skills. The purpose of the course is to cover basic aspects of research design, selection and development of research questions, conceptualization, measurement, and data collection/acquisition. Students will also gain experience conducting literature reviews, critically reviewing manuscripts and grant proposals, and writing research questions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HPM 3505 - ADVANCED EMPIRICAL MICROECONOMICS METHODS WITH APPLICATIONS FOR HEALTHCARE RESEARCH

Minimum Credits: 3

Maximum Credits: 3

This course is designed to cover applied econometrics and regression methods at a fairly advanced level. The course reviews the fundamentals of econometrics, summarizes empirical microeconomics methods and discusses the applications for unique issues in healthcare research. This course will provide students with advanced tools necessary to evaluate and conduct empirical research using existing datasets. The focus is on the 'hands-on' use of economic and health data.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: STAT 2131 and STAT 2132 and BIOST 2046

HPM 3508 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1

Maximum Credits: 15

Research credits for qualified doctoral students in the department of health policy & management.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

History

HIST 2000 - PROFESSIONALIZATION SEMINAR

Minimum Credits: 1

Maximum Credits: 1

This one hour one-credit course introduces graduate students to the discipline of history and to Pitt's graduate program in history. In addition, the course will enable students to commence work on their MA essays. Our main goals are to gain a better understanding of: a) the principal intellectual strengths of the history department; b) degree requirements such as the MA thesis and the comprehensive exams; c) various methodological approaches, such as social and gender history; d) fundamental analytical skills, such as how to write a historiographical essay, how to use databases, and how to edit your own work; and e) professional issues, such as participation in conferences and academic associations.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

HIST 2009 - GRADUATE TEACHING PRACTICUM

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2010 - GRADUATE TEACHING SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2011 - PREPARING THE DISSERTATION

Minimum Credits: 3
Maximum Credits: 3
A seminar aimed at helping students conceptualize, research, and write their dissertation overviews.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2012 - GRADUATE WRITING SEMINAR

Minimum Credits: 3
Maximum Credits: 3
This seminar provides graduate students, particularly Master's students, with the opportunity to design, research and write a research paper based on primary sources that will form the basis for the research paper that is required for one's Master's degree. Students will work with the instructor and another faculty member who is a specialist in their area of interest to design the topic and to discuss issues relating to researching the paper. Students are expected to write a proposal explaining the topic and justifying its importance; and to submit periodic drafts.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2015 - HISTORIOGRAPHY

Minimum Credits: 3
Maximum Credits: 3
This seminar studies major trends in modern historiography, from the Annales School to the present.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2020 - DIGITAL/CRITICAL INTERDISCIPLINARY METHODS

Minimum Credits: 3
Maximum Credits: 3
This advanced graduate course unites students from widely varying disciplines to share the work of learning new disciplines. It explores humanities, social and natural sciences. Specific course objectives are: (1) to introduce students to a wide range of disciplines, theories, and methods; (2) to enable individual students to develop substantial strength in a new discipline and method of their choice; (3) to emphasize the historical discipline and the factor of time; and (4) to compare and contrast the various disciplines in topic, framework, data, method, analysis, and philosophy.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2023 - HISTORICAL METHODS AND APPROACHES

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2025 - TEACHING WORLD HISTORY

Minimum Credits: 3
Maximum Credits: 3

This course provides training for teaching world history surveys. Students will engage with the content of an existing world history survey and learn about available resources for the teaching of world history. Simultaneously, an ongoing dialogue between the existing survey, the analysis of the teaching resources, and the student's own ideas will result in the formulation of new world history surveys by each student based on their evolving understanding of the field, strengths, and preferences. History and education students are warmly welcome to join this workshop.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2042 - SOCIOLOGY OF REVOLUTION

Minimum Credits: 3
Maximum Credits: 3

Through readings and discussion of (usually) recent studies, this course will survey a variety of questions concerning the causes, unfolding and consequences of revolution. Some of the topics to be treated: the causes of rural revolts; political crises of old regimes; the rise and significance of revolutionary parties; the institutionalization of new regimes; reigns of terror; the molding of new men and women.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2043 - SOCIAL MOVEMENTS

Minimum Credits: 3
Maximum Credits: 3

Various theories and models to study social movements are examined. Emphasis is placed on structural conditions that contributed to the emergency of the movements. Their development over time and what changes, if any, are brought about to the social system in which the movements occurred.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Global Studies, Latin American Studies, Russian & East European Studies, West European Studies

HIST 2045 - MEMORY POLITICS

Minimum Credits: 3
Maximum Credits: 3

This course introduces students to the study of memory. We will be reading classic works on collective memory, including Maurice Halbwachs, Pierre Nora and Jan Assmann. We will explore how societies remember and how they decide what is included in official history books. Our discussions will focus on how the politics of memory are shaped by actors such as the state, the media, lobbying groups as well as different political agendas. We will read case studies concentrating on Modern Europe with additional readings from classical antiquity, the medieval world, Asia and the Americas for comparative perspectives.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HIST 2102 - EUROPEAN READINGS 1850-PRESENT

Minimum Credits: 3

Maximum Credits: 3

This course provides a forum for the discussion of major trends of European history from the mid-19th century to the present, and their reflection in historiography. While the course content reflects the History Department's current European reading list for the comprehensive Ph.D. examination, thus introducing a thematically and methodologically wide range of historiographical literature, an effort has been made to structure the course along coherent chronological and thematic lines.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

HIST 2130 - GENDER, SEXUALITY, + MASCULINITY IN HISTORICAL PERSPECTIVE

Minimum Credits: 3

Maximum Credits: 3

The seminar will examine Modern European history through the lens of gender, analyzing how gender roles and expectations and the social, economic and political participation of men and women evolved over the course of the 18th to the 20th centuries. We will look at a wide variety of political trends 'nationalism, feminism the welfare state, liberalism, communism and fascism, and at the impact of powerful events such as revolutions and wars on the development of gender roles. The course format is guided discussion of assigned literature. Evaluation based on discussion, presentations and essays.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Russian & East European Studies

HIST 2402 - SOURCES AND METHODS IN EAST ASIA

Minimum Credits: 3

Maximum Credits: 3

This course is designed to train students in research using original source material. It is part of the graduate studies training in Chinese history.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Attributes: Asian Studies

HIST 2440 - ENVIRONMENTAL HISTORY AS WORLD HISTORY: NEW TRENDS

Minimum Credits: 3

Maximum Credits: 3

This reading seminar will provide an introduction to the field of in environmental history in world historical perspective. In order to ground our understanding of environmental history, the course will begin with a review of foundational works written since the birth of the field in the mid-1970s. After establishing this intellectual foundation, we will spend the rest of the semester reading more recently published books and articles that focus on the most important themes within the field of environmental history today. We will consider how these themes have been shaped by, and shape, ongoing discussions of globalization and world historical perspectives. We will consider traditional historical categories such as race, class, and gender, but will also examine more global themes including migration, imperialism and colonialism, the spread of epidemic diseases, and global capitalism, among others.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HIST 2500 - LATIN AMERICAN READING

Minimum Credits: 3

Maximum Credits: 3

Readings in Latin American historiography.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis
Course Attributes: Latin American Studies

HIST 2505 - RACE, GENDER AND VIOLENCE IN LATIN AMERICAN HISTORY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2509 - WOMEN, GENDER AND BLACK INTERNATIONALISM

Minimum Credits: 3
Maximum Credits: 3
This seminar explores the complex dynamics of black internationalism, focusing on the global visions; transnational activities; and transracial political alliances of people of African descent in the United States and in other parts of the globe. Highlighting the writings, speeches, activism, and overseas travel of a diverse group of men and women, this course employs a gender analysis and moves black women from the margins to the center of the black internationalist story. The seminar examines varied expressions of black internationalism in the United States and abroad from the late 19th century to the Civil Rights-Black Power era. It engages two key questions: how was black women's engagement in internationalism similar to and/or different from their male counterparts? And to what extent did black women merge internationalism with issues of women's rights and/or feminist concerns? Course readings will represent a combination of primary and secondary sources that reflect the geographical breadth of the African Diaspora including Africa, the Americas, and Europe.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2510 - BRAZIL

Minimum Credits: 3
Maximum Credits: 3
A reading seminar, covering historical and social scientific literature on Brazil.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2515 - VIOLENCE AND THE POLITICS OF MEMORY IN LATIN AMERICA

Minimum Credits: 3
Maximum Credits: 3
Focusing on a variety of Latin American countries, this graduate seminar will consider a range of readings on dictatorship, democracy, violence, and memory. Topics include the experience of specific sectors of society under authoritarian rule, sources of support for dictatorship, forms of resistance to authoritarianism, memories of terror and resistance, and efforts to forge peace and justice in the aftermath of extreme violence.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2530 - TRANSNATIONAL LABOR AMERICAS

Minimum Credits: 3
Maximum Credits: 3
This seminar explores the transnational history of labor in North America, Latin America, and the Caribbean across the 19th and 20th centuries. How have geopolitical shifts and international capital flows remade local communities and regional economies? How have the actions of workers and potential workers shaped investors' possibilities? What role have ideologies of race and gender played in labor control -or struggle? To what extent have different states been able to impact outcomes within this supranational system? How different is the "globalized" present from this past?
Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad Letter Grade

HIST 2540 - EUROPEAN EMPIRES IN THE WORLD

Minimum Credits: 3

Maximum Credits: 3

This seminar offers a survey of European empires in comparative perspective. The sequence is loosely chronological, beginning with hegemonic powers from the 16th through 18th centuries, then lingering in the long nineteenth century of European global dominance, and ultimately examining how that age of empires shaped our own world. Geographically, it ranges from Britain to Russia to European colonies in India, Africa, and Latin America. Thematically, the seminar singles out, first and foremost, geopolitics, but also engages topics such as political economy, networks and exchange, warfare, and the development of "modern" categories of knowledge. Although rooted in historical methodology, the seminar also considers questions relevant to political science and anthropology.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HIST 2626 - U.S. IN THE WORLD

Minimum Credits: 3

Maximum Credits: 3

The purpose of the course is to look at American foreign policy in the sense of its now-expanded conception (cultural, social, and political). It will examine both governmental and non-governmental influences on the role of the U.S. in the world and also examine how those in the world perceived the U.S. and its efforts. It should prepare students to have a sense of the trajectory of scholarship (Williams to Gaddis to more recent works) while also examining more contemporary discourses on how to assess American interventions.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HIST 2640 - GLOBAL APPROACHES TO THE CONCEPT OF MODERNITY

Minimum Credits: 3

Maximum Credits: 3

When did modernity start? Is our society postmodern? Are some societies more modern than others? Should we altogether jettison the word "modernity"? Modernity is not only a word whose use you may one day be asked to justify, it is also a gateway unto debates about whether humanity has progressed, about Western expansion, and about how to compare global societies. The first part of this class will give you an overview of three key debates surrounding the concept of modernity: 1) whether modernity is primarily related to capitalism, to the nation-state system, or to transformations in forms of subjectivity, 2) how the temporal markers of modernity, early modernity, and postmodernity have been debated, and 3) how people in societies on the receiving end of Western expansion wrote about modernity and about its twin concept, tradition. The second part of this class will look at actual uses of the concept of modernity by inviting half a dozen faculty members to discuss how they use modernity in their own work. Although based in the history department, this seminar seeks to foster an inter-disciplinary conversation among students from a broad array of disciplines.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HIST 2699 - POWER AND INEQUALITY IN AMERICAN HISTORY

Minimum Credits: 3

Maximum Credits: 3

"Power and Inequality in American History" is a readings course that covers the full sweep of American history from early Native America to the near-present. The course will concentrate on four themes within the broader rubric of power and inequality: race, class, gender, and capitalism. We will pay special attention to transnational approaches and to the ever-shifting politics of American historical writing. We will read classic and newer works to demonstrate how historical practice has changed over time. The course will serve as a broad survey for graduate students in any department or discipline who study any period or theme in American history.

Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2704 - APPROACHES TO GLOBAL HISTORY

Minimum Credits: 3

Maximum Credits: 3

World history has a history. While universal history and world history lost ground to national histories in the nineteenth centuries, historians in the past half century are again experimenting with "global", "international", and "transnational" histories. This seminar reads some of the key texts in a long historiography.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Global Studies

HIST 2709 - AGE OF REVOLUTION IN GLOBAL CONTEXT

Minimum Credits: 3

Maximum Credits: 3

The Age of Revolution has long been considered the beginning of western, and therefore of global, political modernity, the period in which liberal democracy declared victory over absolute monarchy, citizens over subjects, and imperial nation-states over composite empires, the bourgeoisie over the nobility, industrialists over landowners, and capitalism over feudalism, and wage-labor over slavery. But the rise of world history has complicated this view, drawing attention to the worldwide dimensions of many of these processes on the one hand, while questioning the utility of potentially Eurocentric frameworks within this broader global context on the other (for example, "democratic," "Atlantic," "bourgeois," or "Industrial" Revolution). This course plans to engage with these debates by probing the conceptual, geographic, and chronological boundaries of this so-called "Age of Revolution." It is designed to appeal to students from across multiple thematic and regional fields, including power and inequality, Atlantic, world, Europe, US, Latin America, and East Asia.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

HIST 2710 - GLOBAL CAPITALISM

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HIST 2711 - TEXTS AND CONTEXTS

Minimum Credits: 3

Maximum Credits: 3

Texts and contexts links aspects of the history of ideas (historical, political, religious, scientific, legal and cultural) to the modes of their transmission (objects, concepts, languages; spoken, manuscript and printed texts). This course relates a wide variety of texts to the cultural as well as historical circumstances of their generation, while also introducing methodological issues of more general importance to history as a discipline.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HIST 2718 - WORLD HISTORY: CORE SEMINAR

Minimum Credits: 3

Maximum Credits: 3

This core seminar inaugurates the Pitt graduate theme in world history. It is an overview of the literature, debates, resources and directions of world-historical studies. It addresses a wide range of time, space, and topics, plus the interactions of world history with other fields of study. Readings

include major recent contributions to the literature, some earlier works, and a world-historical synthesis in preparation by the instructor. The seminar is organized both chronologically and topically, and includes introduction to major research resources in world history, including cross-disciplinary links.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

HIST 2720 - THEORY AND METHOD IN ATLANTIC HISTORY

Minimum Credits: 3

Maximum Credits: 3

An intensive readings course with a dual focus: classics in Early American history, such as Edmunds. Morgan's *American Slavery, American Freedom* and Gary B. Nash's *Urban Crucible*, and newer scholarship that locates Early American history in its Atlantic context, such as Jack P. Greene's *Pursuits of Happiness* and Robin Blackburn's, *The Making of New World Slavery*.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HIST 2721 - ATLANTIC HISTORY TO 1800: READINGS

Minimum Credits: 3

Maximum Credits: 3

This readings seminar will introduce students to work in Atlantic History. The focus will be on popular and laboring classes, gender, race and ethnicity.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: African Studies, Global Studies, West European Studies

HIST 2724 - RETHINKING THE 20TH CENTURY BLACK ATLANTIC: CIRCUITS, SPHERES, SOCIAL MOVEMENTS

Minimum Credits: 3

Maximum Credits: 3

How has the African diaspora shaped the modern world? What role did afro-diasporic intellectuals and social movements play in the post-emancipation Atlantic world? Recent scholarship in multiple disciplines has traced how men and women from the Caribbean, North America, Brazil, West Africa, and beyond remade 20th C. politics and culture on an international as well as national level. Exploring performance, ritual, literature, social movements, and everyday life, we trace evolving ideas of race and nation, ancestry and authenticity, belonging and rights.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Attributes: African Studies

HIST 2729 - SEAS, PEOPLES, AND EMPIRES

Minimum Credits: 3

Maximum Credits: 3

This course focuses on interactions between seas, peoples, and empires in historical and comparative contexts. Using maritime history as its point of departure, the course explores the multiple ways in which contact with the sea shaped the lives of peoples and empires across the world. Beginning with Braudel's pioneering regional study of the Mediterranean and the Mediterranean World, the course moves into the Atlantic, Indian, and Pacific Oceans. In each of these contexts, students will consider how the lives of people across social hierarchies were mediated through the interpenetration of empires and maritime regions. The course also considers the extent to which enclosed maritime worlds make sense historically - as the voluminous literature on specific basins suggest that they do - and if so, what distinguished one such world from that of another? Students will explore these lines of inquiry through readings that concentrate predominantly, though not exclusively, on the early modern and modern periods.

Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HIST 2732 - POWER AND INEQUALITY CORE SEMINAR

Minimum Credits: 3

Maximum Credits: 3

How are systematic patterns of inequality generated and sustained? What roles do cultural beliefs, social practice, political institutions, and macroeconomics play? How do different kinds of inequality, such as those around class, racism, ethnicity, and gender interact? How do differently scaled systems of inequality within the household, community, nation, and international system interrelate? We survey four decades of theoretical debate and empirical findings from history, sociology, anthropology, geography, and other disciplines regarding power and inequality.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

HIST 2733 - ENVIRONMENT & HEALTH HISTORY

Minimum Credits: 3

Maximum Credits: 3

This course explores the interplay between the environment, health, and disease from a global perspective, with an emphasis on the reciprocal relationship between human environmental impacts and natural, biological processes. Important themes include the impacts of local environmental practices on global health, how global processes shape local patterns of disease, and the ways in which humans have responded to environmental and health crises. Readings are interdisciplinary, and draw from diverse fields including disease ecology, environmental studies, and the history of medicine.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

HIST 2734 - MIGRATION, INEQUALITY AND EXCLUSION

Minimum Credits: 3

Maximum Credits: 3

This course will explore select aspects of the vast history of migration. It will take a broad approach to the topic, linking labor migration with expulsion, displacement, and exile; and connecting the process and experience of migration with the making and remaking of communities and cities after migration. Focusing on the nineteenth to the twenty-first centuries, we will consider movements of people from Europe, Asia, and the Middle East to the Americas; from Latin America to the United States; within Europe and within Latin America. Multidisciplinary perspectives will inform our discussions, as will some of the central methodological questions and debates marking historical work today. The course welcomes students from diverse disciplines, programs, and fields.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

HIST 2735 - INTELLECTUAL AND CULTURAL HISTORY

Minimum Credits: 3

Maximum Credits: 3

One of two core courses in the texts & contexts theme offered in history. Students from other units are welcome to take it. We will examine different approaches to intellectual and cultural history & their application to the study of historical cases that fit under the rubric of material culture, cartography, statistical practice, archives and memoirs, national identities & discourse, the evolution of academic disciplines, literature & censorship, etc. Readings & cases will range over different historical periods & spaces. Some sessions will feature invited guests.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HIST 2736 - WORLD HISTORY METHODS SEMINAR: DIGITAL METHODS FOR SPATIAL ANALYSIS OF THE PAST

Minimum Credits: 3

Maximum Credits: 3

Over the past two to three decades, scholars in the humanities and social sciences have increasingly referred to a "spatial turn" of increasing attention to the place of geography and landscape in understanding society and culture. At the same time, historians have taken up the term spatial history to describe the ways in which they articulate geographical perspectives from their particular disciplinary approach. The reach of approachable desktop GIS and database design platforms, accessible satellite imagery, and online spatial visualization has amplified these trends. This seminar is an introduction to exemplary projects, applied methods, and techniques and tools for spatial analysis of the human past. At the same time, it is an effort to bring together several approaches that are not yet frequently joined. For instance, spatial history theory, method and exemplar are not well integrated, and we will approach the field from all three of these perspectives. Moreover, spatial history is seldom practiced at the global scale. World historians have not yet "put the world in world history." This class combines reading in theory and exemplars, interaction with online projects, and hands-on work with digital archives and tools. By the end of the class, students will understand the state of the art and possible future trajectories of spatial history as a field and its relationship with the field of world history. They will also be able to plan a spatial history project at the global scale, articulate its significance and scholarly contribution, and identify the sources, tools and expertise needed to complete it. Student work will include reading responses and archive and website assessments throughout the semester, and will culminate in a large-scale project prospectus.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HIST 2739 - CITY AS TEXT

Minimum Credits: 3

Maximum Credits: 3

The 'City as Text' seminar focuses on analyzing cities as readable realities that can be interpreted, so as to enable students to appreciate the ways in which cities (the built environment) can be understood as physical and symbolic manifestations of those forces (be they ideological, cultural, political, economic, social or technological) that shaped them and were, in turn, shaped by those forces. Following a series of readings on methodological and conceptual issues, the seminar focuses on case studies from various geographical areas and time periods, although the major focus is on 19th and 20th century cities.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HIST 2902 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 12

M.A. candidates wishing to do independent reading with a professor on a subject not dealt with in a seminar may take this course, as May M.A. candidates who wish to do one of their papers independently, rather than in a seminar.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

HIST 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 12

Candidates with M.A. degrees who are preparing for their Ph.D. Comprehensive examination may register for HIST 2990, a course of independent reading and study with one faculty member.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

HIST 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1

Maximum Credits: 12

Ph.D. candidates who have passed their comprehensive examination may register for HIST 3000 with their advisor as they undertake their research for the doctoral thesis.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

HIST 3902 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 12

History 3902 is a special course designed only for one type of student and one type of work. Candidates for the Ph.D. degree who have entered this program with a M.A. from another institution register for HIST 3902 when they undertake individual study with a faculty advisor to complete the research paper required for them.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

History and Phil of Science

HPS 2497 - TEACHING PRACTICUM

Minimum Credits: 1

Maximum Credits: 1

This is a survey course designed specifically for teaching assistants and fellows. The focus will be on practical teaching methods and techniques used in classroom recitations and lectures.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

HPS 2501 - PHILOSOPHY OF SCIENCE CORE SEM

Minimum Credits: 3

Maximum Credits: 3

This seminar is an intensive and advanced introduction to some of the main themes and problems in philosophy of science including the nature of evidence, theory comparison, and the theory-observation distinction, the meaning of theoretical terms, scientific explanation and scientific change.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: History and Philosophy of Science (MA, PHD) or Philosophy (PHD)

HPS 2502 - HISTORY OF SCIENCE 1

Minimum Credits: 3

Maximum Credits: 3

This is the first of two "core" seminars designed to survey the development of scientific thought in Western civilization. In this first seminar, Greek medicine, astronomy, mathematics, biology and physics, its disappearance in the West, its preservation and development in Islam and finally the emergence of modern science in the renaissance, are the main focus.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: History and Philosophy of Science (MA, PHD)

Course Attributes: West European Studies

HPS 2503 - HISTORY OF SCIENCE 2

Minimum Credits: 3

Maximum Credits: 3

This seminar will provide an overview of some of the major developments in the sciences from the second half of the seventeenth century to the first half of the Twentieth Century, considering the physical, chemical, biological, geological and social sciences. It will deal with the work of individuals, of general movements and their institutional and national settings.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: History and Philosophy of Science (MA, PHD)

HPS 2504 - HISTORY OF GENETICS: MENDEL TO METHYLATION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

HPS 2505 - PHILOSOPHICAL FOUNDATIONS OF COGNITIVE SCIENCE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

HPS 2509 - SPECIAL TOPICS IN THE HISTORY OF THE PHILOSOPHY OF SCIENCE`

Minimum Credits: 3

Maximum Credits: 3

This course deals with selected special topics in the history of the philosophy of science. It is an intermediate to advanced graduate seminar, usually taken by students in the doctoral program. The exact contents of the course vary from one occasion to the next.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2515 - PERSPECTIVES IN HISTORY OF SCIENCE

Minimum Credits: 3

Maximum Credits: 3

This seminar investigates perspectives of history of science by drawing on recent literature in the field. The emphasis and selection of topics will vary from year to year according to the instructor's selection.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2519 - CONTROVERSY, CRISIS, AND CONSENSUS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

HPS 2521 - HISTORY OF PARTICLE PHYSICS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2522 - SPEC TOPICS-HISTORY OF SCIENCE

Minimum Credits: 3

Maximum Credits: 3

A variety of archival resources are available for investigating the history of science, and the internet will continue to make more and more of these materials accessible on-line. In this seminar we will be exploring issues such as how to make intelligent use of resources and how to determine which questions they can help to answer. In particular, can such resources give us insight into the creative process often referred to as scientific discovery? We will explore such questions in the context of archival collections, for example those related to Galileo and Darwin.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2527 - ORGANIZATION, LEVELS AND EMERGENCE

Minimum Credits: 3

Maximum Credits: 3

Biology is a science where both reductive and holistic approaches have frequently been championed. In this seminar we will consider reductive vs emergentist strategies and specific debates including gene-centric vs levels-of-selection accounts of evolution by natural selection, molecular vs systems biology. How can we specify different levels in biology? What types of organization support emergent explanation? Requirements include class participation and presentation, plus the option of 4 short papers or a longer, term paper.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

HPS 2530 - READING SEM HIST OF SCIENCE

Minimum Credits: 1

Maximum Credits: 6

This seminar is designed as an intensive reading of one or a small number of texts in the history of science. The text(s) is to be selected by the instructor. Ordinarily this will be a chance to do a directed reading of texts not studied in the department's regular course offerings.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

HPS 2531 - FREUD AND PSYCHOANALYSIS

Minimum Credits: 3

Maximum Credits: 3

An intense reading of the works of Freud and selected secondary works. Emphasis will be on psychoanalytic theory rather than therapy.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2533 - DESCARTES

Minimum Credits: 3

Maximum Credits: 3

An examination of some of the major works of Descartes. Also a look at his precursors, his culture and his influences.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

HPS 2536 - LAWS OF NATURE, MODERN TREATMENT

Minimum Credits: 3

Maximum Credits: 3

An examination of recent accounts of the nature and function of laws of nature.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HPS 2540 - LOCKE AND LEIBNIZ

Minimum Credits: 3

Maximum Credits: 3

John Locke's Essay Concerning Human Understanding is often considered to be one of classics of early modern philosophy. It was first published in 1690, though many of Locke's famous doctrines, like the association of ideas were not developed in the original edition of the Essay but were added to later editions (e.g., the association of ideas comes in the 4th edition of the Essay (1700). The image of Locke grows during the Enlightenment. Yet very quickly, Locke's vision and specific doctrines were disputed. Most notably by G.W. Leibniz in his New Essays Concerning Human Understanding; [Nouveaux essais sur l'entendement humain] (finished in 1704, but suppressed on Locke's death). This is a chapter by chapter rebuttal of Locke's ideas. This seminar will carefully examine these two books, plus a little supplementary material.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

HPS 2541 - HISTORY OF NEUROSCIENCES

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2547 - ARISTOTLE'S PHILOSOPHY OF SCIENCE

Minimum Credits: 3

Maximum Credits: 3

This seminar explores Aristotle's views on the nature of science, such as explanation, causation, demonstration, and necessity. We will study a number of Aristotle's works, including the analytics and physics.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2553 - DARWIN'S ORIGIN

Minimum Credits: 3

Maximum Credits: 3

This seminar involves a study of Darwin's evolutionary theory and examines Darwin's early studies and research to understand that work's theoretical and empirical basis.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2555 - ARISTOTLE'S CONCEPT OF NATURAL SCIENCE

Minimum Credits: 3

Maximum Credits: 3

Among theoretical forms of investigation and knowledge, Aristotle distinguishes mathematics, natural science and first philosophy (metaphysics). This seminar explores Aristotle's understanding of the aims methods and the conceptual and explanatory structure of natural science, and the relationship between it and the other forms of theoretical inquiry.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Medieval & Renaissance Studies, West European Studies

HPS 2562 - PROBABILITY AND STATISTICS

Minimum Credits: 3

Maximum Credits: 3

We shall review the development of the notion that uncertainty and the chaos of chance may be tamed by the application of numbers. We trace its birth in the 17th century as a device for bloodlessly resolving gambling disputes; its growth through statistical theory into one of science's most important analytic tools; and its ascendance in the work of philosophically minded Bayesians as the framework of all belief.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2565 - THE GENE: TRANSFORM/FRAGMENT CONCEPT

Minimum Credits: 3

Maximum Credits: 3

The course covers the period from Gregor Mendel to the molecular gene of the 1990s. We explore its status as a hypothetical construct, and as a spatial concept in terms of its localization in the cell. Discussion of its status as a fundamental unit in biology leads to consideration of its place in the theoretical biology, in speculations about the origin of life, and in debates over the levels at which natural selection acts.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2571 - GOING MOLECULAR

Minimum Credits: 3

Maximum Credits: 3

The course is given to an examination of the impact of molecular biological methods and concepts upon the biomedical sciences. Has molecular biology become just a bag of tricks with which to carry on "business as usual"? Have these sciences, perhaps, changed their outward appearance but not their hearts? Consider the neutral theory, the home box, jumping genes, or prions. We take examples like these and explore the nature of the concepts, the degree of discontinuity in their history, and the dependence of these changes on the molecular approach.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2580 - MODERN COSMOLOGY

Minimum Credits: 3

Maximum Credits: 3

In 1917 Einstein asked his new general theory of relativity how the universe might look on the largest scale. So was born the modern tradition in cosmology--rich in wild speculation, technical physics and controversy. We shall review its history and philosophy.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2590 - EINSTEIN 1905

Minimum Credits: 3

Maximum Credits: 3

1905 was the year for Einstein the patent examiner. In papers in Annalen der Physik, he proposed the special theory of relativity, $E=mc^2$, the molecular account of Brownian motion and that light energy came in quanta. In preparation for the centenary of 1905, we will study these papers which laid the foundations of modern physics.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2607 - NEUROETHICS

Minimum Credits: 3

Maximum Credits: 3

This course is an introduction to ethical, social, and philosophical issues in the neurosciences and brain research.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2622 - RECENT TOPICS IN PHIL OF SCIENCE

Minimum Credits: 3

Maximum Credits: 3

In this seminar we will read and discuss recent works in the philosophy of science. The choice of authors and topics will depend on who is doing the most interesting new work in the field.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2626 - TOPICS IN PHILOSOPHY OF PHYSICS

Minimum Credits: 3

Maximum Credits: 3

The course will examine some of the fascinating problems to which the modern physical theories of quantum mechanics and relativity have given rise. No previous formal training in physics or mathematics will be presupposed.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2627 - PHILOSOPHY OF PHYSICS

Minimum Credits: 3

Maximum Credits: 3

This seminar investigates philosophical issues in the foundations of fundamental theories of physics.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2633 - PHILOSOPHY OF COGNITIVE SCIENCE

Minimum Credits: 3

Maximum Credits: 3

This course will survey the main philosophical questions provoked by cognitive science. Students will acquire a comprehensive grasp of the main issues in this field. We will discuss questions such as: is the mind modular? Is the mind embodied and situated? Do we ascribe mental states by

simulation or by means of a theory? What is consciousness?

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2634 - TOPICS IN PHILOSOPHY OF COGNITIVE SCIENCE

Minimum Credits: 3

Maximum Credits: 3

This class focuses on advanced topics that have been recently debated in the philosophy of cognitive science. Students will acquire an in-depth understanding of these debates.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2635 - CENTRAL PROBLEMS IN SYSTEMS NEUROSCI

Minimum Credits: 3

Maximum Credits: 3

This course will examine the theoretical foundations of systems and behavioral neuroscience, asking what progress has been made towards a general account of neural processing and discussing obstacles to theoretical unification. Example seminar topics are; the neuron doctrine, information theory and the brain, the Bayesian brain, dynamic representation, understanding intrinsic activity.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2646 - TOPICS IN HISTORY AND PHILOSOPHY OF BIOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course aims to examine a variety of philosophical issues that arise in the biological sciences in historical context. Topics that may be covered, depending on which faculty member is teaching it, include: teleological explanation in biology; the nature of selection and/or levels of selection; debates over the gene concept or the species concept; biological individuality; whether there are 'laws of nature' in the biological sciences; mechanistic explanation; biological classification and systematics; biological kinds and natural kinds; integration of development and evolution; etc.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2649 - SCIENCE AND VALUES

Minimum Credits: 3

Maximum Credits: 3

This course will examine values as they appear in scientific reasoning and practice. It will deal with issues such as the distinction between cognitive and social values, and how values enter into the selection of theories and research projects, and their subsequent applications. It will also take up the ethical assumptions and implications of scientific judgments and policy decisions.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2650 - PHILOSOPHY OF PSYCHIATRY

Minimum Credits: 3

Maximum Credits: 3

This course examines conceptual, methodological, and some historical issues in psychiatry. General analyses of psychiatric disorders and classifications, and their reliability and validity, will lead to a consideration of the DSM and ICD. The function of etiological, reductive, and mechanical dimensions (including genetic and neuroimaging research) will be discussed. Historical topics include the contrast between and transition

from psychoanalytical, narrative approaches to the rise of bio-chemical psychiatry. Extended consideration of schizophrenia and depressive disorder will be course themes. The seminar closes with a discussion of legal and ethical issues in psychiatry.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2653 - MODELS AND MODELING IN SCIENCE

Minimum Credits: 3

Maximum Credits: 3

There is increasing interest in representing scientific knowledge by means of models. Some (Suppes, Giere, Vanfraassen) have argued for model theoretic rather than axiomatic formulations in defending a semantic account of theories. For others, models are understood in light of scientific practice, autonomous from theory, or mediating between theory and observation (Morrison, Morgan). This seminar will examine recent philosophical literature (Cartwright and others) on related topics including, the relation of model to theory and to observation, the nature of abstraction, idealization, analogy and isomorphism in modeling, and different types of models including physical and scale models, mathematical models and computer simulations

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2657 - PHILOSOPHY OF BIOLOGY

Minimum Credits: 3

Maximum Credits: 3

This seminar will consider foundational conceptual issues in biology including the nature and structure of biological explanation, the possibility of laws in biology and the relationship of biology to other sciences, natural kinds and the classification of species, teleology and biological function. In addition we will explore cutting edge topics of robustness in complex biological systems and the challenges raised for causal inference, emergence and multi-level organization as well as the relationship between unity of science and pluralism.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2659 - NEUROBIOLOGY, REDUCTION AND EMERGENCE

Minimum Credits: 3

Maximum Credits: 3

This is an introductory level graduate seminar on the relations of the mind and the brain. Recent developments in the neurosciences, in theoretical brain science, and in computer science suggest that powerful new perspectives on understanding the "mind-brain" will be covered.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2660 - CAUSALITY

Minimum Credits: 3

Maximum Credits: 3

Consideration of various theories of causality and how the theories relate to questions of metaphysics, epistemology and explanation.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2663 - PERCEPTION

Minimum Credits: 3

Maximum Credits: 3

An in-depth analysis of contemporary theoretical and experimental issues in perception.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2665 - PHILOSOPHY OF MEDICINE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HPS 2667 - PHILOSOPHY OF QUANTUM MECHANICS

Minimum Credits: 3
Maximum Credits: 3
This seminar provides an introduction to philosophical problems of quantum theory including variously the EPR paper, Bell's inequalities, the measurement problem and quantum logic.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2668 - TOPICS IN PHILOSOPHY OF BIOLOGY

Minimum Credits: 3
Maximum Credits: 3
In this seminar we will read both philosophy and biology concerning issues that have led to the development of a new discipline 'systems biology.' Robustness is a system level property of central significance for systems biology. Robustness can refer to the character of a theory or explanation, the evidence for a theory or explanation or a feature of phenomena themselves. In this course it is the latter 'robustness as a feature of complex phenomena' that we will examine. Kitano (2002, science) suggests that robustness occurs in 'adaptation, which denotes the ability to cope with environmental changes; parameter insensitivity, which indicates a system's relative insensitivity to specific kinetic parameters; and graceful degradation, which reflects the characteristic slow degradation of a system's functions after damage, rather than catastrophic failure.' How does a system maintain robustness, how does robustness evolve? How does robustness analysis affect our understanding of causality in flexible networks, modularity, and feedback control, as well as the empirical access to this form of dynamic stability? We will explore a wide variety of examples from bacterial chemotaxis to brain reorganization. In addition to robustness, biological systems also display multi-level organization, and are subject to multi-level explanations. We will consider alternative views about the relationships among the levels, and how experimental and explanatory strategies manage the multiple levels. For example, we will investigate if system-level properties are emergent and whether causal mechanisms can be multi-level.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2669 - REALISM

Minimum Credits: 3
Maximum Credits: 3
What, if anything, makes scientific claims true or false? Is scientific language about anything? If it is, can we know which scientific claims are true, or can we arrange our beliefs to converge towards the truth? If not, what purpose can the enterprise of science serve? This seminar will examine these and related questions.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

HPS 2673 - STUDIES IN ARISTOTLE

Minimum Credits: 3

Maximum Credits: 3

Study of selected Aristotelian texts and topics (readings in Greek). Course may be repeated for credit if the material covered is different.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

HPS 2679 - PHILOSOPHY OF MATHEMATICS

Minimum Credits: 3

Maximum Credits: 3

Historical perspectives in philosophy of mathematics, by historical study of philosophical views about mathematics or by philosophical analysis of episodes in the history of mathematics.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2680 - READING SEM IN PHIL OF SCIENCE

Minimum Credits: 1

Maximum Credits: 6

Selected texts in the philosophy of science.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

HPS 2681 - AUTHORITY: POLITICAL & SCIENTIFIC

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2682 - THEORIES OF CONFIRMATION

Minimum Credits: 3

Maximum Credits: 3

Survey of accounts of the confirmation of scientific hypotheses, including both Bayesian and non-Bayesian approaches.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2687 - THE EPISTEMOLOGY OF EXPERIMENTAL PRACTICES

Minimum Credits: 3

Maximum Credits: 3

Observation and experimentation have long been taken as central to the legitimacy of scientific claims. This seminar examines the assumptions and inferences involved in reasoning about experimental results.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2688 - SCIENTIFIC EXPLANATION

Minimum Credits: 3

Maximum Credits: 3

This is a graduate seminar in scientific explanation taken almost exclusively by students in the doctoral programs of philosophy and HPS usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2690 - HISTORY AND PHIL OF PSYCHOLOGY

Minimum Credits: 3

Maximum Credits: 3

Examination of historical and/or philosophical texts dealing with the nature of psychology and its theories, experiments and methodology.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2699 - EXPERIMENT & SCIENTIFIC PRACTICE

Minimum Credits: 3

Maximum Credits: 3

This will be a course on the epistemology of science. An honest way to do epistemology of science is to ask, given a theory and a set of evidence: to what extent does this evidence support this theory? In this course we will not investigate the topography of evidential warrant so directly. We will turn instead to some recent studies of the experimental practices through which particular pieces of evidence emerge as evidence.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2720 - PRAGMATISM

Minimum Credits: 3

Maximum Credits: 3

The course focuses on key pragmatic texts from C.S. Pearce to the present. But it will also give some consideration to the historical background of pragmatism and to later critical responses and reactions. Emphasis will be upon those pragmatic teachings ' especially in semantics, epistemology and philosophy of science ' that bear on currently controverted issues.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HPS 2902 - PRE MA DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

This course provides credit for supervised research on an approved master's thesis topic.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

HPS 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 9

This is an opportunity for a student and instructor to determine a topic in history and/or philosophy of science which is of special interest. Reading assignments are established by individual instructors.

Academic Career: Graduate

Course Component: Independent Study
Grade Component: Grad SN Basis

HPS 2999 - PROSPECTUS RESEARCH

Minimum Credits: 1

Maximum Credits: 6

This course is intended for students who are preparing for their prospectus meeting.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

HPS 3000 - DISSERTATION RESEARCH

Minimum Credits: 1

Maximum Credits: 12

Students work on a dissertation topic guided by dissertation director.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

HPS 3902 - ADVANCED DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 12

Topics to be selected by students in consultation with faculty advisors.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

History of Art & Architecture

HAA 2000 - RESEARCH AND THESIS MA DEGREE

Minimum Credits: 1

Maximum Credits: 6

Independent research for m. A. Paper.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: History of Art & Architecture (MA, PHD)

HAA 2001 - SPECIAL TOPICS: ART HISTORY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2005 - METHODS RESEARCH AND SCHOLARSHIP

Minimum Credits: 3

Maximum Credits: 3

This is the introductory seminar for entering graduate students in the history of art and architecture. As such it has two goals; 1) to explore, through use, the bibliography of reference works central to the history of art; 2) to consider the intellectual history of the discipline, with the various approaches to the work of art revealed in art historical literature.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

HAA 2007 - HISTORIOGRAPHY

Minimum Credits: 3

Maximum Credits: 3

This class examines the history of analytic approaches to art objects, doing so with an eye to the department's array of research constellations.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

HAA 2008 - CONSTELLATIONS OF ART HISTORY

Minimum Credits: 3

Maximum Credits: 3

This is a graduate reading course tied to HAA's constellations. Readings will address one of the constellations from multiple perspectives. In lieu of a research paper there will be a series of shorter response papers that vary in format and goals, from brief "blog" entries on a particular reading to longer essays that compare several readings to exploratory papers that apply readings to the interpretation of specific works of art.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HAA 2009 - PROSEMINAR FOR GRADUATE STUDIES IN ART HISTORY

Minimum Credits: 3

Maximum Credits: 3

This course aims to familiarize students with the professional landscape they will confront as art historians, and to give them the tools they need to succeed as they do so. Topics covered will concern such subjects as writing grant applications, turning seminar papers into publishable essays, composing successful research statements, working in the digital humanities, and exploring the range of professional outcomes and career paths available to students in the 21st century.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

HAA 2010 - APPROACHES TO ART HISTORY

Minimum Credits: 3

Maximum Credits: 3

HAA 2010 is the capstone research seminar required of all HAA majors and is an official w-course. Students in this class will conduct extensive readings on a special topic devised by the course instructor. Each student in the class will be required to produce a substantive research paper under the guidance of the instructor. Students will work to master the skills that are fundamental to the discipline and broader arts related professions: critical thinking, research, and written and oral communication.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HAA 2019 - CURATORIAL DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

This museum studies course draws on the University Art Gallery collection to develop an exhibition that will be realized in the Fall by students in the

Exhibition Presentation Seminar. Within a defined thematic or collection-area focus, students will survey the holdings of the gallery to develop an exhibition concept and conduct in-depth research into a single work of art to contribute to a catalogue for the exhibition. Students will explore the key texts related to the subject of the exhibition and identify potential loans to complement its storyline.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2020 - MUSEUM STUDIES EXHIBITION SEMINAR

Minimum Credits: 4

Maximum Credits: 4

This course teaches museum practice through practical experience with the permanent collection and with special exhibitions. Students will help in all aspects of exhibitions, from writing labels and/or catalogue copy, deciding how to best display the works, participating in the actual installation of exhibitions and planning related events such as tours.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HAA 2021 - INSIDE THE CARNEGIE MUSEUMS OF PITTSBURGH

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2025 - HISTORY AND ETHICS OF COLLECTING

Minimum Credits: 3

Maximum Credits: 3

This course will critically examine the history of public and private collecting practices, the cultural and scholarly rationales behind collecting, and the legal and ethical challenges that collections face. Case studies will include the British museum and the Louvre, Pittsburgh's private collectors Frick and Mellon, the fate of art in Europe during World War II, the antiquities trade, and ethnographic collections. Using these and other examples, we will evaluate the arguments for and against universal art museums, the repatriation of works to source nations or original owners, and the protection of cultural heritage during times of conflict.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2030 - SPECIAL TOPICS: MUSEUM STUDIES

Minimum Credits: 3

Maximum Credits: 3

This course will discuss specific subjects in museum studies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2051 - WORLD ART: CONTACT AND CONFLICT

Minimum Credits: 3

Maximum Credits: 3

This course, an advanced undergraduate seminar, is a counterpart to the introductory core course Introduction to World Art and invites students to think more critically about 'World Art' as a disciplinary enterprise as it emerged in the last several decades with the 'global turn', post-colonialism, and a call for art history to be more inclusive. Students will be introduced to key terms that are employed by this discourse (contact zones, planetarity, world-picturing, cosmopolitanism). The course works through these ideas by focusing its attention on specific sites and art objects, case

studies that explicitly circulate within or take as their subject the meeting point of different cultures and groups. First and foremost, this course regards 'the contact zone' as a messy and complicated place. To inhabit the earth as a human being, people encounter, perceive, collaborate with and often resist others. Through the spaces and material objects humans create, boundaries are established and individuals and communities are defined and circumscribed. Art objects and constructed spaces not only arise from but define the contact point of individuals or groups occupying different worlds. By studying these works as a space of encounter, students will learn that boundaries between people are porous, with cultural contact a zone of potentially productive collaboration but also power inequity and strife. How do works of art and built spaces incite, mediate, or instantiate such strife? How have people traditionally perceived to reside at the periphery employed artistic expression or rhetorical strategies to subvert existing power structures (the center) and formulate identity? Students who have taken the HAA 0010 Introductory version of this course are encouraged to take this more advanced version, but it is not necessary to have had HAA 0010 to enroll in HAA 1050

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2101 - SPECIAL TOPICS: ARCHITECTURE

Minimum Credits: 3

Maximum Credits: 3

Course varies from term to term.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HAA 2102 - SPECIAL TOPICS-ANCIENT

Minimum Credits: 3

Maximum Credits: 3

Special topics in ancient art.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2111 - GREEK ART

Minimum Credits: 3

Maximum Credits: 3

The study of Greek art begins ca. 3000 B.C. In the so-called "age of bronze" and traditionally ends in 30 B.C. With the completion of the roman conquest of the eastern Mediterranean. The course will trace the development of architecture, sculpture and painting in mainland Greece and to a lesser extent in the Greek colonies of Asia minor and Italy, emphasizing the changes in style and taste which took place over this period.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: History of Art & Architecture (MA, PHD)

HAA 2131 - ROMAN ART

Minimum Credits: 3

Maximum Credits: 3

Roman art served as the funnel through which the principles of Greek art passed into European culture, but the principles were transformed in the process of transmission. The course will trace the beginnings and subsequent development of the arts of painting, sculpture, and architecture in Italy from the period of the kings to the middle years of the empire (ca. 150 A.D.).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: History of Art & Architecture (MA, PHD)

HAA 2160 - ROMAN ARCHITECTURE

Minimum Credits: 3

Maximum Credits: 3

The course will examine the development of roman architecture from its origins in Etruria and central Italy to the middle empire (ca. 150 Ad). Special attention will be given to the relationship of architectural forms, types and functions to changes in roman politics and society and the significance of materials and outside influences on the development of local Italian traditions and forms. The interaction between roman architectural forms and local traditions in the provinces to create a roman imperial "koine" will be treated only in passing.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad SN Basis

Course Requirements: PLAN: History of Art & Architecture (MA, PHD)

HAA 2200 - SPECIAL TOPICS-MEDIEVAL

Minimum Credits: 3

Maximum Credits: 3

Special topics in medieval art.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

HAA 2231 - EARLY MEDIEVAL ART

Minimum Credits: 3

Maximum Credits: 3

This course examines the art of the early middle ages, paying particular attention to the slow disintegration of the roman empire, the rapid rise of Christianity, and the evolving identity of Europe and the Mediterranean in a period of migration, crisis, and transformation. Special attention will be paid to the roles played by emperors and kings in this period, including Constantine, Justinian, Clovis and Charlemagne, and the peculiar blend of Pagan and Christian cultures that defined early medieval art.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2232 - PAGANS AND CHRISTIANS: THE EARLY MIDDLE AGES

Minimum Credits: 3

Maximum Credits: 3

This course examines the art of the early middle ages, paying particular attention to the slow disintegration of the roman empire, the rapid rise of Christianity, and the evolving identity of Europe and the Mediterranean in a period of migration, crisis, and transformation. Special attention will be paid to the roles played by emperors and kings in this period, including Constantine, Justinian, Clovis and Charlemagne, and the peculiar blend of pagan and Christian cultures that defined early medieval art.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2240 - ROMANS AFTER ROME

Minimum Credits: 3

Maximum Credits: 3

Romanesque architecture, evolving from the building practices of about A.D. 800 In the Carolingian Empire, marks the coming of age of European culture in the post-Antique era. Most of what survives was ecclesiastical in purpose and consists predominantly of monastery churches and their claustral structures. This course will treat both formal and functional issues in the development of the Romanesque tradition and will emphasize the Mature period, 1050-1140.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2255 - GOTHIC ART

Minimum Credits: 3

Maximum Credits: 3

The survey of the architecture, painting and sculpture of the period circa 1140 to 1500 with an emphasis on French art and its influence in the rest of Europe.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2300 - SPECIAL TOPICS-RENAISSANCE

Minimum Credits: 3

Maximum Credits: 3

Special topics in Renaissance art.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

HAA 2303 - ITALIAN RENAISSANCE PORTRAITURE

Minimum Credits: 3

Maximum Credits: 3

Topics in Italian Renaissance portraiture.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2306 - HIGH RENAISSANCE ARCHITECTURE

Minimum Credits: 3

Maximum Credits: 3

The architecture of the high Renaissance and mannerism (from about 1500 to about 1580 in Rome and other centers of Italy) changed forever the face of architecture. This course focuses on the roman projects of Bramante, Raphael, Michelangelo and Leonardo da Vinci. It then follows the mutation of high Renaissance ideals into mannerism and the spread of both styles in Northern Italy, particularly in town planning and in the villas and churches of Andrea Palladio around Venice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: History of Art & Architecture (MA, PHD)

HAA 2308 - EARLY RENAISSANCE ARCHITECTURE

Minimum Credits: 3

Maximum Credits: 3

The early Renaissance (1420-1500) marked a fundamental change in the way mankind saw and thought about the world. This course examines the buildings, cities, projects, and theories of that period through its major designers. It concentrates on the new acceptance of rationality and modular linkage in building, which prefigures the rationality and scientific method so characteristic of the modern world.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2400 - SPECIAL TOPICS-MODERN ART

Minimum Credits: 3
Maximum Credits: 3
Special topics in modern art.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Attributes: Global Studies

HAA 2401 - SPECIAL TOPICS-CONTEMPORARY

Minimum Credits: 3
Maximum Credits: 3
Special topics in contemporary art.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

HAA 2404 - SPECIAL TOPICS: MODERN-LECTURE

Minimum Credits: 3
Maximum Credits: 3
Special topics in modern art.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

HAA 2407 - ARCHITECTURE AND ENLIGHTENMENT

Minimum Credits: 3
Maximum Credits: 3
This course will examine architecture, city planning, interior design, and gardening in eighteenth-century Europe as the product of social, industrial, administrative, and intellectual transformations that began to radically challenge traditional spatial configurations and conventional approaches to building. In cosmopolitan centers like London and Paris, an unprecedented explosion of print media, rapid rises in literacy, and the development of a public sphere outside official power structures opened debate in the arts to previously marginal figures. A range of new voices thus emerged that impacted policy decisions in the urban realm and proffered advice and guidance in thinking about aesthetics and artistic production. The rise of science held out the possibility that cities and institutions could be reshaped to improve human welfare through better hygiene and the expansion of commerce. Influential new classes defined by wealth or specialized knowledge generated the creation of building types for a range of new activities. Elite domestic space in particular reflects a wholesale transformation of social priorities motivated by the novel concept of privacy. Narrowly defined Renaissance discourses on the arts founded exclusively on the model of ancient Rome collapsed under an avalanche of data gathered in remote sites around the Mediterranean and through contact with more far-flung civilizations around the world. New intellectual paradigms reconfigured the relationship between individual and nature, between modern present and historical past. Consequently, the purpose of architecture mutated in the course of the eighteenth century as a bewildering range of new possibilities for shaping building and reshaping social relations were explored. Well before political revolution rocked European governments and toppled traditional hierarchies, the built environment served as a laboratory for experimentation and as a forum for reimagining society.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

HAA 2411 - MODERNISM

Minimum Credits: 3
Maximum Credits: 3
Something happened in the history of art around the time of Manet which set painting upon a new course. This change has been described as a kind of skepticism or uncertainty about the nature of representation in art, characterized by an attention to the material means by which illusions and likenesses are made. This course will examine several monuments in the history of modernism, in an attempt to define the political ambitions of modernism and to confront the issue of whether modernism has become simply an aesthetic or is still a viable artistic strategy in the "post-modern"

era.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2412 - REALISM AND IMPRESSIONISM

Minimum Credits: 3

Maximum Credits: 3

These movements in 19th century European art were important in the formation of later modern art currents. The course will consider the major developments in Romanticism, then study Courbet, Manet and Degas, and finally move to the major impressionist masters, Monet, Renoir, Sisley, and Pissarro. Much attention will be given to the literary and scientific framework for the art of the period.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2441 - EXPRESSIONISM

Minimum Credits: 3

Maximum Credits: 3

A history of the development of modernist art in Germany from the founding of the "bridge" group in 1905 to the "death" of German expressionism in 1920. Although primarily focused on the art of the "bridge" and "blue rider" groups, the course will also situate this art within the broader context of German art production during these years (academic art, Jugendstil, secession, dada).

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HAA 2451 - ART IN THE WEIMAR REPUBLIC

Minimum Credits: 3

Maximum Credits: 3

The course will examine art and architecture in Germany from the end of World War I to the rise of the national socialist dictatorship in 1933. Emphasis will be on a chronological study of the ways in which art developed in Germany under democratic social concepts and a new internationalist outlook in the early years of the republic, and the ways art became embedded in the political structures.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2455 - ART OF THE THIRD REICH

Minimum Credits: 3

Maximum Credits: 3

This course examines national socialist art and the fate of modernism under Hitler in the years between 1933 and 1945. As we will explore, Hitler's regime enlisted the arts and architecture, through party rallies, art exhibitions, building programs, and film, in enforcing its dictatorial policies on everything from the extermination of the Jews to sexuality and the war effort. We shall also consider the impact of the purge of modern art under Hitler on the work of such noted modernists as Otto Dix and Käte Kollwitz, who chose to remain in Germany, and on the art of those who fled into exile, among them John Heartfield, George Grosz, and Max Beckmann. The final weeks of the course will consider critical issues involved in recent--and invariably controversial--attempts in museum building, sculpture, and site-specific installations to memorialize the holocaust and examine Germany's Nazi past.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2480 - ARCHITECTURE SINCE 1945

Minimum Credits: 3

Maximum Credits: 3

Treats the key developments in architecture throughout the world since World War II, including theory as well as practice. The course will focus on such figures as Frank Lloyd Wright, Mies Van der Rohe, Le Corbusier, James Stirling, Eero Saarinen, Louis Kahn, Kenzo Tange, Robert Venturi, Richard Rogers, and Norman Foster.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2491 - ART SINCE 1945

Minimum Credits: 3

Maximum Credits: 3

This course will present a review of art movements in America and Europe from 1905 - 1945 in the introduction, followed by a more intensive study of post-World War II art movements in Western Europe and America from 1945 to the 1980's. We will give special attention to: a) different styles of art which fit into the label "abstract expressionism" b) different styles under "pop(ular) art" c) conceptual art movements d) issues in critical evaluations of contemporary art.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2510 - PITTSBURGH ARCHITECTURE/URBANISM

Minimum Credits: 3

Maximum Credits: 3

The course studies the physical environment of Pittsburgh; the topography, early settlement, the expansion of its industrial center, the post-war renewal, and the current shift from production to a service-based economy. A parallel study in the architectural history of Pittsburgh focuses on images of individual buildings from Fort Pitt to the new skyscrapers. Student papers either expand research in building categories (industrial, domestic, etc.) or integrate the physical development of the region with its political and social history.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2531 - AMERICAN ARCHITECTURE SINCE INDUSTRIALIZATION

Minimum Credits: 3

Maximum Credits: 3

By 1880 traditional American architectural values had broken down under a barrage of ornament and imported European styles. But at the same moment a new American architecture was taking shape to express the new wealth of post-Civil War America and its new social order. The next hundred years would see a succession of brilliant architects in Sullivan, Wright, Mies, Johnson and the pluralists of today. These individual successes only partially mask some major problems; both constitute the underlying themes of this course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: History of Art & Architecture (MA, PHD)

HAA 2532 - EARLY AMERICAN ARCHITECTURE

Minimum Credits: 3

Maximum Credits: 3

Architecture often serves as a prime document and indicator of America's past and future. The theme of this course is the search for identity in American architecture in the centuries from the colonial settlements to the Civil War. The course studies both the recorded history of American architecture and the unrecorded millennium before that, to show its surprising cohesion in the face of great cultural and territorial diversity.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2600 - SPECIAL TOPICS-CHINESE

Minimum Credits: 3

Maximum Credits: 3

Special topics in Chinese art.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Attributes: Asian Studies

HAA 2601 - SPECIAL TOPICS-JAPANESE

Minimum Credits: 3

Maximum Credits: 3

Special topics in Japanese art.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Attributes: Asian Studies

HAA 2604 - SOURCES AND METHODS IN EAST ASIA

Minimum Credits: 3

Maximum Credits: 3

This course is designed to train students in research using original source material. It is part of the graduate studies training in Chinese history.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Attributes: Asian Studies

HAA 2609 - EARLY CHINA: POWER & IDENTITY

Minimum Credits: 3

Maximum Credits: 3

The course is designed to look carefully at the ancient culture of the Chinese. The first task is to learn more about how and where they lived and to gain an understanding of the changes in culture throughout the period dating from c. 2500 BC-C. 200 A.D. It is hoped that the participants in the class will be able to distinguish various periods in Chinese history through study of the material culture; jade, bone, ivory, and bronze artifacts of all kinds. As each period is discussed significant art historical problems will be noted and examined.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: History of Art & Architecture (MA, PHD)

HAA 2611 - SPECIAL TOPICS: JAPANESE LECTURE

Minimum Credits: 3

Maximum Credits: 3

Special topics in Japanese art.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2612 - SPECIAL TOPICS-ASIAN

Minimum Credits: 3

Maximum Credits: 3

Special topics in Asian art.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2630 - CHINA: VILLAGE & URBAN ARCHITECTURAL SPACE

Minimum Credits: 3

Maximum Credits: 3

The design of Chinese cities is guided by philosophical principles established in the early dynastic period. Imperial cities follow a regular grid pattern that faces south, and includes an inner city, open only to the imperial leaders and aristocrats, and an outer city in which the business is carried out.

The design and use of the city is guided by Confucian and Daoist ideals. Religious centers follow palace designs, but are tied to Buddhist, Confucian and Daoist practice. Village centers are arranged according to Daoist ideas about nature called Fengshui.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: History of Art & Architecture (MA, PHD)

HAA 2640 - 20TH CENTURY CHINESE ART

Minimum Credits: 3

Maximum Credits: 3

The 20th century in china was a period of tremendous change. Artists and the society in which they lived crashed into the modern world to struggle with the weight of tradition as well as the draw of the new. We will consider this period and artistic visions of it by looking at arts including printmaking, painting, film, installation and other synthetic and combined forms. All artistic production will be contextualized within the political and cultural history of the period.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2641 - CONTEMPORARY CHINESE ART

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2650 - CHINA'S ARCHAEOLOGICAL PAST

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2652 - JAPAN: BUDDHIST ART & RITUAL

Minimum Credits: 3

Maximum Credits: 3

This course will examine forms of Japanese art dating from the Heian (794-1185) and Kamakura (1185-1333) periods. Course content may be altered to incorporate new research and publications.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2653 - ANCIENT EAST ASIAN VISUAL TRADITIONS

Minimum Credits: 3

Maximum Credits: 3

This course is designed to look at early cultures of East Asia through the study of material culture. It is arranged in chronological order, beginning with the Paleolithic and including the Neolithic, through the formation of states and empires in China, Korea and Japan. We will consider the artifacts as cultural documents and learn how to explain why they look the way they do based on an understanding of their patron's input, their function, use and time of manufacture.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2656 - JAPAN: ARCHITECTURE AS PERFORMATIVE SPACE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2680 - JAPAN: ARTIST AND CITY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2880 - WORLD CITIES

Minimum Credits: 3

Maximum Credits: 3

This course establishes a set of issues and a chronological context through which to understand the main patterns of city development. Thus the pairing of St. Petersburg and Brasilia, London and Los Angeles, Amsterdam and Chicago, points out similarities and differences in their shape and social context. Student reports on individual cities are an integral element of the course, and influence the choice of cities to be studied in detail.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 2901 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

Directed study for M.A. Students.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: History of Art & Architecture (MA, PHD)

HAA 2902 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

Directed study for M.A. Students.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: History of Art & Architecture (MA, PHD)

HAA 2903 - GRADUATE INTERNSHIP

Minimum Credits: 3

Maximum Credits: 3

Academic credit is awarded for experience gained through a directed internship. The internship is arranged by the student in consultation with the director of graduate studies in the history of art and architecture department.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad SN Basis

HAA 2905 - COMPREHENSIVE EXAM PREPARATION

Minimum Credits: 1

Maximum Credits: 9

This course is an independent study for Ph.D. students who are actively preparing for their comprehensive exams. The student works under the supervision of a dissertation advisor, with the assistance of other members of the dissertation committee. Committee and student agree on bibliographies in advance, and the student is encouraged to discuss the readings on a regular basis with his or her advisor and other members of the committee if necessary.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: History of Art & Architecture (MA, PHD)

HAA 2906 - DISSERTATION PROSPECTUS

Minimum Credits: 1

Maximum Credits: 9

This course is an independent study for Ph.D. students who are preparing their dissertation prospectus. Working under the supervision of a dissertation advisor, the student writes a prospectus that summarizes the dissertation topic, its original contribution to the field, and its methodology. The prospectus should also include a brief chapter outline, a research plan, and a bibliography-the whole document totaling approximately 10 to 20 pages.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: History of Art & Architecture (MA, PHD)

HAA 2951 - MENTORING INTERNSHIP

Minimum Credits: 1

Maximum Credits: 3

This course provides an opportunity for graduate students to mentor undergraduates under the supervision of a faculty instructor. The course is designed to enable graduate interns to mentor individual undergraduates, or small groups, who are engaged in advanced research or other projects in the University art gallery or digital media workshop or elsewhere under faculty supervision. Supervising faculty will meet regularly with the graduate intern to design and monitor the mentoring experience, and to discuss the practice of mentoring.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad SN Basis

HAA 2970 - TEACHING OF ART HISTORY

Minimum Credits: 1

Maximum Credits: 3

Taken simultaneously with independent teaching by graduate students.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad SN Basis

Course Requirements: PLAN: History of Art & Architecture (MA, PHD)

HAA 2991 - 20THC RUSSIAN ART: BETWEEN EAST/WEST

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

HAA 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1

Maximum Credits: 9

Dissertation research for Ph.D.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

Course Requirements: PLAN: History of Art & Architecture (MA, PHD)

HAA 3901 - INDIVIDUAL RESEARCH

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Human Behavior

SWBEH 2008 - HUMN BHVR: URBAN ENVIRONMENT

Minimum Credits: 3

Maximum Credits: 3

This course deals with collective behavior and societal values relative to key urban issues, particularly race, gender, and poverty. Guest experts will lecture, with the course drawn together, coordinated, and enriched by a single instructor of wide experience, both in teaching and in running a large innovative agency.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWBEH 2063; SBPLAN: COSA (Social Work-MS)

SWBEH 2062 - HUMN BHVR: CHLD FMLY AT RISK

Minimum Credits: 3

Maximum Credits: 3

This course is designed to examine the strengths and needs of children and families at risk. The effects on parent and child development of poverty, unemployment, drug and alcohol abuse, family violence, child maltreatment, inadequate housing, inadequate health care, inferior educational opportunities and other micro and macro factors will be examined.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWBEH 2063; SBPLAN: Direct Practice (Social Work-MSW)

SWBEH 2063 - HUMAN BEHAVIOR & SOCIAL ENVRNMNT

Minimum Credits: 3

Maximum Credits: 3

Using systems theory as an organizing framework, human behavior and its determinants are studied from the societal systems through the group, family, and individual systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Social Work students only.

SWBEH 2065 - HUMAN BEHAVIOR: MENTAL HEALTH

Minimum Credits: 3

Maximum Credits: 3

This course addresses the etiology, nature, course and treatment of mental disorders across the life cycle. Some mental illnesses begin early in life, and may continue throughout life, being modified by growth and development; others begin later in life or are specific to a particular stage in the life cycle; while others occur in response to environmental circumstances and stressors. Furthermore, gender, race, culture, ethnicity, socioeconomic status and other aspects of diversity shape how symptoms of mental illness are experienced, interpreted and expressed. A selection of the major categories of mental disorder and abnormal behavior will be addressed although it will not be possible to examine all of them in class. Understanding and applying the DSM-IV-TR manual as a clinical assessment tool, an introduction to psychopharmacology, and the nature and role of risk and protective factors associated with suicidal and violent behavior will also be addressed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWBEH 2063; SBPLAN: Direct Practice (Social Work-MSW)

SWBEH 2066 - HUMAN BEHAVIOR: HEALTH/MENTAL HEALTH

Minimum Credits: 3

Maximum Credits: 3

The overall purpose of this course is to expand student knowledge of physical health and mental health interactions which impact individuals and target populations during the life cycle process. This knowledge is used to design theory driven health promotion interventions. This course will investigate selected physical and public challenges that impact the overall health and well-being of individuals from early childhood to late adulthood. Definitions of health and well-being from both a social work and public health perspective will be defined and discussed to more fully understand the state of physical and mental issues in the western society. Understanding the integration of health education, health behavior, health promotion, is required to facilitate the development of theory driven interventions. Special attention is focused on how values, historical experience, cultural norms and environmental factors such as race, gender, socioeconomic status, and access to resources impact the public's health and their access to service delivery. Students will develop the ability to apply their knowledge and understanding of the interactions between physical health and mental health status across the lifespan to their own work with clients, organizations and policy initiatives.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWBEH 2063; SBPLAN: Direct Practice (Social Work-MSW)

SWBEH 2077 - HUMN BHVR: ADLT DVLP AGING

Minimum Credits: 3

Maximum Credits: 3

This course focuses on substantive content during adulthood (early and middle age) and old age. This course offers a framework for understanding mid-life and old age from a life-span developmental perspective and examines physical, social (environmental), and personal factors that influence the developing personality. The knowledge is integrated and appraised for its usefulness in working directly with and/or in behalf of middle-aged and older persons.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWBEH 2063; SBPLAN: Direct Practice (Social Work-MSW)

Human Genetics

HUGEN 2010 - BIOINFORMATIC RESOURCES FOR GENETICISTS

Minimum Credits: 1

Maximum Credits: 1

The focus of this course is the online bioinformatic resources available to geneticists. Students will learn to locate and use such resources and interpret the data therein to inform the development of research questions, aid in clinical decision-making, and enhance the understanding and contextualization of research results.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Human Genetics or Public Health Genetics; CREQ: HUGEN 2022 & 2040

HUGEN 2011 - SCIENTIFIC WRITING IN HUMAN GENETICS

Minimum Credits: 1

Maximum Credits: 1

Writing and communication skills are amongst the most important assets for any human genetics researcher and/or public health genetics professional. By facilitated discussions and reading and writing exercises/assignments, Scientific Writing in Human Genetics is designed to empower Human Genetics students to establish the communication mindset to write clear and compelling scientific narratives in plain language, utilize the writing resources available on campus and online, improve their scientific writing skills, and complete a solid draft of the Background/Introduction section of their MPH essay, MS Thesis, or PhD research proposal/comprehensive exam document (and possibly, additional sections, including methods, results, or the entire MPH essay) or another academic work with permission of the instructor. The ability to write and use standard English language is required. Whether English is your first or second language, if you are not comfortable writing grammatically correct and properly punctuated English, an "ESL course" is recommended.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HUGEN 2017 - HUMAN GENETICS

Minimum Credits: 3

Maximum Credits: 3

Provides an introduction to basic genetic principles and their application to human heredity.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: University Honors Course

HUGEN 2021 - SPECIAL STUDIES

Minimum Credits: 1

Maximum Credits: 15

Qualified students may undertake advanced work or research with the approval and under the guidance of a member of the staff.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

HUGEN 2022 - HUMAN POPULATION GENETICS

Minimum Credits: 2

Maximum Credits: 2

This survey course covers the principles of population genetics as applicable to human populations, including (1) the laws of inheritance that govern the organization of the genomes in populations, (2) the evolutionary forces and phenomena that impact genetic diversity in human populations, and (3) the foundational concepts of genetic epidemiology and gene discovery.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

HUGEN 2025 - HUMAN GENETICS SEMINAR

Minimum Credits: 0

Maximum Credits: 0

Human genetics seminars present current genetics methodology, theory, and data.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad SN Basis

HUGEN 2026 - SPECIAL STUDIES HUMAN GENETICS

Minimum Credits: 3

Maximum Credits: 3

This course is designed to provide advanced undergraduates and graduate students with directed, intensive training in laboratory, statistical or clinical research methods relevant to human genetics. These specialized skills are not available in regularly taught courses in the university. Each special study is designed in consultation with an individual member of the human genetics faculty.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HUGEN 2027 - HUMAN GENETICS FALL JOURNAL CLUB

Minimum Credits: 1

Maximum Credits: 1

Human genetics journal club meets once a week during the fall semester to give students and faculty a chance to present exciting research which they feel is relevant to the department. The audience is other students and faculty from the department and other departments of the schools of health sciences. Presentations are informal and meant to give students the experience necessary to be an effective communicator, and to teach them critical skills for evaluating research publications.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HUGEN 2028 - HUMAN GENETICS JOURNAL CLUB AND PEER REVIEW

Minimum Credits: 1

Maximum Credits: 1

Human genetics journal club provides students and faculty with an opportunity to present and discuss exciting research in an informal format. The purpose of the course is to hone students' oral and written critical evaluation skills.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

HUGEN 2029 - INTRODUCTION TO GENE MAPPING

Minimum Credits: 3

Maximum Credits: 3

This course presents a literature-based approach to understanding and interpreting results from gene mapping papers in the field of human genetics. Traditional and state-of-the-art genetic mapping methodologies will be explored.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: HUGEN 2022 and 2034 and 2040 and BIOST 2041

HUGEN 2031 - CHROMOSOMES AND HUMAN DISEASE

Minimum Credits: 3

Maximum Credits: 3

The role of chromosomes in human disease is discussed after a thorough background on chromosome structure and function is presented. Topics covered include cytogenetic methodology, aneuploidy, chromosome rearrangements, chromosomes and cancer, chromosome breakage syndromes, and fragile sites on human chromosomes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HUGEN 2032 - GENETIC TECHNIQUES

Minimum Credits: 2

Maximum Credits: 2

Students participate in laboratory exercises to become acquainted with cytogenetics laboratory procedures including cell culture, chromosome preparation, chromosome banding, and karyotyping. Chromosome analysis and karyotype interpretation are practiced.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

Course Requirements: CREQ: HUGEN 2031; Graduate Sch of Public Health Students Only

HUGEN 2034 - BIOCHEMICAL AND MOLECULAR GENETICS OF COMPLEX DISEASES

Minimum Credits: 3

Maximum Credits: 3

This course provides students with an overview of the molecular and biochemical genetic approaches to determine the underlying genetic architecture of common diseases that account for a large portion of the public health burden of disease. The genetic, environmental and epigenetic factors that influence susceptibility to common disease will be illustrated using selected examples, such as cardiovascular disease, neurodegenerative diseases, mental health diseases, autoimmune diseases and eye diseases.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HUGEN 2035 - PRINCIPLES OF GENETIC COUNSELING

Minimum Credits: 3

Maximum Credits: 3

This course addresses fundamental concepts important to genetic counseling principles and practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HUGEN 2036 - GENETIC COUNSELING INTERNSHIP

Minimum Credits: 4

Maximum Credits: 4

For this course, students will participate in supervised genetic counseling clinical rotations in a variety of specialty areas. The lectures that are part of the course will address topics relevant to clinical genetics and counseling.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Genetic Counseling (MS)

HUGEN 2038 - INTERVENTION SKILLS FOR GENETIC COUNSELING

Minimum Credits: 3

Maximum Credits: 3

Focuses on the understanding of theories of intervention, skill development and application to genetic counseling. The course aims at sensitizing students to the ethical dilemmas faced by affected families and health-care providers.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Genetic Counseling (MS)

HUGEN 2039 - RISK CALCULATION GENETIC COUNSELING

Minimum Credits: 1

Maximum Credits: 1

This course provides hands-on training in calculating risk of disease or carrier status in a variety of typical genetic counseling situations, as well as discussion of the limitations of those calculation methods.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: CREQ: HUGEN 2022

HUGEN 2040 - MOLECULAR BASIS OF HUMAN INHERITED DISEASE

Minimum Credits: 3

Maximum Credits: 3

This course will provide an overview of selected human inherited disorders and integrate clinical descriptions with recent genetic, molecular genetics and biochemical insights. Current state of the art molecular genetics methodologies will be integrated into the overviews.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HUGEN 2041 - BIOETHICS

Minimum Credits: 3

Maximum Credits: 3

This course is an advanced treatment of significant problems in medical ethics. Topics may include euthanasia, rights to health care, competency, allocation of resources, and other issues of medical ethics.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

HUGEN 2047 - CLINICAL GENETICS CASE CONFERENCE

Minimum Credits: 1

Maximum Credits: 1

With clinical cases and specimens from various clinical genetics service units, this seminar illustrates and provides insights into the biologic, medical, ethical, and emotional aspects of genetic disorders.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad SN Basis

HUGEN 2049 - INTRODUCTION PUBLIC HEALTH GENETICS

Minimum Credits: 3

Maximum Credits: 3

This course provides a framework in which to assess how advances in genomics may be applied to public health practice and policies that affect both individuals and society. In addition, the ethical, legal, and social consequences of historical, current, and future interventions are considered.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

HUGEN 2050 - PUBLIC HEALTH GENETICS PRACTICUM

Minimum Credits: 1

Maximum Credits: 6

The practicum is a short term field placement (minimum 200 hours of public health oriented work) with an organization or agency that is relevant to the student's area of interest. Each placement must be agreed upon by the student and the MPH program advisor.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Public Health Genetics (MPH or CERT)

Course Attributes: Community Element -General Community Impact

HUGEN 2051 - INBORN ERRORS OF DEVELOPMENT

Minimum Credits: 2

Maximum Credits: 2

This course focuses on the connections between human development and inherited disease. The course will include core principles of development of the body plan and signaling pathways involved in development and differentiation. These biological processes will be used to categorize inherited human diseases, understand disease mechanisms, and the current efforts to develop targeted treatments.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

HUGEN 2052 - ETHICAL ISSUES IN CLINICAL AND PUBLIC HEALTH GENETICS

Minimum Credits: 1

Maximum Credits: 1

This course is designed to explore ethical issues as they relate to genetics and genomics in both the clinical and public health contexts. This seminar series provides an ethical framework for analyzing arguments in the literature and cases arising in clinical and research contexts and proceeds throughout the semester with a discussion-based format that encourages students to assume responsibility for engaging in ethical analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad SN Basis

Course Requirements: CREQ: HUGEN 2035 or 2049; PLAN: HUGEN-MS or GNCSLG-MS or PHGEN-CR4 or PHGEN-MPH

HUGEN 2053 - APPLICATIONS IN PUBLIC HEALTH GENETICS AND GENOMICS

Minimum Credits: 2

Maximum Credits: 2

This graduate level course builds on the basic components of public health genetics and genomics and provides students with the opportunity to discuss and apply these concepts to public health. The goal of this course is for students to apply knowledge and skills learned across public health disciplines, especially the use of genetic principles, in a public health practice setting. Using current issues in public health genetics, students will also demonstrate mastery of essential competencies through data analysis, and oral and written communication.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: BIOST 2041 or BIOST 2011; CREQ: HUGEN 2049; PLAN: Human Genetics or Genetic Counseling or Public Health Genetics

HUGEN 2070 - BIOINFORMATICS FOR HUMAN GENETICS

Minimum Credits: 3

Maximum Credits: 3

This course focuses on manipulation and management of human genetic data, with an emphasis on association and linkage studies. The course will cover bioinformatics for genome-wide association analysis, sequence data, and integrated analyses, as well as the R statistical computing language. A key component of the course will be hands-on analyses of example data sets.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: HUGEN 2022 and BIOST 2041

HUGEN 2080 - STATISTICAL GENETICS

Minimum Credits: 3

Maximum Credits: 3

An advanced course which discusses the principles and practice of statistical genetics in the area of genetic epidemiology of human diseases and traits. The course will cover statistical modeling and methodology in familial aggregation, linkage analysis and association analysis; the course includes hands-on experience with current computer programs used in these research areas.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: HUGEN 2022 and BIOST 2041

HUGEN 3010 - RESEARCH AND DISSERTATION PH.D.

Minimum Credits: 1

Maximum Credits: 15

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Immunology

MSIMM 2000 - PRINCIPLES OF MICROBIOLOGY AND IMMUNOLOGY

Minimum Credits: 6

Maximum Credits: 6

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MSIMM 2200 - MS THESIS RESEARCH

Minimum Credits: 1

Maximum Credits: 14

A directed research project which results in a thesis for a master's degree.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

MSIMM 2210 - COMPREHENSIVE IMMUNOLOGY

Minimum Credits: 2

Maximum Credits: 2

This is a lecture course that will introduce the students to the fundamental concepts of modern immunology. The course will cover cells, tissues and organs of the immune system. Furthermore in-depth analysis of the development, activation, effector functions and regulation of immune response will be presented in this course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSIMM 2230 - EXPERIMENTAL BASIS OF IMMUNOLOGY

Minimum Credits: 2

Maximum Credits: 2

This course will expose the students to classical and contemporary literature in modern immunology. Emphasis will be on paper analysis and critical evaluation of primary data. This course will parallel the topics presented in comprehensive immunology lecture course which must be taken before or simultaneously with experimental basis of immunology.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: MSIMM 2210

MSIMM 2240 - INTRODUCTION TO IMMUNOBIOTHERAPEUTICS

Minimum Credits: 2

Maximum Credits: 2

This course will provide a comprehensive overview of the principles and the technology upon which immunobiotherapeutics are based. The course will focus on the overall aims of using small molecules, antibodies, genes and cells as immunotherapeutic agents. It will cover the use of viral and non-viral agents as gene delivery vehicles, cells as therapeutic agents and small molecules as delivery and therapeutic vehicles. The course will also cover diseases and disorders in which immunobiotherapy has proven safety and demonstrated successful outcomes like cancer, Mendelian disorders and autoimmunity. Lectures and student presentations will cover: genes and cells as drugs, peptides, antibodies and small molecules as therapeutics and delivery vehicles, viral and non-viral vectors, stem cells, and specific diseases where immunotherapy has shown safety and efficacy. Students may also be educated on bioethical issues and existing laws governing biotechnology and molecular medicine approaches.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSIMM 2250 - TA: MEDICAL MICROBIOLOGY

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Immunology (PHD)

MSIMM 2260 - IMMUNOLOGY SEMINAR

Minimum Credits: 1

Maximum Credits: 1

Graduate students and faculty present their current research in a seminar format.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

MSIMM 2290 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

This course provides the student an opportunity to carry out a specific laboratory project in any area of interest in immunology.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

Course Requirements: PLAN: Immunology (PHD) or Interdis Biomedical (UNK)

MSIMM 3200 - PHD DISSERTATION RESEARCH

Minimum Credits: 1

Maximum Credits: 14

After advancement to candidacy for the Ph.D. degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation. A minimum of 40 credits of this course are required for the Ph.D. degree in the school of medicine.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: Immunology (PHD)

MSIMM 3220 - CONTEMPORARY TOPICS - IMMUNOLOGY

Minimum Credits: 1

Maximum Credits: 1

This is an advanced level course in which students will read, present and evaluate the primary literature in immunology. Each semester will feature an integrated set of papers addressing a current issue of interest to modern immunologists. The course may be taken more than once by each student, since the topic addressed will change each semester.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

MSIMM 3230 - IMMUNOLOGY AND HUMAN DISEASE

Minimum Credits: 2

Maximum Credits: 2

This course surveys basic immunological principles as they impact our understanding of the causes or treatments of human disease. The course consists of a series of lecture blocks. Background reading is required and the course relies heavily on the reading of original articles. Classes are regularly devoted to paper discussions, and each student will be responsible for introducing one paper.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSIMM 3260 - IMMUNITY AND THE NEUROENDOCRINE AXIS

Minimum Credits: 2

Maximum Credits: 2

This course will consider the interaction among the immune, nervous and endocrine systems. It will prepare the students for a critical understanding

of how endocrine organs and the hormones they produce affect immune cell function, how the nervous system and neuropeptides/neurohormones and neurotransmitters modify immunity and how the immune system (cells and their secreted molecules) affect the endocrine and the nervous system. The course will also permit the students to critically appraise and understand how drug therapy aimed at immunostimulation or immunosuppression may be affected by, and affect the neuroendocrine axis and how pharmacologic manipulation of the neuroendocrine axis can affect the immune system and the outcome of immunotherapies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: MSIMM 3230

MSIMM 3270 - INNATE IMMUNITY

Minimum Credits: 2

Maximum Credits: 2

This course will focus on the several aspects of host innate immunity against infection. Topics will include the conceptual basis for innate versus adaptive immunity, induction of innate immunity by pathogens, signaling by innate immune receptors, effector cells of the innate immune system, secreted effectors of innate immune signaling, and subversion of innate immune signaling by pathogens. Courses like molecular virology and comprehensive immunology are highly recommended but not a prerequisite for the course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MSIMM 3280 - IMMUNOLOGY OF INFECTIOUS DISEASE

Minimum Credits: 2

Maximum Credits: 2

This course examines the immune responses to pathogens, as well as on immune evasion of microbes. The organisms studied include bacteria, parasites, and viruses. Topics focus on host-pathogen interaction and include innate immunity, modulation of antigen processing and presentation, pathogenic strategies for subversion of immune responses, effector functions of immune cells, and immunopathology.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: MSIMM 2210

MSIMM 3290 - AUTOIMMUNITY & IMMUNOPATHOLOGY

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: MSIMM 2210 and 2230

MSIMM 3440 - VACCINES AND IMMUNITY

Minimum Credits: 2

Maximum Credits: 2

Vaccines are widely regarded as one of the major contributors to increased life expectancy. The purpose of this course is to (1) explore the history of vaccines; (2) underscore the successful role of current vaccines in the management of infectious diseases; (3) present strategies for a new generation of safe and effective molecular vaccines; and (4) discuss the ethical and economic realities of vaccine use and development.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Industrial Engineering

IE 2000 - FUNDAMNTLS OF INDUSTRIAL ENGR

Minimum Credits: 1

Maximum Credits: 1

This course will provide an overview of basic industrial engineering principals, primarily for those students who have not had prior exposure to industrial engineering. Topics will include, but are not limited to, flow charts, work methods, and work measurement including work sampling and most.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

IE 2001 - OPERATIONS RESEARCH

Minimum Credits: 3

Maximum Credits: 3

The operations research method; linear programming; network flows; CPM/pert; integer programming formulations. A group project is required.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Industrial Engineering (IE-MIE or IE-PHD)

IE 2003 - ENGINEERING MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

Concepts and processes of qualitative engineering management applied to the management of technical and scientific organizations. Topics include: (1) general systems theory; (2) management and the systems concept; (3) strategic planning and management systems; (4) systems analysis; (5) project management systems; (6) organizational design; (7) evaluation and control of systems; and (8) managing technical professionals.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Industrial Engineering (MIE or PHD)

IE 2004 - DATA BASE DESIGN

Minimum Credits: 3

Maximum Credits: 3

This course introduces the fundamental aspects of database design and management within the context of a relational data base management system (DBMS). Covered topics include: relational model, database design life-cycle, database design optimization, client/server architecture, data modeling, SQL, database security, database management, data warehousing, internet database environment. Students will gain hands-on experience in analysis, design, implementation, and management of relational data base systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

IE 2005 - PROBABILITY AND STATISTICS FOR ENGINEERS 1

Minimum Credits: 3

Maximum Credits: 3

Probability, random variables, common discrete and continuous probability distributions, expected values, central limit theorem, distributions derived from the normal distribution (χ^2 , t and f), estimation of parameters and fitting of probability distributions, testing hypothesis and assessing goodness of fit, comparing two samples.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Industrial Engineering (IE-MIE or IE-PHD)

IE 2006 - INTRO TO MANUFACTURING SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

The purpose of this course is to provide students that have a background in advanced manufacturing technologies with an opportunity to learn about fundamentals of micro and Nano machining processes. The course represents a good balance between theoretical problems and practical considerations related to the advanced manufacturing processes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Industrial Engineering (IE-MIE or IE-PHD)

IE 2007 - STATISTICS AND DATA ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

Analysis of variance, experiments with one factor, experiments with two or more factors, regression analysis, multiple linear regression, response surface methods, analysis of categorical data, nonparametric statistics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Industrial Engineering; PREQ: IE 2005

IE 2011 - FUNDAMENTAL OF MICRO AND NANOMANUFACTURING

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Industrial Engineering; PREQ: IE 2006

IE 2012 - MANUFACTURE OF STRUCTURAL NANOMATERIALS

Minimum Credits: 3

Maximum Credits: 3

Description: this course covers contemporary research topics on the design and manufacture of nanostructured materials. In addition to design and manufacturing, this course would also emphasize the nanometer-scale phenomena that make nanostructured materials particularly attractive for structural applications. Topics such as dislocation theory, large strain plasticity phenomena, super plasticity and kinetics of coarsening will be discussed in the context of structural nanomaterials.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Industrial Engineering; PREQ: IE 2006

IE 2013 - MOLECULAR MANUFACTURING

Minimum Credits: 3

Maximum Credits: 3

You often hear in the news about the potential societal impact of nanotechnology, which is simply described as the science and technology of manipulating matter in the 10-100 nm length-scale. However, with the continued miniaturization of material building blocks approaching the atomic scale, a paradigm shift is needed in the way of thinking about how to synthesize and assemble atomically precise units that integrate various different components, which eventually build a functioning device or material. This bottom-up approach to fabrication with atomic level precision is the focus

of this course. The course will include molecular fabrication methods such as DNA origami, protein assembly, chemical synthesis of carbon materials, block copolymer self-assembly, and scanning probe methods that are capable of atomic level manipulation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

IE 2014 - MANUFACTURING PROCESS ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

The objective of this course is to instill a fundamental understanding of manufacturing processes by focusing on the processes, metallurgy and mechanics of deformation in metal forming. To this end, analysis techniques will be developed from solid mechanical principles (stress-strain relationship, deformation and failure) which would then be applied bulk deformation and material removal processes. The course assumes no prerequisites except basic concepts of stress, strain and strength of materials.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Industrial Engineering; PREQ: IE 2006

IE 2025 - FACILITY LAYOUT AND MATERIAL HANDLING

Minimum Credits: 3

Maximum Credits: 3

Introduction to facility layout and location. Topics including activity relationships, space and personnel requirements, computer algorithms for constructing layouts, and both single and multiple facility location methodologies; material handling methods and equipment including conveyors, lift trucks, carousels, automated guided vehicles, and automated storage and retrieval systems are also discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Industrial Engineering (MIE)

IE 2039 - ENTREPRENEURSHIP FOR ENGINEERS

Minimum Credits: 3

Maximum Credits: 3

This course considers the development of a new technology company from ideation and opportunity evaluation to capital generation and launch. It includes an understanding of accounting principles, budgeting, capital markets, venture capital, operating in the development stage, executive and employee requirements, product development, and growing the company.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

IE 2042 - ENGINEERING DERIVATIVES MARKET

Minimum Credits: 3

Maximum Credits: 3

The basic building blocks for engineering futures contracts, call and put options, and swaps are studied within the context of real-world environments. By the end of this course learners will have a good understanding of how these tools are built for the purposes of hedging risks and formulating portfolio strategies, all within the goal of managing financial risk.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Industrial Engineering; PREQ: IE 2001 and 2005

IE 2044 - INVESTMENT SCIENCE

Minimum Credits: 3

Maximum Credits: 3

This course is an introduction to basic concepts of modern quantitative finance and investment. Group projects involving financial market data.

Topics: basic interest rate; evaluating investments: scenario-based analysis and Monte Carlo simulation; fixed-income markets: bonds, yield, duration, and portfolio immunization; measuring risk: volatility and value at risk; the concept of investment diversification in the presence of uncertainty; designing optimal security portfolios; the capital asset pricing model, practical implementation of the concepts, including comparison of loan (e.g., house and auto) terms, credit card financial terms; derivative market and option pricing. No prior knowledge of finance required.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IE 2061 - ERGONOMICS & OCCUPATIONAL BIOMECHANICS

Minimum Credits: 3

Maximum Credits: 3

Fundamentals of ergonomics as applied to the industrial workplace. Specific topics include: occupational biomechanics, anthropometry, work physiology, cumulative trauma disorders and slip and fall prevention applied to the organization and physical design of the workstation, effects of hand tool design on workers, and analysis of manual material handling jobs.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

IE 2062 - DATA MINING

Minimum Credits: 3

Maximum Credits: 3

This is an introductory data analytics class that requires probability as a prerequisite. The objective is to prepare students to effectively collect and analyze data and to teach data-driven thinking, problem-solving and decision-making. In this class, we will cover various statistics and data mining methodologies and use them to analyze real-world problems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: IE 2005; PROG: Swanson School of Engineering

IE 2064 - DATA SCIENCE

Minimum Credits: 3

Maximum Credits: 3

Data Science involves working with complicated and messy data to build prediction models for use in making decisions. This course covers data processing and exploratory data analysis; regression, classification, and clustering models; and model evaluation methods.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Industrial Engineering; PREQ: IE 2005

IE 2065 - STATISTICAL ANALYSIS AND OPTIMIZATION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: IE 2007 or 2064 or 1072 or STAT 1152

IE 2072 - PROBABILITY

Minimum Credits: 3

Maximum Credits: 3

Interpretations of probability, counting methods, conditional probability, Bayes theorem, random variables and distributions, functions of random variables, expectations, special discrete and continuous univariate distributions, law of large numbers and central limit theorems, multivariate distributions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

IE 2076 - TOTAL QUALITY MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

introduces the total quality management philosophies and practices of Deming, Juran, and others. We will focus on the use of statistical process control, understanding variability and process capability, acceptance sampling, as well as managing supplier relationships. Research papers and student teaching projects allow students to explore additional topics such as Kaizen, Taguchi methods, FMEA, etc.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Industrial Engineering; PREQ: IE 2005

IE 2079 - LOGISTICS & SUPPLY CHAIN ENGRNG

Minimum Credits: 3

Maximum Credits: 3

Modern supply chains are based on networks with a number of actors from manufacturer to distributor to retailer. This course covers the use of modeling for coordinating production, inventory, distribution, and transportation across a supply chain network.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

IE 2081 - NONLINEAR OPTIMIZATION

Minimum Credits: 3

Maximum Credits: 3

Necessary and sufficient conditions for an optimal solution to the non-linear programming problem; convex sets and functions; numerical solution of non-linear equations; search methods; unconstrained optimization including gradient, metric and penalty methods; algorithms for constrained optimization; quadratic and geometric programming.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

IE 2082 - LINEAR OPTIMIZATION

Minimum Credits: 3

Maximum Credits: 3

Review of linear algebra, matrices and the simplex methods; revised simplex method; generalized bounds; product form of inverse; pricing and pivot selection; duality and sensitivity analysis; separable programming; linear complementarity; Dantzig-Wolfe decomposition; column generation; generalized LP; semi-infinite LP, stochastic LP; interior point methods.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

IE 2084 - STOCHASTIC PROCESSES

Minimum Credits: 3

Maximum Credits: 3

Reviews probability theory; conditional probability and expectations; discrete-time and continuous time Markov chains; Poisson process and exponential distributions; renewal theory and its applications; queueing theory; stochastic systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Industrial Engineering; PREQ: IE 2072

IE 2086 - DECISION MODELS

Minimum Credits: 3

Maximum Credits: 3

Decision making under uncertainty is the key to understanding a variety of problems from industry, including inventory control, revenue management, energy, healthcare, and logistics. This course covers the fundamentals of stochastic (sequential) decision models, including data-driven and risk-averse methods, with applications to real-world problems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: CREQ: IE 2005; PROG: Swanson School of Engineering

IE 2088 - DIGITAL SYSTEMS SIMULATION

Minimum Credits: 3

Maximum Credits: 3

Nature of simulation; discrete event simulators; modeling complex systems; input data reduction; random number generation; output data analysis; validation of simulation models; experimental design; variance reduction techniques; comparing alternative systems; overview of simulation languages.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: IE 2005 or IE 1071 or ENGR 0020; PROGRAM: SSOE

IE 2089 - ADDITIVE MANUFACTURING

Minimum Credits: 3

Maximum Credits: 3

In this course we will analyze the seven primary types of additive manufacturing, their materials, and machines, highlighting their benefits and limitations. Examples of industrial applications will be given along with ongoing research trends and future directions. Labs will focus on design for additive manufacturing, data capture and input, machine setup, and post processing. Field trips will include observation of machine building and part production at some local industries.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Industrial Engineering; PREQ: IE 2006

IE 2090 - M. S. PROJECT

Minimum Credits: 3

Maximum Credits: 3

This is the capstone project course for M.S. Students. Students working in teams of 3 or 4 will solve a real world problem in conjunction with a

company liaison and a faculty advisor.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

IE 2100 - SUPPLY CHAIN ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

An overview of supply chain management with an emphasis on operations and strong quantitative orientation. Supply chain strategies; sourcing decisions; demand forecasting; aggregate planning; managing supply and demand; production and inventory control systems including MRP and JIT; dealing with uncertainty; distribution networks; coordination and integration.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Industrial Engineering; PREQ: IE 2001 & 2005

IE 2102 - LEAN SIX SIGMA I (GREEN BELT)

Minimum Credits: 3

Maximum Credits: 3

This course provides an introduction to lean and six sigma principles with an emphasis on the application of statistics to quality control. Topics include value stream mapping, various lean tools, DMAIC methodology, data collection and measurement, and applications of ANOVA and doe. A project is required and the student should be prepared for green belt certification at the end of the course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

IE 2103 - LEAN SIX SIGMA II (BLACK BELT)

Minimum Credits: 3

Maximum Credits: 3

This is a follow up course in lean and six sigma covering topics such as influence principles and techniques, systems analysis, design for six sigma, lean enterprise analysis and response surface methods. Several projects are required and the student should be prepared for black belt certification at the end of the course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: IE 2102; PROG: Swanson School of Engineering

IE 2105 - GEOGRAPHIC INFORMATION SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

Explore the concepts and history of geographic information systems and learn to effectively use the most utilitarian GIS software, ArcGIS.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

IE 2106 - OPERATIONS IMPROVEMENT IN HEALTHCARE

Minimum Credits: 3

Maximum Credits: 3

This course leads students to apply basic industrial engineering tools to healthcare. This includes fact gathering through interviews & observation, process mapping, system analysis and modeling, work sampling, work study and workflow improvement. Using the health operations laboratory, students learn to model core operations of key hospital departments, and are required to develop expertise in one of the following areas: work measurement in healthcare, quality improvement in healthcare, department productivity management, supply chain management, patient workflow through a department.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Industrial Engineering

IE 2108 - HEALTH SYSTEMS ENGINEERING: QUANTITATIVE ANALYTICS

Minimum Credits: 3

Maximum Credits: 3

Applying industrial engineering tools and techniques (often referred to as Healthcare Systems Engineering) provides the opportunity to make significant improvements in the healthcare setting. This course will provide an overview of the US healthcare system and the opportunity to apply industrial engineering techniques while developing and understanding of basic healthcare operations and systems in the United States.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Industrial Engineering

IE 2110 - HEALTH SYSTEMS ENGINEERING SEMINAR

Minimum Credits: 0

Maximum Credits: 0

The seminar supplements the education provided by health policy and management and industrial engineering departments by creating a forum for exposure and discussion of healthcare systems engineering issues. Students become aware and are exposed to the role of vendors/consultants that bring solutions for healthcare delivery processes. The standards for professional leadership required for health management are reinforced.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: PROG: Swanson School of Engineering

IE 2122 - FUNDAMENTALS OF SYSTEMS ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

This course will focus on the fundamentals of systems engineering, including technical processes (e.g., requirements definition, architecture design, system verification), technical management processes (e.g., project planning, risk management), agreement processes (acquisition and supply) and project-enabling processes (e.g., life-cycle model management, quality management). Key systems engineering techniques and methods (e.g., system modeling and simulation, function-based systems engineering) will also be discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Industrial Engineering (MIE or PHD)

IE 2123 - PROJECT MANAGEMENT FOR ENGINEERS

Minimum Credits: 3

Maximum Credits: 3

The focus of the course will be to understand professional project management in achieving strategic organizational objectives and mitigating risks. The process for obtaining professional project management (PMP) certification will be the foundation. The six domains of project management that will be addressed include: initiating the project planning the project, executing the project, monitoring and controlling the project, project transition and closure, professional and social responsibility.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: IE 2003; PROG: Swanson School of Engineering

IE 2125 - PROJECT MANAGEMENT AND STRATEGY: DESIGN AND IMPLEMENTATION

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

IE 2155 - DISCRETE OPTIMIZATION AND APPLICATIONS IN INFRASTRUCTURE SYSTEMS

Minimum Credits: 3
Maximum Credits: 3
Discrete optimization is a powerful modeling and computational tool in decision making, especially for critical industrial systems (e.g., transportation and energy systems). In this course, the focus will be on learning various modeling techniques, classical and popular models (including location, scheduling and transportation problems) and solution techniques (including exact and heuristic algorithms) for these models that lead to millions of dollars in savings.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: IE 2001; PLAN: Industrial Engineering

IE 2180 - OPERATIONS ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
Industrial engineers apply production concepts in manufacturing, retail, and healthcare settings. In today's increasingly competitive marketplace, companies must be efficient to remain in business. Many factors influence a company's efficiency but one key area is operational effectiveness. The purpose of this course is to enhance students' knowledge of several key aspects of operational effectiveness including just-in-time (JIT) and pull systems, fundamentals of factory dynamics, scheduling of machines and personnel, change management, and MRP and ERP systems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: (IE 2001 or 2082) and IE 2005

IE 2186 - REINFORCEMENT LEARNING

Minimum Credits: 3
Maximum Credits: 3
This is an introductory course on reinforcement learning (RL), a set of techniques used for learning sequential decision making policies from data. The basics of Markov decision processes necessary for RL will be covered, but a firm grasp of undergraduate level probability and basic programming ability (in Python and MATLAB) will be assumed. A wide range of methods (e.g., TD learning, Q-learning, policy gradients) that perform evaluation and control will be covered. The focus in this course will be on applications, implementation, intuition and some theory.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: IE 2005 or IE 1070 or Equivalent and IE 1082 PLAN: Industrial Engineering

IE 2188 - SIMULATION MODELING AND APPLICATIONS

Minimum Credits: 3
Maximum Credits: 3

Introductory graduate course to the concepts, technology and applications of discrete-event and hybrid simulation. Covers the foundational concepts of simulation and the application of those concepts using commercial software. Topics include simulation, modeling, validation, input/output analysis, animation, and project success skills. Students will learn to use the Simio commercial simulation product as well as how to conduct/manage simulation projects. Practical experience will be gained in a simulation project.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: IE 2001 and 2005; PROG: Swanson School of Engineering

IE 2201 - BIOMATERIALS AND BIOMANUFACTURING

Minimum Credits: 3

Maximum Credits: 3

The purpose of this course is to provide students having a background in biomaterials and biomanufacturing with an opportunity to learn about the many modern aspect of biomaterials from basic science to clinical applications, across the formulations and chemistry of polymers, ceramics, metals and their use in various biomedical devices and implants, as well as their clinical performance and host responses. Students will also gain knowledge and experiences with designing and manufacturing biomedical devices through team projects. This one-semester, graduate course is intended for students majoring in the industrial engineering, or those who contemplating such a major (or minor). Students enrolled in the class should have an understanding of various biomaterials, and the ability to understand biological phenomena and manufacturing processes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Industrial Engineering; PREQ: IE 2006

IE 2301 - INTRODUCTION TO SAFETY ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

Introduction to safety engineering" provides a basis to assist students in understanding and applying the scientific and engineering principles associated with the field of safety engineering. Specifically, the course will provide a background in, information on and application exercises in the natural, chemical and physical laws and forces associated with safe design and implementation of work-related tasks and industrial and construction projects. These involve soils and excavation, trenching and shoring, permanent and temporary work platforms and scaffolding, cranes, rigging, ropes, slings and chains, fall protection, pressure vessels, confined space entry, energy isolation and preparation of equipment, hot work, welding, personal protective equipment and non-destructive testing. The course will also address safety related issues associated with building and facility design and layout, job, task and work setting layout. The course will stress the importance of safety engineering as part of both the corrective process and the design process.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

IE 2302 - ENGINEERING FOR PROCESS SAFETY

Minimum Credits: 3

Maximum Credits: 3

Engineering for process safety provides for a basic understanding of the quantitative and qualitative analysis methods of process safety engineering and process safety management. The course also provides guidance in planning, implementing and managing an overall process safety management program. It includes coverage of such applicable science and engineering principles as risk, human reliability, fault logic, failure modes, incident cost and prediction. The course is presented in an applied format where several different types of industries are discussed such as oil and chemical, pharmaceuticals, defense, nuclear, aerospace, paper, information technology and manufacturing industries. Regulatory influence on process safety is discussed. Quantitative aspects of the course include application of risk analysis, fault tree analysis, hazard and operability analysis, vapor-cloud dispersion modeling, human reliability analysis, failure modes and effects analysis, etc. This course is also intended to provide a background in managing an overall system safety program and its application to several industries, therefore, cost and effectiveness measurement are covered in the material.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

IE 2303 - WORK DESIGN

Minimum Credits: 3

Maximum Credits: 3

This course is designed to provide students the opportunity to learn and use standard industrial tools commonly used in analyzing, troubleshooting, and designing work spaces and work processes. It includes the concepts of cost effectiveness, functional effectiveness, human interface design and characterization, analysis and improvement of productivity. These tools and design methodologies include human information processing, basic auditory and visual displays, cost models, facility layout and network transportation and delivery systems, cognitive engineering, anthropometry and musculoskeletal principles, cumulative trauma disorders, work measurement and time and motion analysis. Students taking this course should be familiar with basic engineering economics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering; PLAN: Industrial Engineering (IE-MIE, IE-PHD)

IE 2725 - DESIGN FOR INJURY PREVENTION

Minimum Credits: 3

Maximum Credits: 3

This course provides instruction for how to design a workplace to prevent occupational injuries. The course will primarily focus on preventing the three types of injuries, the injury mechanism, risk factors, tools for quantifying risk and engineering solutions will be covered. Upon completion of a course, students will be expected to develop custom engineering design solutions to prevent occupational injuries. Students will complete a project where they will design a solution to eliminate or reduce an existing hazard.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IE 2900 - GRADUATE FELLOWSHIPS AND PROPOSAL-WRITING WORKSHOP

Minimum Credits: 1

Maximum Credits: 1

This workshop will provide information and guidance to students interested in competing for external fellowships to support their graduate research, as well as instruction on proposal writing in general. The workshop will consist of structured class time and outside-the-class mentoring teams to work with students on the preparation of a fellowship application.

Academic Career: Graduate

Course Component: Workshop

Grade Component: Grad SN Basis

IE 2997 - RESEARCH, M. S.

Minimum Credits: 1

Maximum Credits: 12

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

IE 2998 - GRADUATE PROJECTS/PRACTICUM

Minimum Credits: 1

Maximum Credits: 12

This course is granted as part of the curriculum for work that is done on well-defined projects on campus or in the form of an internship in a company, the end result will be a final technical report and a presentation.

Academic Career: Graduate

Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

IE 2999 - M. S. THESIS

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

IE 3051 - COMPUTATIONAL OPTIMIZATION

Minimum Credits: 3
Maximum Credits: 3
This course addresses issues arising in the implementation of optimization algorithms. Computational strategies and techniques will be explored. A major emphasis will be placed on implementing various algorithms for large- scale linear, nonlinear, and integer programs. Such algorithms include benders' decomposition, Dantzig-Wolfe decomposition, Lagrangian relaxation and algorithms for specially-structured problems.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

IE 3053 - GLOBAL OPTIMIZATION

Minimum Credits: 3
Maximum Credits: 3
This is an introductory course to the theory and applications of global optimization. The topics covered in this course include properties of convex/non-convex sets and functions, convex envelopes, duality, local and global optimality conditions, algorithms and their convergence and finiteness, computational complexity of global optimization, cutting planes, outer approximation, convexification, decomposition, branch and bound, DC Programming, Lipschitzian programming.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

IE 3055 - ROBUST OPTIMIZATION

Minimum Credits: 3
Maximum Credits: 3
Today the modeling of uncertain phenomena in both theory and practice is done via probability theory, the foundation of which is based on the axioms set forth by Kolmogorov in 1933. While it offers insights into understanding uncertainty, probability theory (in contrast to optimization) has not been developed with computational tractability as an objective when the dimension increases. Correspondingly, some of its major areas of application remain unsolved when the underlying systems become multidimensional. The goals of this course will be to propose an alternative via robust optimization (RO) for modeling uncertain phenomena, to develop RO as a tractable methodology for solving optimization problems under uncertainty, and to expose students to a large number of applications.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

IE 3056 - OPTIMIZATION UNDER UNCERTAINTY

Minimum Credits: 3
Maximum Credits: 3
In this course, students will learn popular formulations and algorithms for stochastic programming, robust optimization, chance constrained optimization, stochastic dual dynamic programming, and VaR and CVaR based models, as well as some interesting applications. Students should

have knowledge of Matlab, Python, C, or C++ programming languages, a doctoral level linear programming background, good mathematical reasoning ability, and a good understanding of integer programming and computational optimization.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IE 3057 - BILEVEL OPTIMIZATION

Minimum Credits: 3

Maximum Credits: 3

This is a course on the theory, algorithms and applications of bilevel optimization. Bilevel optimization models are motivated by various real-life settings (e.g., in transportation, energy, defense, network design) that involve independent decision-makers, referred to as the leader and the follower, who interact in a hierarchical manner. Specifically, the leader (the upper-level decision maker), whose perspective is modeled, needs to take into account the decisions of the other (lower-level) decision-maker, i.e., the follower, who solves his/her own optimization problem that, in turn, also depends on the decisions of the leader. In this class we will overview basic modeling concepts of bilevel programming, computational complexity issues, solution algorithms and several notable applications.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IE 3072 - NANOMECHANICS

Minimum Credits: 3

Maximum Credits: 3

Mechanics at the nanometer-scale often greatly diverges from that observed in the macro-scale. This course will elucidate how under different physicochemical condition, different coupled nanoscale phenomenon are dominant. For example, length-scale dependence can be introduced in both elastic and plastic deformation. Topics covered in this course will include size-effects in nanoindentation, their associated strain-gradient dependent phenomena, surface and interface stress dependent phenomena in nanowires and bulk nanomaterials, switch-overs in deformation-modes with shrinking length-scales, implications of interfacial diffusion phenomena in microstructure evolution, thermomechanical response of nanomaterials, diffusion-driven solid-state dewetting, force-controlled mechanochemistry, and elastocapillarity of nanofilaments.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Industrial Engineering Graduate

IE 3077 - SEMINAR IN THERAPEUTIC OPTIMIZATION

Minimum Credits: 3

Maximum Credits: 3

This seminar surveys current research in therapeutic optimization. Emphasis is placed on critiquing and extending the current state of the art. Students will also be expected to present their own work in class.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

IE 3078 - CONVEX OPTIMIZATION

Minimum Credits: 3

Maximum Credits: 3

This course develops a modern framework for convex optimization. The topics covered in this course include concepts of convex analysis, smooth convex optimization, non-smooth convex optimization, structural optimization, duality theory.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

IE 3079 - ADVANCED STOCHASTIC PROCESSES

Minimum Credits: 3

Maximum Credits: 3

The primary objective of this course is to provide graduate students with advanced knowledge of the theory and application of stochastic processes in operations research and industrial engineering. Specific topics include discrete- and continuous- time martingales, Brownian motion and diffusion processes, with applications in queuing, optimal stopping and stochastic control, among others.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: IE 2072 and 2084; PLAN: Industrial Engineering (BEH or BSE)

IE 3080 - ADV TOPICS IN OPERATIONS RES

Minimum Credits: 3

Maximum Credits: 3

May cover various topics at the leading edge of technology in the area of operations research. Course content is announced by the professor.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

IE 3083 - OPERATIONS RESEARCH IN ENERGY

Minimum Credits: 3

Maximum Credits: 3

This course is a seminar on the modeling, analysis and solution of problems related to energy, natural resources, sustainment and the environment using the tools and techniques of operations research. Students will survey a variety of current and emerging topics including, but not limited to, planning and control of energy systems (e.g. capacity planning and operation of large-scale gas and/or electricity networks); operational and design problems arising in renewable energy production, integration and storage; energy systems management and maintenance, as well as pricing and policy related issues.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: IE 2082; PROG: Swanson School of Engineering

IE 3085 - QUEUING THEORY

Minimum Credits: 3

Maximum Credits: 3

Simple queueing models using Markov processes. Network series and cyclic queues. Models with general arrival or service patterns. Closed queues. Numerical and simulation techniques.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

IE 3087 - NETWORK-BASED OPTIMIZATION

Minimum Credits: 3

Maximum Credits: 3

This course covers graphs, digraphs and related concepts, node and edge covering problems, Euler tours, Hamiltonian cycles, tsp, set covering and matching problems, shortest path problems, maximum flow problems and minimum cost network flow problems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

IE 3088 - INTEGER PROGRAMMING

Minimum Credits: 3

Maximum Credits: 3

Polyhedral theory, computational complexity, super additive duality, and integral polyhedral.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

IE 3089 - REPAIRABLE SYSTEMS MODELING AND ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

A repairable system is a system that can be restored to a satisfactory condition through some intervention by a decision maker. In a manufacturing setting, such actions might include inspections, part replacements or setting adjustments; in a medical context, such actions might include disease screening, surgery or drug therapy. In this course, we consider applications of probability, simulation and optimization in the: (a) mathematical modeling of the performance of repairable systems, and (b) designing of optimal inspection and maintenance policies for repairable systems. In each case, we compare and contrast

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

IE 3093 - STOCHASTIC PROGRAMMING

Minimum Credits: 3

Maximum Credits: 3

This course considers stochastic programming, a technique for making optimal decisions under uncertainty. Will consider theory, algorithms and applications. Extensions to multi-stage problems and stochastic integer programs will be discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

IE 3094 - MARKOV DECISION PROCESSES

Minimum Credits: 3

Maximum Credits: 3

Introduces the fundamentals of discrete sequential models when outcomes are uncertain. Covers formulation and analysis of stochastic dynamic programs under several objective criteria; developing and enhancing solution algorithms; applications in the areas of inventory control, vehicle routing, and resource allocation; development of approximate solution techniques.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

IE 3095 - GRADUATE SEMINAR

Minimum Credits: 1

Maximum Credits: 1

Speakers from universities and industry discuss research topics and state-of-the-art material in the areas of operations research, engineering management, and manufacturing systems. Enrollment in this course is mandatory for all full-time Ph.D. students.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: PROG: Swanson School of Engineering

IE 3097 - ALGORITHMS FOR ENGINEERS

Minimum Credits: 3

Maximum Credits: 3

This course will develop students' ability to understand algorithms and use them appropriately for real-world and theoretical problems. Our discussion will be geared towards topics and example arising in IE applications, in particular, in the context of optimization problems. Topics covered will include introduction to complexity theory, running times and performances measures, common ideas in algorithmic design including randomized algorithms, approximation algorithms, and heuristics..

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

IE 3099 - THEORY OF STOCHASTIC STIMULATION

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the theoretical foundations of simulation methodology and its recent advances with an emphasis on stochastic processes. Topics include: generating random objects, output analysis (autoregressive, regenerative, spectral, and stationary times series methods), variance reduction techniques (antithetic variable, common random numbers, control variables), Markov chain Monte Carlo (MCMC), rare-event simulation techniques, stochastic optimization (likelihood ratio method, perturbation analysis, stochastic approximation), sampling of stochastic differential equation, exact simulation and perfect sampling. Some of the motivating applications that will be discussed are drawn from the domain of finance and risk management, insurance modeling, and queuing networks.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: IE 2084

IE 3186 - APPROXIMATE DYNAMIC PROGRAMMING

Minimum Credits: 3

Maximum Credits: 3

This course is an introduction to the theory and application of large-scale dynamic programming with emphasis on a broad spectrum of applications in finance, revenue management, and health policy. The first part of the course emphasis more on approximate dynamic programming algorithms. The second part of the course is devoted to the recent advances in reinforcement learning. Topics include Markov decision processes, dynamic programming algorithms, simulation-based algorithms, q-learning, theory and algorithms for value function approximation and policy search methods, stochastic approximation, r-max algorithm, online learning and regret minimization, and posterior sampling method.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IE 3997 - RESEARCH, PH.D.

Minimum Credits: 1

Maximum Credits: 12

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

IE 3998 - PH.D. INDEPENDENT STUDY

Minimum Credits: 2
Maximum Credits: 12
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

IE 3999 - PH.D. DISSERTATION

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

Infct Disease & Microbiology

IDM 2001 - MOLECULAR BIOLOGY OF MICROBIAL PATHOGENS

Minimum Credits: 3
Maximum Credits: 3
Students will develop a comprehension of (1) bacterial anatomy, metabolism, regulation of gene expression, genetics, and the action of anti-microbial agents at the molecular level; and (2) the relevance of this knowledge to understanding microbial pathogenesis and the host response. In addition, prokaryotic and eukaryotic model system of gene regulation will be compared to emphasize the conceptual aspects and application of molecular biology to infectious disease.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

IDM 2002 - MOLECULAR VIROLOGY

Minimum Credits: 3
Maximum Credits: 3
The intent of this course is to provide a comprehensive coverage of the animal virus families and a few selected examples of bacterial viruses. The emphasis of the course will be to provide an in depth coverage of the viral life cycle, including the fundamental mechanisms of viral replication and gene regulation. Representative members of each virus family will be selected for the lecture material.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: IDM 2001 or INTBP 2000

IDM 2003 - HOST RESPONSE TO MICROBIAL INFECTION

Minimum Credits: 2
Maximum Credits: 2
Students will develop a comprehension of the concepts and knowledge of resistance and immune responses of humans to microbial infection. The role of phagocytic cells; complement; lymphocytes; the development of humoral and cell mediated immunity at the molecular, cellular, and organ level; and the consequences in controlling and enhancing disease are covered.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

IDM 2004 - VIRAL PATHOGENESIS

Minimum Credits: 2
Maximum Credits: 2

The goal of this course is to integrate the lectures given on a particular virus in the comprehensive virology course with two additional lectures which expand the basic biology of the virus life cycle to the level of virus-host interactions. The first lecture will address the pathogenic properties of the virus from the perspective of disease manifestations, immunology, and the natural history of infection. This will be followed by a second lecture which will address the molecular basis of viral pathogenesis and current advances in antiviral research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: LEVEL: Second Year Graduate Students and above

IDM 2007 - PUBLIC HEALTH COMMUNICABLE DISEASE PRACTICUM

Minimum Credits: 1

Maximum Credits: 3

The practicum, through structured and educationally supervised assignments at an approved site with an experienced professional, is aimed at providing a means to identify and to apply a variety of theories and skills discussed and demonstrated in the classroom to the real life experiences to which the student is assigned in the field under professional supervision. The assignments and choice of site are determined by the director of the program and the program requirements and career goals of the student.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

Course Attributes: Community Element -General Community Impact

IDM 2010 - PATHOGEN BIOLOGY

Minimum Credits: 2

Maximum Credits: 2

The goal of this course is to teach the basic biology and pathogenesis of many of the most important infectious diseases that are public health challenges in the 21st century. It is intended for students with a background in biological sciences, and will review those features that make these pathogens so successful as agents of disease. Topics covered will include: the interaction between the pathogen and the host genome, the strategies used by each pathogen to evade the host response, and the ways in which the pathogen defends itself against treatments and vaccines. The course will be taught using a combination of didactic lectures and paper discussions based on the current primary research literature.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: PUBHLT 2015; PLAN: Infect Disease & Microbiology (MS or PHD); SUBPLAN: Infect Dis Path Erad Lab Pract or Inf Dis Mgmt Interv Comm Pract or Peace Corps (IDM)

IDM 2014 - FUNCTIONAL GENOMICS OF MICROBIAL PATHOGENS

Minimum Credits: 3

Maximum Credits: 3

Functional genomics involves the systematic study of genes and their function. This course will introduce many of these innovative technologies for the systematic analysis of gene function including gene discovery, transcriptome analysis, random and targeted gene disruption strategies, proteomics, metabolomics, and integrative systems approaches with a particular emphasis on their application to infectious disease pathogens and their interaction with their host cells. We will also examine the genomes of well-studied pathogens and explore how these technologies have been used to study their biology and pathogenesis and the application of these techniques for drug and vaccine targeting and development.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: IDM 2001

IDM 2021 - SPECIAL STUDIES IN MICROBIOLOGY

Minimum Credits: 1

Maximum Credits: 15

Properly qualified students may undertake special study, experience in a clinical laboratory, or research with the approval and under the guidance of a

member of the faculty. Part or all of such study may be used as the basis for the essay or dissertation requirement for the master's and doctoral degrees.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

IDM 2022 - SPECIAL TOPICS

Minimum Credits: 1

Maximum Credits: 3

Properly qualified students may undertake special study under guidance of a faculty member to acquire knowledge and skill to use independently a specific laboratory research tool, e.g., Gene cloning, DNA sequencing, cell sorting, oligonucleotide synthesizer, polymerase chain reaction, statistical analysis with pc.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

IDM 2023 - MICROBIOLOGY LABORATORY

Minimum Credits: 2

Maximum Credits: 2

A series of laboratory exercises introduces the student to microbiological procedures, especially as they apply to virology and bacteriology.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IDM 2025 - MICROBIOLOGY SEMINAR

Minimum Credits: 1

Maximum Credits: 1

In this course students are going to present scientific journal articles dealing with virology, immunology, molecular biology, and epidemiology and drug therapy of viral diseases. In addition, students will present similar aspects of bacterial diseases. In some sessions students may be shown video presentation of diagnosis and clinical management of a particular viral or bacterial disease.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

IDM 2032 - HUMAN DIVERSITY AND PUBLIC HEALTH

Minimum Credits: 2

Maximum Credits: 2

This course will provide a theoretical framework for designing policy, research, and programs for diverse populations. Opportunities for expanding understanding and examining attitudes about human diversity will be presented. Community organizing and marketing methods related to program design and recruiting and sustaining volunteer or patient participation in programs will be a major focus of the course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IDM 2034 - CONTROL AND PREVENTION OF HIV/AIDS

Minimum Credits: 2

Maximum Credits: 2

This graduate level course on HIV disease prevention and control is aimed at providing an in-depth study of the HIV disease. The course goal is to provide advanced knowledge base of information on the complex clinical, preventive, treatment, and policy issues on HIV/aids.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Graduate Sch of Public Health (PPBHL) or School of Medicine (MEDSC)

Course Attributes: Global Studies

IDM 2038 - PREVENTION, TREATMENT, AND CONTROL OF GLOBAL INFECTIOUS DISEASES

Minimum Credits: 3

Maximum Credits: 3

This course is aimed to prepare the student to demonstrate knowledge of the prevention, treatment, and control of infectious diseases throughout the world. Students will develop knowledge in the pathogenesis, treatment, individual, and environment intervention in prevention and spread of infectious diseases.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Graduate Sch of Public Health (PPBHL) or School of Medicine (MEDSC)

IDM 2040 - SCIENTIFIC COMMUNICATION

Minimum Credits: 1

Maximum Credits: 1

This course will include a 1-hour lecture with 50 minutes of discussion on topics including: Tools for presentations (e.g. Word, PowerPoint, Endnote, Photoshop, Illustrator), preparing and delivering poster and oral presentations, technical writing skills for scientific publications, writing grant applications, and preparing for writing graduate theses or essays. Assignments will include writing abstracts, designing posters, and a short oral presentation of their work. Satisfactory letter grades will be contingent upon participation in discussions, and completion of assignments and projects.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Infectious Diseases & Microbiology (MPH, MS, or PhD)

IDM 2069 - INFECTION PREVENTION AND CONTROL IN HEALTH CARE SETTINGS

Minimum Credits: 2

Maximum Credits: 2

This course in infection control is aimed at building knowledge and skills as well as critical thinking through evidenced-based and case-based learning to provide students with a foundation in infection prevention and control in a healthcare settings. As the end of this course, successful students will have current knowledge of hospital acquired infections, patient isolation practices, infection surveillance, documentation, monitoring, reporting, and outbreak investigations. The course will be taught by expert practitioners, researchers, and clinicians in infection prevention. Students may enroll in this course only or they may combine it with an optional practicum/internship of a minimum of 200 hours within a clinical setting if accepted into IDM 2068 (Infection Prevention and Control Practicum/Internship)

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IDM 2161 - METHODS OF INFECTIOUS DISEASE EPIDEMIOLOGY

Minimum Credits: 1

Maximum Credits: 1

Covers important topics in infectious diseases epidemiology, including public health surveillance, emerging infectious diseases, the role of infectious diseases in the etiology of chronic diseases, and epidemiologic study designs and laboratory methods used in infectious diseases research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: EPIDEM 2110

IDM 2420 - EXPERIMENTAL VIROLOGY

Minimum Credits: 2

Maximum Credits: 2

This course is designed for graduate students training in molecular virology research and is designed to provide a more in-depth study of molecular virology through a critical analysis by the student of seminal research publications in various virus systems. Paper discussion format.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: IDM 2002

IDM 3010 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1

Maximum Credits: 15

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

IDM 3440 - VACCINES AND IMMUNITY

Minimum Credits: 2

Maximum Credits: 2

Vaccines are widely regarded as one of the major contributors to increased life expectancy. The purpose of this course is to (1) explore the history of vaccines; (2) underscore the successful role of current vaccines in the management of infectious diseases; (3) present strategies for a new generation of safe and effective molecular vaccines; and (4) discuss the ethical and economic realities of vaccine use and development.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: IDM 2003; PROG: School of Public Health

IDM 3441 - EPIDEMIOLOGY AND CONTROL OF SEXUALLY TRANSMITTED INFECTIONS

Minimum Credits: 1

Maximum Credits: 1

The purpose of IDM 3441 is to provide students with an understanding of the major sexually transmitted infections (STIs) in the U.S. This course will focus on the underlying transmission dynamics, history, risk factors, public health impact and current strategies for control. The method of teaching will be to provide STI-specific lectures and promote critical discussion about the strategy and control limitations thereof. Approximately 50% of class time will be lecture and the remaining 50% will be devoted to a critical review of the assigned papers (2) for each class period.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Information Science

HIM 1405 - MEDICAL TERMINOLOGY LAB

Minimum Credits: 1

Maximum Credits: 1

This course is a basic study of the professional language of medicine. It is designed to include word construction, pronunciation, spelling, definition, and use of terms related to all areas of medical science, hospital service, and health related professions. This ONLINE course is designed to give the student a knowledge of words frequently used in the medical field and provides examples through the review of basic anatomy, physiology, surgical procedures, diagnostic procedures, and symptomatology. Coverage of the pathology of each body system is will take place along with an introduction to pharmacology, and the pharmacological treatment of frequently occurring conditions of each body system.

Academic Career: UGRD

Course Component: Mass Media

Grade Component: Letter Grade

Course Requirements: PLAN: Health Information Management (BPH or BS or BS-H)

INFSCI 0017 - FUNDAMENTALS OF OBJECT-ORIENTED PROGRAMMING

Minimum Credits: 3

Maximum Credits: 3

First programming course for is majors, designed for students with little or no programming experience. Basic principles and concepts of object-oriented programming using java. Classes, interfaces, operators, program control, arrays, testing, debugging, inheritance, polymorphism, and event handling. Techniques for simplifying the programming process and improving code quality. Activity-based learning.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: LG/SNC Elective Basis

Course Requirements: CREQ: INFSCI 0010

INFSCI 2000 - INTRODUCTION TO INFORMATION SCIENCE

Minimum Credits: 3

Maximum Credits: 3

Overview of the history, academic roots, conceptual structure, and methodology of information science. Explores principles and concepts that underlie information processing, including information theory, models of information storage and retrieval, and human cognition. Basic processes of information systems analysis, design and development.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

Course Attributes: Global Studies

INFSCI 2020 - MATHEMATICAL FOUNDATIONS FOR INFORMATION SCIENCE

Minimum Credits: 3

Maximum Credits: 3

Basic concepts of theoretical mathematics needed to understand theoretical work in information science with the exception of probability and statistics; in particular, concepts from set theory, graph theory, combinatorics, logic, abstract algebra, topology, and mathematical analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

INFSCI 2040 - RESEARCH DESIGN

Minimum Credits: 3

Maximum Credits: 3

Beginning research design with emphasis on the basic process of inquiry. Identifying and articulating research problems, determining and describing procedures for conducting research, designing data collecting procedures, formulating testable hypotheses, interpreting and drawing conclusions from data analysis, and reporting research findings and implications.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or School of Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

INFSCI 2120 - INFORMATION AND CODING THEORY

Minimum Credits: 3

Maximum Credits: 3

Includes measures of information, information sources, joint and conditional uncertainty, noiseless and deterministic channels, reliable messages through unreliable channels, channel capacities, properties of codes, minimal codes, and error-detecting and error-correcting codes. Examines entropy as a measure of semantic content.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

INFSCI 2125 - NETWORK SCIENCE & ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: ISCI-MSI, ISCI-AC, BDA-ACG, SAISYS-ACG, SAIS-ACG, ISCI-PHD, INFSCI-MSI, INFSCI-AC, INFSCI-PHD

INFSCI 2130 - DECISION ANALYSIS AND DECISION SUPPORT SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

Introduction to decision analysis with elements of human cognition under uncertainty, including structuring decision problems and developing creative decision options, quantifying uncertainty and preferences, and combining uncertainty and preferences to arrive at optimal decisions. Foundations needed for applying the methods of decision analysis in decision support systems. Note: can also be used to fulfill distribution requirement in cognitive science area.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

INFSCI 2135 - PROBABILISTIC METHODS

Minimum Credits: 3

Maximum Credits: 3

This seminar provides an introduction to computational approaches for probabilistic modeling and inference. A particular focus is placed on Bayesian networks, although other probabilistic models also will be studied. Medical applications are emphasized, however, the principles are general and no medical knowledge is needed to take the course. The course does not require knowledge of a computer programming language. An understanding of basic probability theory would be helpful, but is not required.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

INFSCI 2140 - INFORMATION STORAGE AND RETRIEVAL

Minimum Credits: 3

Maximum Credits: 3

Problems and techniques related to storing and accessing unstructured information with an emphasis on textual information. Overview of several approaches to information access with a primary focus on search-based information access. Covers automated retrieval system design, content analysis, retrieval models, result presentation, and system evaluation. Examines applications of retrieval techniques on the web, in multimedia and multilingual environments, and in text classification and event tracking.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

INFSCI 2149 - INTRODUCTION TO INFORMATION SECURITY

Minimum Credits: 3

Maximum Credits: 3

Introductory information security and privacy course for non-SCI students enrolled in the Graduate Certificate Program in Cybersecurity, Policy and Law. Covers fundamental issues and first principles of security and information assurance, including security policies, models and mechanisms related to confidentiality, integrity, authentication, identification, and availability issues related to information and information systems. The course will introduce students to risk management, security assurance, secure design principles, organizational security policy, legal and ethical issues in security, and standards and methodologies for security evaluation and certification.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Plan = CPL-AC, CSPL-AC, or CSPL-MN

INFSCI 2150 - INFORMATION SECURITY AND PRIVACY

Minimum Credits: 3

Maximum Credits: 3

Fundamental issues and first principles of security and information assurance. Security policies, models and mechanisms related to confidentiality, integrity, authentication, identification, and availability issues related to information and information systems. Basics of cryptography such as key management and digital signatures, etc. And network security such as PKI, IPsec, intrusion detection and prevention. Risk management, security assurance and secure design principles. Issues such as organizational security policy, legal and ethical issues in security, standards and methodologies for security evaluation and certification.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: TELCOM 2000 or INFSCI 1070; PROG: School of Information Science or Sch Computing and Information

INFSCI 2160 - DATA MINING

Minimum Credits: 3

Maximum Credits: 3

Introduction to data mining techniques, including data preprocessing, data mining primitives, association rules, decision trees, cluster analysis, classification and machine learning, data visualization, and data warehousing. Detailed applications from a wide variety of domains.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: INFSCI 2020 (B or greater) or INFSCI 2725 (B or greater) or INFSCI Exemption-Analytics Component (Test Score 6 or higher);

INFSCI 2170 - CRYPTOGRAPHY

Minimum Credits: 3

Maximum Credits: 3

Principles of number theory, cryptographic algorithms and cryptanalysis. Steganography, block and stream ciphers, secret key encryption (DES, res, re-n), primes, random numbers, factoring, and discrete logarithms. Public key encryption (RSA, Diffie-Helman, elliptical curve cryptography, n'tru); key management, hash functions (md5, sha-1, ripemd-160, HMAC), digital signatures, certificates and authentication protocols. Cryptanalytic methods (known, chosen plaintext etc.) For secret and public key schemes (linear and differential cryptanalysis, pollard's rho method, number field sieve, etc.).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: ISCI-MSI, ISCI-AC, BDA-ACG, BDAL-ACG, SAISSYS-ACG, SAIS-ACG, ISCI-PHD, INFSCI-MSI, INFSCI-AC, INFSCI-PHD

INFSCI 2204 - INTRODUCTION TO TECHNICAL COMMUNICATIONS FOR INFORMATION SCIENCE

Minimum Credits: 3

Maximum Credits: 3

An English language support course for international students in SIS who are non-native speakers of English. Introduces students' to strategies and skills for comprehension and production in academic English contexts. Also addresses issues of academic integrity and plagiarism.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad SN Basis

INFSCI 2205 - TECHNICAL COMMUNICATIONS FOR INFORMATION SCIENCE

Minimum Credits: 3

Maximum Credits: 3

An English language support course for international students in SIS who are non-native speakers of English. Helps develop students' strategies and skills for comprehension and production in academic English contexts. Also addresses issues of academic integrity and plagiarism.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad SN Basis

INFSCI 2230 - CYBERCRIME

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

INFSCI 2300 - HUMAN INFORMATION PROCESSING

Minimum Credits: 3

Maximum Credits: 3

Introduction to research and theory in human cognition, including perception, attention, pattern recognition, memory, representation of knowledge, language, problem solving, reasoning, and decision making, with emphasis on modeling human cognition and implications for user interface design and design of intelligent systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

INFSCI 2350 - HUMAN FACTORS IN SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

Introduces principles for analysis of human performance in human-machine systems. Emphasis on principles of human factors as applied to the design of systems other than the graphical user interface (GUI) that is covered in interactive systems INFSCI 2470.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

INFSCI 2410 - INTRODUCTION TO NEURAL NETWORKS

Minimum Credits: 3

Maximum Credits: 3

Introduces mathematical and computer techniques used in constructing models of information processing by parallel distributed processing (PDP) networks; principles of input-output functions and adaptation (learning) functions in single units and in networks; examines the relation between PDP networks, neurobiology, artificial intelligence, and cognition.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

INFSCI 2415 - INFORMATION VISUALIZATION

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the visual design, structure, and organization of information as applied to library and information environments and web site design. Topics include visualization literacy, usability research, theories of visual perception and cognition, visualization models, visual analytics, and data graphics. The emphasis is on user and task-centered design for developing and evaluating visualization-based tools for various types of data. Practical work with visualization technologies will be included.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

INFSCI 2420 - INTRODUCTION NATURAL LANGUAGE PROCESSING

Minimum Credits: 3

Maximum Credits: 3

Overview of computational approaches to natural language processing. Issues in syntax, semantics, and pragmatics, as well as overall system architectures.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: INFSCI 2300 and (INFSCI 2500 or INFSCI 2500 Exemption (Test Score=1)); PROG: School of Information Science or Sch Computing and Information

INFSCI 2430 - SOCIAL COMPUTING

Minimum Credits: 3

Maximum Credits: 3

Introduction to key theories and technologies of social computing. Reviews major types of social computing systems. Several social computing systems are explored and used throughout the course. Final group project focuses on designing and implementing a social web system.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

INFSCI 2440 - ARTIFICIAL INTELLIGENCE

Minimum Credits: 3

Maximum Credits: 3

With the focus on the machine intelligence technologies around processing, representing, modeling, and learning from large quantity of data in the current web context, this course serves as a broad introduction to students of the theories, algorithms and applications of modern Artificial Intelligence (AI). Taking a data science oriented perspective, this course aims to help students to develop a broad theoretical knowledge and practical experience in AI. With the understanding that modern AI is actually a discipline of theories and techniques around the idea of data driven model-based machine intelligence, this course consists of four broad modules: 1) representation of knowledge, 2) uncertainty-based modeling and

reasoning, 3) improvements with machine learning, and 4) communication with natural language processing, all of which are necessary components for an intelligent agent to engage intelligently with other agents or people in the real world. The goal of this course is to prepare students to work creatively and productively in current data-driven and intelligence-rich environment, and it is ideal for students who would like to be introduced to the techniques of modern AI. Topics include: search, logic and deduction, knowledge representation and memory organization, production systems, expert systems, planning, language understanding, and machine learning.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: INFSCI 2020 and (INFSCI 2500 or INFSCI 2500 Exemption (Test Score=1)); PROG: School of Information Science or Sch Computing and Information

INFSCI 2460 - SPATIAL REASONING FOR GIS

Minimum Credits: 3

Maximum Credits: 3

Fundamental issues in qualitative spatial reasoning, spatial languages, and spatial decision-making. Applications of spatial reasoning including problems of navigation and interface issues for GIS.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

INFSCI 2470 - INTERACTIVE SYSTEM DESIGN

Minimum Credits: 3

Maximum Credits: 3

The environments that can or should be provided for interactive use of computers. Necessary hardware, software, and behavioral components of an interactive system; data structure considerations for various types of interactive applications; operating system fundamentals, functions, and characteristics. Emphasis on interactive operating systems, human machine dialogues, interactive graphics, programming languages, and application(s) design.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Information Science (MS or PHD); SUB: Digital Libraries & Info Mgmt

INFSCI 2480 - ADAPTIVE INFORMATION SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

Introduces key principles of adaptive information systems and modern techniques for user modeling and personalization. Covers the construction of user models and user profiles. Examines the use of various personalization techniques such as adaptive search, recommendation, and navigation support. Reviews major types of adaptive information systems and explores important application areas.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: INFSCI 2710 or 2470; PROG: School of Information Science or Sch Computing and Information

INFSCI 2500 - DATA STRUCTURES

Minimum Credits: 3

Maximum Credits: 3

Theory and application of data structures. Data and file structures and their appropriateness to various applications.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: (Information Science or Telecommunications or Interdisc Information Science or Not Candidate for Degree) or SUBPLAN: (Digital Libraries & Info Mgmt)

INFSCI 2510 - INFORMATION SYSTEMS ANALYSIS AND DESIGN

Minimum Credits: 3

Maximum Credits: 3

The focus of this course is on studies of specifications of the information systems development process. The course covers fundamental topics on two main stages of information systems development life cycle: analysis, and design. Students will become familiar in techniques to investigate, collect, organize, and structure requirements for an information system as well as understanding how to design different component of the information system to satisfy the requirements. The course hands-on experiences such as working directly with real-world clients to address an information need challenge. Students are evaluated through regular assignments, quizzes, and a course project

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information ; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

INFSCI 2511 - INFORMATION SYSTEMS DESIGN

Minimum Credits: 3

Maximum Credits: 3

Object-oriented design best practices; principles of system architecture; design patterns; requirements traceability; construction of uml-compliant models (class, sequence, communication and package diagrams); refactoring; iterative development of system prototype. Requires knowledge of fundamental of programming concepts including abstract classes, interfaces, inheritance, polymorphism, and message passing.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: INFSCI 2510; PROG: School of information Science or Sch Computing and Information

Course Attributes: Global Studies

INFSCI 2540 - SOFTWARE ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

Critical analysis of leading iterative software development processes; TSP/PSP, unified process, extreme programming and related agile processes; enterprise management and control of software projects (CMM and COBIT); configuration and change management; quality assurance and testing.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

INFSCI 2545 - SOFTWARE QUALITY ASSURANCE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

INFSCI 2550 - CLIENT-SERVER SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

Analysis and design of distributed systems. Emphasis on distributed applications and various protocols used in such applications. Explores

algorithms for various iterative and concurrent server designs as well as the design of application level protocols. Includes various languages and operating systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: INFSCI 2500 or INFSCI 2500 Exemption (Test Score=1); PROG: School of Information Science or Sch Computing and Information

INFSCI 2560 - WEB TECHNOLOGIES AND STANDARDS

Minimum Credits: 3

Maximum Credits: 3

Covers core technologies and standards for distributed systems, especially web based distributed systems. Includes an overview of the standardization process and the standards organizations. Looks at network and data standards with significant attention to HTML/XML, HTTP, URL and other web technologies including APIS to programming with them.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

INFSCI 2591 - ALGORITHM DESIGN

Minimum Credits: 3

Maximum Credits: 3

Fundamentals of algorithm design including greedy algorithms, divide-and-conquer algorithms, dynamic programming, heuristics and approximate algorithms, parallel and distributed algorithms, multi-dimensional data structures, time complexity of algorithms, and development of programs from algorithms.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: INFSCI 2500 or INFSCI 2500 Exemption (Test Score=1); PROG: School of Information Science or Sch Computing and Information

INFSCI 2595 - MACHINE LEARNING

Minimum Credits: 3

Maximum Credits: 3

Introduction to machine learning, includes algorithms of supervised and unsupervised machine learning techniques, designing a machine learning system, bias-variance tradeoffs, evaluation metrics; Parametric and non-parametric algorithms for regression and classification, k-nearest-neighbor estimation, decision trees, discriminant analysis, neural networks, deep learning, kernels, support vector machines, ensemble methods, regularization techniques; Dimensionality reduction, principle component analysis, LDA, t-SNE; Clustering methods such as k-means, hierarchical clustering, spectral clustering, DBSCAN; Mathematical foundations including linear algebra, probability theory, statistical tests, statistical learning theory; Best practices and application to real-world problems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

INFSCI 2620 - DEVELOPING SECURE SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

Design and implementation of secure systems. Principles and practice of trustworthy computing, secure and high assurance software development process and lifecycle models. Secure software design using UMLSEC, secure design of operating systems and network services, database and applications. Secure webs services, cots-based and service-oriented systems. Software assurance tools and techniques such as code analysis and testing, evaluation and certification of software. Secure programming techniques.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: INFSCI 2150 or TELCOM 2810; PROG: School of Information Science or Sch Computing and Information

INFSCI 2621 - SECURITY MANAGEMENT AND COMPUTER FORENSICS

Minimum Credits: 3

Maximum Credits: 3

Administration and management of security of enterprise information systems and networks. Principles and tools related to intrusion detection systems, vulnerability analysis, anomaly detection, computer forensics, application logging, auditing and data management, risk management, contingency planning and incident handling, digital immune systems, and alarms and responses. Security standards, evaluation and certification process; security planning, ethical and legal issues in information; privacy, traceability and cyber-evidence.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: (INFSCI 2150 or TELCOM 2810) and TELCOM 2821; PLAN: ISCI-MSI, ISCI-AC, BDA-ACG, BDAL-ACG, SAISSYS-ACG, SAIS-ACG, ISCI-PHD, INFSCI-MSI, INFSCI-AC, INFSCI-PHD

INFSCI 2625 - CYBERSECURITY AND PRIVACY REGULATION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

INFSCI 2629 - CAPSTONE IN SECURITY

Minimum Credits: 3

Maximum Credits: 3

Integrative class for master's students in their final semester of the sais track. Combination of business and technical case studies and group projects. Case studies focus on business/economics aspects of providing information assurance and how this service impacts technology. Group projects involve design and development of a prototype secure and survivable information system including application development, system deployment, system optimization and system economics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: (INFSCI 2150 or TELCOM 2810) and TELCOM 2821; PLAN: ISCI-MSI, ISCI-AC, BDA-ACG, BDAL-ACG, SAISSYS-ACG, SAIS-ACG, ISCI-PHD, INFSCI-MSI, INFSCI-AC, INFSCI-PHD

INFSCI 2710 - DATABASE MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

Basic graduate course on database systems. Centralized relational database systems with emphasis on database design, implementation, and administration. Comprehensive coverage of SQL, data modeling, normalization, storage management, transaction management, and query evaluation. Students will develop practical skills in building and maintaining realistic medium-scale database systems. Also covers more advanced topics including data warehousing and OLAP.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: INFSCI 2500 or INFSCI 2500 Exemption (Test Score=1); PLAN: IIS-MS or INFSCI-AC or INFSCI-MSI or INFSCI-PHD or IISCI-MS or ISCI-AC or ISCI-MSI or ISCI-PHD or SAISYS-AC or SAISYS-ACG or TCOMM-MST or TCOMM-AC) or (SUBPLAN: MLISDL-TR or MLISDLI-SP or MLIDLIM-SP)

INFSCI 2711 - ADVANCED TOPICS IN DATABASE MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

Advanced graduate course on database systems. Key issues that typically arise in the context of large-scale enterprise database management in heterogeneous wide-area environments including distributed and non-relational database systems, network-centric data management, web-based information systems, heterogeneous databases, information integration, and wireless data management.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: INFSCI 2710; PLAN ISCI-MSI, ISCI-AC, BDA-ACG, BDAL-ACG, SAISSYS-ACG, SAIS-ACG, ISCI-PHD, INFSCI-MSI, INFSCI-AC, INFSCI-PHD

INFSCI 2725 - DATA ANALYTICS

Minimum Credits: 3

Maximum Credits: 3

Introduction to fundamental technologies underlying distributed storage and efficient analysis of very large amounts of data. An overview of approaches to extracting information and knowledge from data, verification, testing, and presentation of results.

Academic Career: Graduate

Course Component: Lecture

Grade Component: LG/SNC Elective Basis

INFSCI 2730 - E-BUSINESS

Minimum Credits: 3

Maximum Credits: 3

Conceptualization of e-business in the context of markets, business practices, and information theory. Implementation of e-business websites and services via various programming languages. Examines various models for online consumer systems, business-to-business systems, and enterprise computing--e.g., Supply chain models. Covers related technologies in document processing, telecommunications, and security.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: INFSCI 2560 and 2710; PROG: School of Information Science or Sch Computing and Information

INFSCI 2731 - SECURITY IN E-COMMERCE

Minimum Credits: 3

Maximum Credits: 3

Covers the technology, concepts, issues and principles that are important in the design and implementation of secure e-commerce systems. Examines technology for protecting electronic commerce. It will include discussion of basic security principles, as well as the issues, policy and standards particular to e-commerce applications.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: INFSCI 2560; CREQ: (INFSCI 2150 or TELCOM 2810); PROG: School of Information Science or Sch Computing and Information

INFSCI 2739 - WEB SERVICES AND DISTRIBUTED COMPUTING

Minimum Credits: 3

Maximum Credits: 3

Looks at advanced techniques to client server computing. Covers design techniques necessary for organizing very large web sites. Integrates the knowledge and skills from e-business and web technologies to develop a functioning distributed application using web services, RMI, RSS, AJAX, etc.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: INFSCI 2550 and 2730; PROG: School of Information Science

INFSCI 2750 - CLOUD COMPUTING

Minimum Credits: 3

Maximum Credits: 3

This course provides an overview of the concepts and design principles behind existing cloud solutions. Topics include large scale data processing techniques such as mapreduce/hadoop and its related ecosystem, overview of virtualized commercial cloud models, system virtualization, hypervisors and virtualized platforms. Design of cloud storage systems such as key-value stores and geographically distributed storage systems. Introduction to security and privacy issues in cloud computing, issues of data and execution privacy in modern commercial cloud services.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: (INFSCI 2500 or INFSCI 2500 Exemption (Test Score=1)); PLAN: School of Information Sciences

INFSCI 2780 - INTERACTIVE GRAPHICS

Minimum Credits: 3

Maximum Credits: 3

Computer graphics, point plotting techniques, line drawing display, clipping and windowing, display lines, geometric models, picture structure, graphic input devices and techniques, event handling, raster graphics, solid area scan conversion, three-dimensional graphics, shading, and user-interface design related to the associated behavioral factors in INFSCI 2300 and INFSCI 2350.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: INFSCI 2500 or INFSCI 2500 Exemption (Test Score=1); PROG: School of Information Science

INFSCI 2801 - GEOSPATIAL INFORMATION SYSTEMS (GIS)

Minimum Credits: 3

Maximum Credits: 3

Introduction to the fundamentals of GIS. Topics include GIS components, geospatial data structures, geospatial databases, geospatial data integration and conversion, overlay analysis, proximity analysis, network analysis, buffering, topology, and GIS tools (hardware and software).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

INFSCI 2802 - LOCATION-BASED SERVICES

Minimum Credits: 3

Maximum Credits: 3

Internet GIS, distributed geo-processing on the internet, mobile GIS, location-based services, navigation systems and services, social networking, and a selection of emerging applications possible through mobile GIS and location-based services.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: School of Information Science or Sch Computing and Information

INFSCI 2809 - SPATIAL DATA ANALYTICS

Minimum Credits: 3

Maximum Credits: 3

Geospatial data collection, geospatial data structures and indexing, geospatial analysis, data quality, geospatial data structures and algorithms for surfaces, spatiotemporal databases, and digital terrain modeling.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: School of Information Science or Sch Computing and Information

INFSCI 2821 - FOUNDATIONS OF CLINICAL AND PUBLIC HEALTH INFORMATICS

Minimum Credits: 3

Maximum Credits: 3

A survey of fundamental concepts and activities on information technology applied to health care. Topics include computer-based medical records, knowledge-based systems, telehealth, decision theory and decision support, human-computer interfaces, systems integration, the digital library, bioinformatics, and educational applications. Department-specific applications such as pathology, radiology, psychiatry and intensive care are also discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: School of Information Science or Sch Computing and Information

INFSCI 2872 - E-BUSINESS

Minimum Credits: 3

Maximum Credits: 3

Conceptualization of e-business in the context of markets, business practices, and information theoretic contexts. Implementation of e-business websites and services via various programming languages. End-user e-commerce, business-to-business e-commerce, and enterprise computing--e.g., supply chain models. Related technologies in document processing, telecommunications, and security.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science

INFSCI 2910 - INDEPENDENT STUDY: FOUNDATIONS

Minimum Credits: 1

Maximum Credits: 3

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

INFSCI 2915 - SPECIAL TOPICS: FOUNDATIONS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

INFSCI 2930 - INDEPENDENT STUDY: COGNITIVE

Minimum Credits: 1

Maximum Credits: 3

Academic Career: Graduate

Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

INFSCI 2935 - SPECIAL TOPICS: COGNITIVE

Minimum Credits: 1

Maximum Credits: 3

An independent study intended to cover advanced material outside of or beyond the scope of current course offerings, specifically within the Cognitive Science or Cognitive Systems academic area.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

INFSCI 2950 - INDEPENDENT STUDY: SYSTEMS

Minimum Credits: 1

Maximum Credits: 3

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

INFSCI 2955 - SPECIAL TOPICS: SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

INFSCI 2960 - STUDY ABROAD

Minimum Credits: 1

Maximum Credits: 15

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

INFSCI 2965 - SEMINARS: SPECIAL TOPICS

Minimum Credits: 3

Maximum Credits: 3

Analysis of journal articles, books, and conference proceedings involving issues in information science. Techniques for preparing for the preliminary and comprehensive examinations.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

INFSCI 2970 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 3

Independent studies are intended to cover advanced material outside of or beyond the scope of current course offerings.

Academic Career: Graduate

Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

INFSCI 2980 - PRACTICUM

Minimum Credits: 3

Maximum Credits: 6

For students who desire experience in applying the knowledge and skills acquired in their course work and laboratory sessions. Students are responsible for arranging a practicum with a business or organization.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

INFSCI 2982 - INFORMATION SCIENCE COOPERATIVE PROGRAM

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad HSU Basis

INFSCI 2995 - THESIS

Minimum Credits: 3

Maximum Credits: 3

The thesis is a report of original, theoretical, or laboratory work suitable for publication.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

INFSCI 3005 - INTRODUCTION TO THE DOCTORAL PROGRAM

Minimum Credits: 3

Maximum Credits: 3

An introduction to the purpose and nature of doctoral studies in information science, theories and processes in scholarly research and the current state of research in the discipline. Graduate faculty in the program will present and discuss their current interests with students.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

INFSCI 3150 - SEMINARS: SPECIAL TOPICS

Minimum Credits: 3

Maximum Credits: 3

Analysis of journal articles, books, and conference proceedings involving issues in information science. Techniques for preparing for the preliminary and comprehensive examinations.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: Plan: Information Science (PhD)

INFSCI 3250 - RESEARCH SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

INFSCI 3350 - DOCTORAL SEMINAR

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: Plan: PhD students in Information Sciences, Library & Information Science, or Intelligent Systems

INFSCI 3990 - DISSERTATION

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: PLAN: Information Science (PHD); CUM GPA: 3.25

Institute for Practice & Research in Education

IPRE 9257 - EAST ASIA: YESTERDAY AND TODAY

Minimum Credits: 3
Maximum Credits: 3
The course is designed for middle and high school teachers of world cultures, world history, geography, economics, and literature. This seminar will provide students with the content and resources needed to implement the study of East Asia into their curriculum in accordance with various approaches to "standards". The seminar will include an analysis of the recently posted Pennsylvania civics and government standards. It will also reference to the latest national geography, world history, as well as NCSS standards.
Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad HSU Basis
Course Attributes: Asian Studies

Instruction and Learning

IL 2002 - INTRODUCTION TO URBAN EDUCATION

Minimum Credits: 3
Maximum Credits: 3
Students will explore the systemic issues unique to urban education historically as well as uncover how urban education is/can be a vehicle for social justice and equity in our country. The course will include the impact of policies, national movements, systemic racism, and their implications for students in urban schools over time in the united states as well as a deep understanding of the condition of students today with a focus on race, socioeconomic status, equity, etc.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

IL 2003 - UNDERSTANDING TEACHING THROUGH A SOCIAL WORKERS LENS

Minimum Credits: 3

Maximum Credits: 3

One critical key to being an effective teacher is being able to delve deep into seeing and understanding people's lived experiences. To do so well, requires that one adopt the 'lens' of a social worker in addition to that of a teacher. Diverse urban school students often have experiences that our predominately white, suburban, middle class teaching force haven't, the knowledge of which can assist teachers in better interpreting behaviors and contextualizing their work. Such topics as trauma, health, family dynamics, violence, and poverty are addressed. This course is a collaboration with the school of social work faculty.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2004 - RELATIONSHIP BUILDING: STUDENTS, FAMILIES AND COMMUNITIES

Minimum Credits: 3

Maximum Credits: 3

Students will learn ways to develop and nurture meaningful relationships with the students, families and communities they serve. This course provides opportunities and assignments designed to actively engage in the relationship development process as well as document it along with evidence of studying about demographics and historical content and contexts that provide the anchor for their work with and perspectives of the urban spaces in which they learn and educate.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2005 - URBAN SEMINAR

Minimum Credits: 1

Maximum Credits: 1

This seminar series provides a deep dive into some of the most salient issues of teaching in urban schools. It is designed to take the students on a journey that begins in the summer with an examination of identity, their own as well as a lens in which to see and understand their students in personal and contextualized ways. The fall seminar takes their newfound understanding and wraps it into meaningful relationship building between the self and student as the foundation for developing classrooms as communal learning spaces for all to thrive. Doing such work in understanding identity and relationships with students in urban spaces includes an explicit look at power and privilege in powerful ways that helps teachers understand their and their students lived experiences in ways that lead to opportunities to more clearly see where inequities lie in our educational and broader systems. This then builds to be the foundation for the spring seminar that provides framing and support in becoming a change agent in educational institutions in ways that disrupt such aspects of the environment, such as systemic institutionalized racism.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

IL 2006 - CULTURALLY RESPONSIVE TEACHING

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2041 - INTRO TO EARLY CHILDHOOD ED

Minimum Credits: 3

Maximum Credits: 3

The course is a general introduction to the theoretical, political, economic, and social issues that are inherent in the conduct and development of services for young children. The primary thrust is intended to provide students with both an overview of current issues and a basis for assessment.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2042 - LANGUAGE AND LITERATURE FOR THE YOUNG CHILD

Minimum Credits: 3

Maximum Credits: 3

An introduction to language and literacy for children birth through grade 4. Includes applied theories and stages of language development, transitions from oral to written expression, family literacy, and guidelines for the selection and use of quality literature.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

IL 2045 - YOUNG ENGLISH LANGUAGE LEARNERS

Minimum Credits: 3

Maximum Credits: 3

Prospective early childhood education teachers will identify, investigate and assess impacts of a variety of social agencies, organizations and current issues in early child hood education through planned interviews as well as class lectures, discussions and reports.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2047 - INTEGRATED CURRICULUM PRE-K-4

Minimum Credits: 3

Maximum Credits: 3

The second half of a two-semester course sequence in which pre-service teachers learn about young (pre-k through grade 4) children's thinking related to core ideas in mathematics and science and gradually, through a series of scaffolded tasks, develop pedagogical skills for designing and implementing math and science instruction.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2091 - SUPERVISED RESEARCH - SCIENCE

Minimum Credits: 1

Maximum Credits: 3

The student proposes and carries out a project under the direction and supervision of an appropriate member of the faculty.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

IL 2098 - DIRECTED STUDY - SCIENCE

Minimum Credits: 1

Maximum Credits: 9

The student proposes and carries out a project under the direction and supervision of an appropriate member of the faculty.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

IL 2203 - LANGUAGE AND LANGUAGE SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

This course provides an overview of literacy research and instructional approaches that relate to language and language systems with emphasis on the historical development of English, linguistic and sociocultural perspectives on second language learners and speakers of dialects, and instructional

approaches for encoding and decoding.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2208 - READING/WRITING METHODS 1: PRE K - GRADE 1

Minimum Credits: 3

Maximum Credits: 3

This course is intended for teacher candidates who are pursuing prek-4 certification. It is the first in a two-course sequence that focuses on classroom teaching methods for literacy. It is also part of a set of courses that focus on literacy development and instruction. Other courses in the set include reading/writing methods 2: grades 2-4, language and literature for the young child, and literacy assessment and instruction for children with disabilities in inclusive settings. Teacher candidates in reading/writing methods 1 will have opportunities to build their knowledge about specific aspects of literacy, including: (a) oral language development, (b) emergent literacy, (c) concepts about print, (d) comprehension, and (e) writing. In addition, candidates will learn about specific instructional approaches and resources for supporting students in developing those aspects of literacy in pre-kindergarten - grade 1.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2209 - READING WRITING METHODS 2: GRADE 2-4

Minimum Credits: 3

Maximum Credits: 3

This course is intended for teacher candidates who are pursuing prek-4 certification. It is the second in a two-course sequence and builds on concepts introduced in reading/writing methods 1. It is also part of set of courses that focus on literacy development and instruction. Other courses in the set include language and literature for the young child, and literacy assessment and instruction for children with disabilities in inclusive settings. Teacher candidates in reading/writing methods 2 will have opportunities to build their knowledge about specific aspects of literacy, including: (a) word study-decoding, spelling, and vocabulary, (b) comprehension, and (d) composition, including handwriting. In addition, candidates will learn about specific instructional approaches and resources for supporting students in developing those aspects of literacy in grades 2-4.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2211 - COMPREHENSION AND VOCABULARY

Minimum Credits: 3

Maximum Credits: 3

This course provides an in-depth consideration of reading processes related to comprehension and learning from text, and instructional approaches that support student text comprehension, including vocabulary instruction.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2216 - LITERACY ASSESSMENTS AND INTERVENTION MODELS

Minimum Credits: 3

Maximum Credits: 3

This course provides an overview of reading processes and assessments of those processes with a focus on phonology, fluency, vocabulary, and comprehension. The course also provides an introduction to the response to intervention model and its application in various contexts.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2217 - LITERACY PRACTICUM WITH ELEMENTARY STUDENTS

Minimum Credits: 3

Maximum Credits: 3

This course engages candidates in working with students in kindergarten through grade 3 to assess students' literacy abilities in decoding, spelling, vocabulary, fluency, and comprehension, and to design instruction targeted to support students' literacy development. The course is also an opportunity for candidates to videotape and analyze their interactions with students.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

IL 2218 - LITERACY PRACTICUM WITH ADOLESCENT STUDENTS

Minimum Credits: 3

Maximum Credits: 3

This course involves working with middle school students who are experiencing difficulties with reading. The course takes place at a school site for 3 weeks, 9:00-12:00, Monday through Friday, students meet at the University of Pittsburgh, 9:00-12:00, for three specific dates to prepare for the practicum sessions.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

IL 2219 - DISCIPLINARY LITERACY

Minimum Credits: 3

Maximum Credits: 3

This course provides an introduction to the literacy development of adolescents with particular attention to the demands of discipline-specific reading and writing.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2226 - SPECIAL TOPICS - WRITING

Minimum Credits: 1

Maximum Credits: 3

A flexible curriculum oriented to special research topics of interest to faculty or current issues of concern to educators. Focused on areas within programs.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

IL 2228 - SUMMER INSTITUTE FOR TEACHERS

Minimum Credits: 6

Maximum Credits: 6

An intensive, teacher-centered, teacher-led professional development program in the teaching of writing, based on the highly successful national writing project model. Open to teachers in all grade levels (k-16) and all content areas.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

IL 2230 - TEACHING AND LEARNING IN SECONDARY ENGLISH 1

Minimum Credits: 3

Maximum Credits: 3

In this course, teacher candidates are introduced to current issues and effective teaching practices in secondary English language arts education.

Teacher candidates will learn the characteristics of English language arts classrooms, curriculum, and instruction that are inquiry-based, cognitively

challenging, and engaging for adolescents.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2235 - THEORY AND PRACTICE IN TEACHING LANGUAGE, GRAMMAR AND USAGE

Minimum Credits: 3

Maximum Credits: 3

The purpose of this seminar is to teach students current best practices for the teaching of language, grammar and usage in multicultural and multilingual secondary English language arts classes. The course will introduce students to basic linguistic concepts and will help students understand how language and grammar are intertwined with all four language arts (reading, writing, listening and speaking). Students will practice developing language and grammar curriculum that is imbedded in reading and writing instruction and developmentally appropriate, explaining grammar and usage concepts clearly and appropriately, and assessing students' understanding of language, grammar, and usage concepts.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2239 - THEORY AND PRACTICE IN TEACHING NEW MEDIA AND LITERACIES

Minimum Credits: 3

Maximum Credits: 3

Teaching new literacies, multimodal forms of expression and technology in the English classroom will be the emphasis of the course. Students will follow a media literacy framework to learn theory into practice as they review and research current literature on digital tools such as wikis, blogs, social networking sites, and digital audio and video production applications. Methods for incorporating new literacies in the classroom will be explored and shared by the students.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2240 - THEORY AND PRACTICE: ASSESSMENT IN ENGLISH EDUCATION

Minimum Credits: 3

Maximum Credits: 3

IL 2240 theory & practice: assessment in English education this course will be a survey of the range of assessment tools and practices appropriate for use in evaluating student learning in the secondary English classroom. Students will explore the purposes, methods, and uses of classroom assessment as well as state and national assessments. Topics explored in this course will include standardized testing, formative and summative assessments, designing writing and project-based assessments and rubrics, providing feedback on student writing, analyzing the results of assessments in order to guide instruction, and other topics related to the design and use of assessments.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

IL 2243 - THEORY & PRAC IN TCHNG WRITING

Minimum Credits: 3

Maximum Credits: 3

This seminar critically studies various approaches to the teaching of writing from both theoretical and applied perspectives. Students are expected to have had some experience teaching writing.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

IL 2245 - TEACHING & LEARNING IN SECONDARY ENGLISH 2

Minimum Credits: 4

Maximum Credits: 4

In this course, teacher candidates learn how to draw upon English language arts classroom research, learning theory, and knowledge of adolescent development to design and implement effective English language arts instruction. The course will emphasize the design and implementation of cognitively challenging reading and writing tasks as well as the appropriate instructional supports to help students succeed at those tasks. Teacher candidates will have opportunities to develop instructional plans and practice teaching techniques while receiving feedback from peers and the course instructor.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2246 - THRY & PRAC: MULTI-CULTURAL LIT

Minimum Credits: 3

Maximum Credits: 3

This course is designed to provide teachers with a multicultural philosophical perspective, criteria for selecting multicultural literature, and strategies and techniques for infusing literature from diverse cultures into a literature program.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Attributes: Global Studies

IL 2250 - TECHNOLOGY IN FOREIGN LANGUAGE EDUCATION

Minimum Credits: 3

Maximum Credits: 3

A flexible curriculum oriented to special research topics of interest to faculty or current issues of concern to educators. Focused on areas within programs.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

Course Attributes: Asian Studies

IL 2251 - INTRODUCTION TO FOREIGN LANGUAGE EDUCATION

Minimum Credits: 3

Maximum Credits: 3

A basic introduction course dealing with the most current issues in foreign language education in elementary, middle and secondary schools.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2252 - TEACHING AND LEARNING IN K-12 FOREIGN LANGUAGE 1

Minimum Credits: 3

Maximum Credits: 3

The purpose of this course is to introduce students to foreign language classroom instruction, management, and methodology. Students will be introduced to the ACTFL national standards for foreign language learning and will explore instructional practices for helping learners develop proficiency in the target language and culture.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: Global Studies

IL 2253 - PRIN/PRA FRGN LANG TESTNG ASSMNT

Minimum Credits: 3

Maximum Credits: 3

In this course, students become familiar with the most current language testing and assessment principles and procedures through discussion and hands-on practice. Topics covered include test usefulness, validity, reliability, practicality, impact, interactiveness, and so on. Student's practice creating tools ranging from multiple choice and short answer to portfolio and performance assessments.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2254 - TEACHING & LEARNING IN K-12 FOREIGN LANGUAGE 3

Minimum Credits: 3

Maximum Credits: 3

In this course, students discuss a variety of issues that relate to the actfl national standards for foreign language learning. In addition, teaching techniques that address these issues are modeled and practiced.

Academic Career: Graduate

Course Component: Lecture

Grade Component: LG/SU3 Elective Basis

IL 2255 - TECHNQ/PROCDR FOREIGN LANG TCH

Minimum Credits: 3

Maximum Credits: 3

The course will present strategies and techniques for teaching the four skills (listening, speaking, reading and writing), culture, and generic principles for effective proficiency-oriented instruction. The emphasis of this course is on practical applications.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2256 - ISSUES IN FOREIGN LANGUAGE ED

Minimum Credits: 3

Maximum Credits: 3

The course deals with current issues in foreign language teaching. Issues are determined by the current concerns and research in the field.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: Global Studies

IL 2257 - TEACHING ENGLISH LANGUAGE LEARNERS

Minimum Credits: 3

Maximum Credits: 3

This course will explore strategies for teaching English language learners (ell's) in formal and informal education settings. Students will be introduced to foundational theories and current research on the social and academic factors that influence ell's learning experiences. The class will include a video component so students can observe instructional approaches for working with linguistically and culturally diverse ell's.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2258 - TEACHING & LEARNING IN SECONDARY FOREIGN LANGUAGE 2

Minimum Credits: 4

Maximum Credits: 4

In this course, students discuss and practice a variety of teaching techniques and assessment tools that support the ACTFL national standards for foreign language learning. In addition, students are introduced to current theories of second language acquisition and apply these theories to explain

and design effective instruction.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2260 - TEACHING & LEARNING IN SECONDARY SOCIAL STUDIES 1

Minimum Credits: 3

Maximum Credits: 3

In this course, students will draw upon research, policy, and curriculum documents to develop an overview of current issues in social studies education. The course is organized around three guiding questions: (1) what are the key practices of social studies educators? (2) What do classrooms in which powerful teaching and learning in social studies look like? And (3) what do teachers need to know and be able to do in order to engage students in powerful learning in social studies?

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: Asian Studies

IL 2262 - TEACHING & LEARNING IN SECONDARY SOCIAL STUDIES 2

Minimum Credits: 4

Maximum Credits: 4

In this course, teacher candidates learn how to draw upon learning theory and knowledge of adolescent development to design and support social studies instruction. Teacher candidates utilize various curricular resources (e.g. Standards, text materials, online modules, etc.) To develop detailed instructional plans for daily lessons and entire units. Emphasis is placed on the selection and/or design of high cognitive demand tasks and appropriate pedagogical scaffolding to support students' engagement in those tasks. Teacher candidates will have opportunities to engage in key pedagogical practices while receiving critical feedback from peers and the course instructor.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2265 - ISSUES IN HISTORY EDUCATION

Minimum Credits: 3

Maximum Credits: 3

Students will explore the historical development of approaches to teaching us history and world history.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

IL 2268 - SOCIAL STUDIES METHODS PRE-K - 4

Minimum Credits: 3

Maximum Credits: 3

This course is designed to provide a theoretical background in social studies education and to exemplify the appropriate principles and practices necessary to deliver effective social studies instruction in pre-k through grade 4.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2269 - SPECIAL TOPICS: SOCIAL STUDIES

Minimum Credits: 3

Maximum Credits: 3

Students will research social studies topics of special interest. Content varies based on professional expertise and students' needs.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

IL 2270 - INTEGRATED ART & MUSIC IN ELEMENTARY SCHOOL

Minimum Credits: 3
Maximum Credits: 3

To introduce preservice classroom teachers to art and music contents and processes with relevance to their expected role in integrating authentic arts learning experiences in their instruction. Emphasis placed on developmental aspects of children's' responsive and expressive skills in art and music.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

IL 2277 - COMPARATIVE AND GLOBAL PERSPECTIVES ON EDUCATION

Minimum Credits: 3
Maximum Credits: 3

This course, held on the campus of the University of cape town in cape town, South Africa, explores and compares the 20th century human/civil rights-related histories of the united states and South Africa, and examines implications these histories have had on the education systems (particularly in a context of social studies education) of each country. In their comparative survey of historical, social, and educational contexts, instructors will place special emphases on the philosophies, work, and legacies of key historical individuals including Mohandas K. Gandhi, Dr. Martin l. King, Jr., Nelson Mandela, among others. Study will incorporate a critical analysis of the universal declaration of human rights (1948), lectures by noted historical experts, visits to sites of historical significance, visits to schools and other learning environments, and group discussions of relevant texts and experiences.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

IL 2278 - PRACTICUM IN SECONDARY SOCIAL STUDIES

Minimum Credits: 1
Maximum Credits: 1

Teacher candidates engage in fieldwork in a secondary school site daily. Fieldwork includes tutoring individual students, supporting instruction in secondary classrooms, collaborating with mentor teachers to design and/or set up lessons, and careful observation of classroom instruction. Teacher candidates will also be responsible for independent instruction. Teacher candidates will reflect critically and productively on their own instruction. Teacher candidates are responsible for timely submission of all required certification paperwork.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

IL 2281 - LEADERSHIP SCHOOL LITERACY PROGM

Minimum Credits: 3
Maximum Credits: 3

This course examines theories about leadership of the school literacy program. Leadership skills are defined and applied. Leadership theory and research as related to literacy curriculum and instruction are discussed; example of how reading specialists and others (principals, teachers) can fulfill a leadership role as described. Course combines theory with practical application.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

IL 2282 - FOREIGN LANGUAGE IN ELEMENTARY SCHOOL

Minimum Credits: 3
Maximum Credits: 3

This purpose of this course is to introduce students to the various types of elementary foreign language programs, to review and apply instructional

practices that are appropriate for young foreign language learners, and to discuss topics that are unique to teaching foreign language in K-8 school settings.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2290 - RESEARCH SEMINAR FOR MED STUDENTS

Minimum Credits: 3

Maximum Credits: 3

The student proposes, carries out, and prepares a careful report of a study germane to the student's professional role.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

IL 2291 - SUPERVISED RESEARCH - READING

Minimum Credits: 1

Maximum Credits: 6

The student works collaboratively with a sponsoring faculty member in the carrying out of a research project.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad HSU Basis

IL 2296 - DOCTORAL DISSERTATION RESEARCH - LANGUAGE LITERACY AND CULTURE

Minimum Credits: 1

Maximum Credits: 9

The student prepares a proposal for a detailed research study, has that proposal approved by an appropriate faculty dissertation committee, completes the proposed study, and defends the completed draft in a dissertation final oral examination.

Academic Career: Graduate

Course Component: Full Time Dissertation

Grade Component: Grad SN Basis

IL 2298 - DIRECTED STUDY - READING

Minimum Credits: 1

Maximum Credits: 9

The student proposes and carries out an independent study project under the direction and supervision of an appropriate member of the faculty.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

IL 2391 - SUPERVISED RESEARCH IN ENGLISH

Minimum Credits: 1

Maximum Credits: 6

The student works collaboratively with a sponsoring faculty member in carrying out a research project.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

IL 2398 - DIRECTED STUDY IN ENGLISH

Minimum Credits: 1

Maximum Credits: 9

The student proposes and carries out an independent study project under the direction and supervision of an appropriate member of the faculty.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

IL 2405 - INTRODUCTION TO ACTION RESEARCH METHODS

Minimum Credits: 3

Maximum Credits: 3

This course introduces students to action research as a method of improving their practice. Students will learn what action research is, how it is carried out, and where it falls in the spectrum of research methodologies. The role of literature in supporting practitioners and their action research and how to develop a literature review will be addressed. Students will design an action research project on a topic relevant to their own practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2430 - TEACHING & LEARNING IN SECONDARY SCIENCE 1

Minimum Credits: 3

Maximum Credits: 3

In this course, teacher candidates will draw upon research, policy, and curriculum documents to develop an overview of current issues in science education. The course is organized around three guiding questions: (1) what are some key practices of scientists? (2) what do classrooms in which students engage in key science practices look like? And (3) what do teachers need to know and be able to do in order to support learning in classrooms where students learn science ideas through engagement in science practices?

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2431 - TEACHING & LEARNING IN SECONDARY SCIENCE 2

Minimum Credits: 4

Maximum Credits: 4

In this course, teacher candidates learn how to draw upon learning theory and knowledge of adolescent development to design and support science instruction. Teacher candidates utilize various curricular resources (e.g. Standards, text materials, online modules, etc.) To develop detailed instructional plans for daily lessons and entire units. Emphasis is placed on the selection and/or design of high cognitive demand tasks and appropriate pedagogical scaffolding to support students' engagement in those tasks. Teacher candidates have opportunities to engage in key pedagogical practices while receiving critical feedback from peers and the course instructor.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2432 - TEACHING & LEARNING IN SECONDARY SCIENCE 3

Minimum Credits: 3

Maximum Credits: 3

Designed to develop an overall rationale for dealing with classroom science instruction; students design, teach and evaluate teaching strategies for secondary school; specific materials for teaching science and strategies for their effective use are examined.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2433 - MATH/SCIENCE INSTRUCTION FOR YOUNG LEARNERS 1 (PREK - GRADE 4)

Minimum Credits: 3

Maximum Credits: 3

The first half of a two-semester course sequence in which pre-service teachers learn about young (pre-k through grade 4) children's thinking related to core ideas in mathematics and science and gradually, through a series of scaffolded tasks, develop pedagogical skills for designing and implementing math and science instruction.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2434 - MATH AND SCIENCE METHODS 2 (PRE K - GRADE 4)

Minimum Credits: 3

Maximum Credits: 3

The first half of a two-semester course sequence in which pre-service teachers learn about young (pre-k through grade 4) children's thinking related to core ideas in mathematics and science and gradually, through a series of scaffolded tasks, develop pedagogical skills for designing and implementing math and science instruction.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2445 - ASSESSMENT AND EVALUATION IN MATH EDUCATION

Minimum Credits: 3

Maximum Credits: 3

In this course we will examine current assessment practices in mathematics education, both historically and in terms of their forms and purposes in today's educational and political climate. Most importantly, however, we will focus on improving current assessment practices to support students' learning in the mathematics classroom. Based on an integrated view of assessment and instruction, students will be expected to employ ideas from the course to improve their own assessment practices.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2448 - SPECIAL TOPICS: SCIENCE ED

Minimum Credits: 1

Maximum Credits: 3

A flexible curriculum opportunity oriented to special research topics of interest to faculty or current issues of concern to educators. Focused on areas within programs.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

IL 2451 - SPECIAL TOPICS: MATHEMATICS

Minimum Credits: 1

Maximum Credits: 3

A flexible curriculum oriented to special research topics of interest to faculty or current issues of concern to educators. Focused on areas within programs.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

IL 2452 - DISCIPLINING ENVIRONMENTAL EDUCATION: USING DIGITAL STORYTELLING TO UNPACK ENVIRONMENTAL ISSUES

Minimum Credits: 1

Maximum Credits: 1

In other parts of the world, such as Finland, environmental education is infused throughout the curriculum in history, science, technology, and math. This pop-up course serves as one way to provide a platform for Pitt students to experience Finnish nature schools in their backyard. The goal of the pop-up classes will be to provide a space for developing student projects at both the undergraduate and graduate levels. This course is geared for students interested in authoring visual content and testing the productive tensions of this new media. During the pop-up classes, we will establish a student-led AR/VR authoring club, training sessions for students, and work to amplify and circulate our content across our local and global communities.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

IL 2470 - REASONING AND PROVING IN SECONDARY MATH

Minimum Credits: 3

Maximum Credits: 3

This course focuses on addressing three overarching questions: 1) what is reasoning-and-proving? 2) How do secondary students benefit from engaging in reasoning-and-proving? 3) How can teachers support the development of students' capacity to reason-and-prove? Teachers explore these questions through engagement in a variety of activities that include: solving and discussing challenging mathematical tasks; analyzing narrative cases that make salient the relationship between teaching and learning and the ways in which student learning can be supported; examining and interpreting student work that features a range of solution strategies, representations, and misconceptions; and making connections to their own teaching practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2473 - MATH FOR ELEMENTARY TEACHERS

Minimum Credits: 3

Maximum Credits: 3

Students will improve their mathematics knowledge of concepts and skills in numeration systems, integers, rationales, geometry, probability/statistics, and other selected topics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2474 - PROPORTIONAL REASONING IN MIDDLE SCHOOL MATHEMATICS

Minimum Credits: 3

Maximum Credits: 3

Focuses on developing teacher's ability to reason proportionally and capacity for designing instructional experiences that foster's child understanding of proportional relationships. Includes solving math tasks related to proportional reasoning and analyzing teaching and learning situations that highlight pedagogical approaches that support student learning in this domain.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2476 - TEACHING AND LEARNING IN SECONDARY MATH 1

Minimum Credits: 3

Maximum Credits: 3

Basic orientation to the issues, lectures, and resources in the field of mathematics education. Issues currently affecting the teaching and learning of mathematics focused on middle and secondary schooling.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2477 - TEACHING AND LEARNING IN SECONDARY MATH 2

Minimum Credits: 4

Maximum Credits: 4

Topics include learning, instruction and assessment, planning lessons, effective learning environments, successful teaching strategies, and materials and resources. Responsibilities and professionalism will also be discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2478 - TEACHING AND LEARNING IN SECONDARY MATH 3

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the development and support of learning contexts in which adolescents have opportunities to engage in challenging mathematical practices. Drawing on cognitive change learning theory, teacher candidates learn to select and develop various assessments that reveal students' thinking and to draw upon their understanding of students' ideas to scaffold learning experiences in the classroom. Emphasis is placed on strategies that build and support students' capacity to engage in mathematical discourse.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2484 - MATH PROBLEM SOLVING K-12

Minimum Credits: 3

Maximum Credits: 3

Students will become familiar with various theories of problem solving. They will solve challenging mathematical problems, discuss strategies, and identify ways to translate what they learn into their own mathematics classrooms.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

IL 2491 - SUPERVISED RESEARCH - MATH

Minimum Credits: 1

Maximum Credits: 3

The student works collaboratively with a sponsoring faculty member in the carrying out of a research project.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad HSU Basis

IL 2493 - PRACTICUM IN SECONDARY MATHEMATICS 1

Minimum Credits: 1

Maximum Credits: 1

Students will share and discuss implementation of school-based assignments linked to teaching lab and methods courses

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

IL 2495 - INTERNSHIP - MATH

Minimum Credits: 1

Maximum Credits: 9

Interns (mat program) work with cooperating teachers in a school setting to master teaching skills and to enhance their professional attitudes.

Responsibility includes half-day teaching.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad HSU Basis

IL 2496 - INTERNSHIP - SCIENCE

Minimum Credits: 1

Maximum Credits: 9

Interns assume half-time teaching in a secondary school working with cooperating teachers and supervisors to master concepts, skills and professional attitudes. Career goal orientation is rigorously tested.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

IL 2498 - DIRECTED STUDY - MATH

Minimum Credits: 1

Maximum Credits: 9

The student proposes and carries out a study project under the direction and supervision of an appropriate member of the faculty.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

IL 2500 - FOUNDATIONS OF SPECIAL EDUC

Minimum Credits: 3

Maximum Credits: 3

Course provides an overview of the field of special education. It includes such topics as 1) identification; 2) placement; 3) programming; 4) inclusion; 5) advocacy; and other topics relating to individuals with disabilities, and gifted and talented individuals. The course examines the various philosophical views of exceptionality.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2501 - STUDENT W/DISAB IN ELEM CLSSRM

Minimum Credits: 3

Maximum Credits: 3

Course is an introduction to teaching students with disabilities in elementary general education classrooms. Course will provide students who plan to become educators with opportunities to (1) develop a knowledge base of the attitudinal issues regarding inclusive educational practices & a philosophical orientation towards effective inclusion support strategies, (2) increase interpersonal skills for working effectively with individuals and groups, and (3) increase technical skills in observing, planning, assessing, & evaluating for both behavioral & instructional challenges.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

IL 2502 - STUDNT W/DISAB IN SECNDRY CLSSRM

Minimum Credits: 3

Maximum Credits: 3

Course is an intro to teaching students with disabilities in sec level general EDUC classrooms. Course will provide students who plan to become educators with opportunities to (1) develop a knowledge base of the attitudinal issues regarding INCL educational practices & a philosophical orientation towards effective inclusion support strategies, (2) increase interpersonal skills for working effectively with individuals and groups, (3) increase technical skills in observing, planning, assessing, & evaluating for both behavioral & instructional challenges, & adapting instruction & curricula.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

IL 2503 - STUDENT TEACHING FOR DUAL CERTIFICATION IN SECONDARY SCHOOLS

Minimum Credits: 3

Maximum Credits: 3

Student teaching for dual certification in secondary schools teacher candidates engage in fieldwork five days a week in secondary school sites for 14 weeks. Teacher candidates will collaborate with both content area and special education mentor teachers to develop and implement a plan by which the teacher candidate will, by the end of the term, assume responsibility for the majority of provided instruction and classroom management. Assignments and weekly meetings are designed to support teacher candidates' ability to recognize and apply evidence-based practices with adolescents in the school context.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

IL 2505 - AUTISM: CHARACTERISTICS AND INTERVENTIONS

Minimum Credits: 3

Maximum Credits: 3

This course will present information on the characteristics of and intervention approaches for children with autism spectrum disorders (ASDS). Introductory material will include diagnosis criteria and characteristics of ASDS. Current research on theories of etiology will be explored and analyzed. Screening tools and assessments specific to this population will be examined in detail. Intervention approaches (e.g., LBI/Discrete Trial, ABBLS, precision teaching, teach) will be described and analyzed in terms of basic premises, research base, associated curricula, and evaluative guidelines from the autism society of America and national institute of mental health. Representatives from local education and behavioral health systems serving children with ASDS will present services/intervention models available in the area.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

IL 2506 - SOCIAL AND COMMUNICATIVE INTERVENTIONS: AUTISM

Minimum Credits: 3

Maximum Credits: 3

The course will consider programming and strategies for facilitating the communication and social development of young children with autism. Communication strategies will include a focus on nonverbal children, echolalic, and verbal children. Strategies will include sign language, picture systems, developmental approaches, naturalistic teaching, and discrete trial formats. Social interventions will examine play, peer interactions, and peer relationships. For both areas, assessment tools and strategies; published curricula; and a range of intervention procedures will be covered.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: IL 2505

IL 2507 - EARLY INTERVENTION CONSULTATION

Minimum Credits: 1

Maximum Credits: 1

This module focuses on providing students with skills for consulting with families, childcare providers, related service personnel, other teachers and paraprofessionals, to assist them in carrying out interventions for young children with autism, in homes, inclusive classrooms, and the community. The class will place special emphasis on classroom-based services. The module emphasizes a collaborative approach to consultation. Communication and interpersonal skills, relationship-building, the inclusion of families in all consultations, and techniques for assisting others to carry out interventions are considered. Finally issues related to interagency collaborations with emphasis on strategies to overcome challenges that occur in the daily life of a consulting professional in a variety of settings will be investigated.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

IL 2509 - APPLD BHVR ANAL/POSTV BHVR SUPRT

Minimum Credits: 3

Maximum Credits: 3

The course focuses upon the application of applied behavior analysis principles to the instruction of students with disabilities. These include individual, small group and class room-wide instruction. The course emphasizes the acquisition, fluency, maintenance and generalization of skills and providing positive behavior support for changing behaviors.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2511 - CURR PRG DVLP-LOW INCDNC DISABS

Minimum Credits: 3

Maximum Credits: 3

This course addresses program and curriculum development for students with moderate/severe disabilities. Topics include the development of assessment, instruction/curricula for the following areas: personal management, social interaction, language communication, leisure, community, vocational, and functional academics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2512 - ASSMNT INSTRUC-HIGH INCDNC DISAB

Minimum Credits: 3

Maximum Credits: 3

Course is designed to provide knowledge of assessment procedures for designing academic programs for children and youth with mild disabilities, with emphasis on assessment for teaching reading, written language and mathematics. Course includes assessment for eligibility for special education and ongoing assessment of instructional effectiveness.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

IL 2513 - INSTRNL METH-HIGH INCDNC DISABS

Minimum Credits: 3

Maximum Credits: 3

This course explores the methods and procedures for developing literacy for students with learning disabilities, mild mental retardation, and behavioral disorders. The focus of the first 5 sessions is on learning to teach young students who have extraordinary difficulty; the next sections address the literacy needs of older students.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

IL 2518 - POSITIONING, HANDLING AND MOBILITY: YOUNG CHILDREN WITH DISABILITIES

Minimum Credits: 1

Maximum Credits: 1

Focuses on knowledge and recognition of normal and abnormal gross motor development of children, aged birth to 5, with an emphasis on analysis and facilitation of movement, handling and positioning, adaptive equipment, and safety.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2519 - ORAL MOTOR AND FEEDING STRATEGIES: YOUNG CHILDREN WITH DISABILITIES

Minimum Credits: 1

Maximum Credits: 1

Provides an overview of medical, motor, sensory, psychological and social aspects of feeding children. The class reviews the development of normal oral motor and self-feeding skills and the impact that disabilities may have on these processes. Use of descriptive, criterion-referenced evaluations and clinical observations to identify a child's level of oral motor control will be reviewed. Students will have an opportunity to use assessment procedures and devise treatment plans to address oral motor and feeding needs of children.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2520 - LITERACY ASSESSMENT & INSTRUCTION FOR CHILDREN WITH DISABILITIES IN INCLUSIVE SETTINGS IN SEC CLSSRM

Minimum Credits: 3

Maximum Credits: 3

General education classrooms are increasingly diverse and all teachers must be able to assess the literacy skills of and provide effective instruction to the children in their secondary classrooms for whom reading is a challenge. This course is designed to provide graduate students preparing to teach in general secondary education settings with an understanding of literacy assessment and instruction for children who are at risk or who have disabilities. Students will develop an understanding of assessment components included in a standards aligned system and be able to explain the differences between the various components and to articulate the proper use of each. Students will also gain an understanding of the components of reading, the challenges these pose for children with disabilities, and effective, research-validated methods for intervening. Students will select a child with a disability who is receiving reading instruction in a general education setting and demonstrate the ability to interpret standardized assessment, administer and interpret progress monitoring assessment, and successfully design an individualized, research-validated instructional plan for this child based on assessment data.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2522 - ED STDNT EMOTIONAL DISTURBANCE

Minimum Credits: 3

Maximum Credits: 3

The course provides knowledge of curriculum content, teaching techniques and instructional materials for children and youth with emotional disturbance through a focus upon academic content areas and social skills. The utilization of instruction as therapeutic programming will be the central theme.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2523 - LITERACY ASSESSMENT & INSTRUCTION FOR CHILDREN WITH DISABILITIES IN INCLUSIVE SETNGS IN ELEM CLSSRMS

Minimum Credits: 3

Maximum Credits: 3

General education classrooms are increasingly diverse and all teachers must be able to assess the literacy skills of and provide effective instruction to the children in their elementary classrooms for whom reading is a challenge. This course is designed to provide graduate students preparing to teach in general elementary education settings with an understanding of literacy assessment and instruction for children who are at risk or who have disabilities. Students will develop an understanding of assessment components included in a standards aligned system and be able to explain the differences between the various components and to articulate the proper use of each. Students will also gain an understanding of the components of reading, the challenges these pose for children with disabilities, and effective, research-validated methods for intervening. Students will select a child with a disability who is receiving reading instruction in a general education setting and demonstrate the ability to interpret standardized assessment, administer and interpret progress monitoring assessment, and successfully design an individualized, research-validated instructional plan for this child based on assessment data.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

IL 2524 - LEVEL 2 STUDENT TEACHING PRACTICUM: VI

Minimum Credits: 5

Maximum Credits: 5

This course is required by the pa department of education for certification to become a teacher of the visually impaired. Placements for this clinical experience are arranged by the vision studies program faculty and may be conducted in the student's home area. The approximate length of the placement is 14-weeks serving children who are blind or visually impaired ages three to 21-years.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad SN Basis

IL 2525 - TECHNOLOGY FOR CHILDREN WITH VI

Minimum Credits: 3

Maximum Credits: 3

This course evaluates many facets of assistive technology for individuals who are blind or visually impaired. Coursework includes projects and a weekend workshop for direct experiences with adapted software, hardware, and peripheral devices.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2527 - LEVEL 1 OBSERVATIONAL PRACTICUM: VI

Minimum Credits: 1

Maximum Credits: 1

This clinical experience requires students to engage in observations of practitioners serving a wide range of needs of individuals who are blind or visually impaired.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

IL 2529 - BRAILLE

Minimum Credits: 3

Maximum Credits: 3

This course places emphasis on reading and writing braille. It emphasizes proficiency in reading and writing contracted and uncontracted braille, as well as teaching pre-braille and braille readiness to individuals who are blind or visually impaired.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2530 - INTRODUCTION TO THE EYE AND LOW VISION

Minimum Credits: 3

Maximum Credits: 3

This course presents an overview on the anatomy and physiology of the eye. It also presents information about visual pathology and its effect upon learning and function.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2531 - EDUCATION OF CHILDREN WITH VI 1

Minimum Credits: 3

Maximum Credits: 3

This methods course reviews the concepts and philosophies of educating children who are blind or visually impaired. It presents information on serving the needs of children in public schools, with emphasis on the itinerant model of delivery. This methods course examines assessment, programming, instructional materials and methods, and their theoretical and research basis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2532 - EARLY INTERVENTION FOR CHILDREN WITH VI

Minimum Credits: 3

Maximum Credits: 3

This course provides an overview of the topics unique to children aged birth through five who are blind and visually impaired and their families. Focus will be on typical and atypical development as a basis for assessing the child's needs and designing appropriate interventions and family supports. The course includes individual and collaborative work in the areas of family-centered practices and collaboration among professional agencies across disciplines. Emphasis will be placed on assessment and intervention in the areas of sensory, cognitive, motoric, and communicative development as well as providing developmentally appropriate orientation and mobility.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2533 - ORIENTATION AND MOBILITY FOR THE TVI

Minimum Credits: 3

Maximum Credits: 3

This course is designed to prepare teachers of the visually impaired with the knowledge and skills to provide initial level sensory, cognitive, and motor skill development to children who are blind or visually impaired. Students will learn the basic skills of sighted guide and self-protective techniques including assessment and remediation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2540 - FOUNDATIONS OF ORIENTATION AND MOBILITY

Minimum Credits: 3

Maximum Credits: 3

This fully on-line course is taken prior to IL 2750. It integrates relevant aspects of the process of teaching O&M (I. E., Sensory, cognitive) to individuals who are blind or with visually impaired who may also possess additional disabilities. In addition the history, philosophy, and aspects of professional ethics are covered. Service delivery models are discussed along with O&M resources, supervision, and program administration.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2541 - PROGRAM DEVELOPMENT: ORIENTATION AND MOBILITY

Minimum Credits: 3

Maximum Credits: 3

This fully on-line is taken prior to IL 2752. This course builds upon the knowledge students acquired in IL 2540 to understand assessment and instructional strategies for teaching O&M to individuals who are blind or visually impaired who may also possess additional disabilities. Aspects related to research in the field of O&M are also presented.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2542 - WEB CURRNT ISSUES & TRENDS SP ED

Minimum Credits: 3

Maximum Credits: 3

This web-based course focuses on philosophical issues as well as research findings that impact on the education of persons with disabilities. Through critical analysis of assigned readings, the course facilitates a thorough understanding of various points of view on the education of students with disabilities.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Attributes: World Wide Web

IL 2545 - EDUCATION OF CHILDREN WITH VI 2

Minimum Credits: 3

Maximum Credits: 3

This course builds on the concepts presented in IL 2531 for developing teaching methodologies and adaptation techniques for children who are blind or visually impaired who may also possess additional disabilities. Curricular and classroom adaptations and modifications are stressed with emphasis placed on teaching academic and functional skills.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2547 - NEMETH CODE/ABACUS

Minimum Credits: 3

Maximum Credits: 3

This course is designed to provide instruction in the mathematical braille code (Nemeth code) as well as the Cranmer abacus. Students will be instructed in arithmetic computation and mathematical problem solving using both systems. Students will also learn instructional strategies to assist students who are blind or visually impaired to obtain mathematical literacy.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2548 - SPECIAL TOPICS SPECIAL EDUCATION

Minimum Credits: 3

Maximum Credits: 3

A flexible curriculum oriented to special research topics of interest to faculty or current issues of concern to educators. Focused on areas within programs.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

IL 2552 - STUDENT TEACHING-SPECIAL EDUCATION IN SECONDARY SCHOOLS

Minimum Credits: 3

Maximum Credits: 3

Teacher candidates engage in fieldwork five days a week in secondary school sites with students with both high and low incidence disabilities. Teacher candidates will collaborate with special education mentor teachers to develop and implement a plan by which the teacher candidate will, by the end of each experience, assume responsibility for the majority of provided instruction and classroom management. Experiences are designed to support teacher candidates' ability to recognize and apply evidence-based practices with adolescents in the school context.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad HSU Basis

IL 2561 - PROGRAMMING IN EARLY INTERVENTION

Minimum Credits: 3

Maximum Credits: 3

Focuses on the development of curriculum and instructional strategies for children under five years of age with disabilities and their implementation in a variety of settings, including inclusive classrooms, home-based programs, and clinical settings.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2562 - ASSESSMENT YOUNG CHILDREN DISABILITY

Minimum Credits: 3

Maximum Credits: 3

Focuses on the identification and assessment of children with disabilities under five years of age and the use of assessment information to plan programs for children in partnership with families and other professionals.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2563 - SEM: INCLUSION EARLY CHILDHOOD

Minimum Credits: 2

Maximum Credits: 3

This interdisciplinary course will cover the rationale, service delivery models, teaming components, family considerations, curriculum development, and instructional strategies for creating early childhood programs that meet the needs of children with and without disabilities. The course will include simulations in which students solve real life problems with individuals from other disciplines.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

IL 2564 - APPLIED BEHAVIORAL ANALYSIS 1: FUNDAMENTALS 1

Minimum Credits: 3

Maximum Credits: 3

This is the first in a series of five courses designed to meet the total academic requirements for board certification in behavior analysis. This course focuses on defining applied behavior analysis, selecting, assessing and evaluating behavior to change, and functional and experimental analyses of behavior change. The primary goal of this and the second course is to provide students with a complete, accurate, and contemporary view of applied behavior analysis, and how functional analysis can be used to understand socially significant behaviors.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2565 - APPLIED BEHAVIORAL ANALYSIS 2: FUNDAMENTALS 2

Minimum Credits: 3

Maximum Credits: 3

This is the second of five courses meeting the total course requirements for board certification as a behavior analyst. This course focuses on the development of new behaviors, various clinical interventions for decreasing interfering behavioral, and maintaining behavioral changes. The instructor presumes that students have limited or no background experiences with applied behavior analysis. Some students will have already completed the fundamentals 1 course. The primary goal of this and the first course is to provide students with a complete, accurate, and contemporary view of applied behavior analysis, and how functional analysis can be used to understand socially significant behaviors.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2566 - APPLIED BEHAVIORAL ANALYSIS 3: APPLICATIONS IN DEVELOPMENTAL DISABILITIES

Minimum Credits: 3

Maximum Credits: 3

This is the third of five courses meeting the total academic requirements for board certification as a behavior analyst. This course focuses on the application of principles and procedures covered in IL 2564 and IL 2565 to a wide range of behavior disorders in individuals with developmental disabilities.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: IL 2564 and 2565

IL 2567 - APPLIED BEHAVIORAL ANALYSIS 4: EMOTIONAL BEHAVIORAL DISABILITIES OF CHILDREN AND ADOLESCENTS

Minimum Credits: 3

Maximum Credits: 3

This is the fourth of five courses meeting academic requirements for board certification as a behavior analyst. This course focuses on etiology, analysis, assessment and intervention for mental health disorders of childhood and adolescence with an emphasis on an applied behavior analysis of disorders.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: IL 2564 and 2565

IL 2568 - APPLIED BEHAVIORAL ANALYSIS 5: CURRENT DEVELOPMENTS IN APPLIED BEHAVIORAL ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

This is the fifth and final course meeting the total academic requirements for board certification as a behavior analyst. This course is specifically focused on a number of advanced topics, including verbal behavior, ethics, and parent training.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: IL 2564 and 2565

IL 2569 - APPLIED BEHAVIORAL ANALYSIS PRACTICUM

Minimum Credits: 1

Maximum Credits: 3

The applied behavior analysis practicum provides students with intensive opportunities to learn and practice the various roles of a behavior analyst in a variety of different settings and to demonstrate competence as a beginning applied behavior analyst. Opportunities will include conducting assessment activities related to the need for behavioral interventions, designing, implementing and monitoring behavior analysis activities, overseeing implementation of behavior analysis programs by others, and other activities typically performed by a behavior analyst such as attending planning meetings and researching the literature to prepare a behavioral intervention. Each student will work closely with an assigned university supervisor and a mentoring professional from their individual placement site during the practicum. The practicum requires group seminar supervision, individual supervision, on-site observations, and small group supervision in amounts determined by the behavior analysis certification board (BACH) standards. The accompanying practicum seminar allows students to share experiences and knowledge gained in placement sites, as well as to seek support and ideas from classmates.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad HSU Basis

IL 2575 - TRANSITION PROCESSES AND SPECIAL EDUCATION PROCEDURES

Minimum Credits: 3

Maximum Credits: 3

Course covers critical information related to transition and special education services for students with disabilities in secondary settings

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

IL 2577 - BRIDGE COURSE: BCBA CURRICULUM EDITION 3 TO 4

Minimum Credits: 2

Maximum Credits: 3

This course is designed to update the competencies of edition 3 of the board certified behavior analyst curriculum to edition 4 of the curriculum so that individuals who took all or part of their ABA studies under edition 3 may sit for the national exam under the current edition 4. The course will address 10 topics such as direct instruction, incidental teaching, alternative and augmentative communication, MAND training, precision teaching. The required competencies (e.g. measurement and data analysis; change systems; implementation, management and supervision; intervention and behavior change considerations) will be distributed across each topic.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

IL 2578 - APPLIED BEHAVIORAL ANALYSIS 6: ETHICS

Minimum Credits: 3

Maximum Credits: 3

This is one of six courses meeting the total academic requirements for board certification as a behavior analyst. This course focuses on ethical practices involving the application of principles and procedures covered in ABA I through ABA V. The ethical practices relate to working with individuals with autism spectrum disorders, developmental disabilities and other behavioral/emotional disorders.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: IL 2564 and 2565

IL 2579 - TREATMENT FIDELITY AND COACHING: AUTISM

Minimum Credits: 3

Maximum Credits: 3

This course will present information on the strategies used to monitor and enhance the accuracy and the delivery of evidence-based interventions for children with autism spectrum disorder (ASD) and other disabilities. The course will focus on defining intervention and implementation fidelity, exploring examples of the documentation, planning and assessment of treatment fidelity for evidence-based interventions, and learning skills for peer, parent, and supervisory coaching.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: IL 2505

IL 2582 - WORKING WITH FAMILIES

Minimum Credits: 3

Maximum Credits: 3

Course focuses on understanding family systems theory and its application to early intervention, including the development of individualized family service plans. Family centered practices, cultural, ethnic, racial, educational, and economic diversity among families, and accessing community resources will be covered.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

IL 2585 - TECHNOLOGY-BASED INTERVENTIONS: AUTISM

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the application of assistive technology to interventions for children with autism spectrum disorder (ASD) and other non-physical disabilities. The course addresses a) the principles of assistive technology (at), b) assessment of students for at, and c) the at continuum of low, mid, and high technology. A range of hardware (E.G., ipad, computers, specialized speech generating devices), software (E.G., imovie, board maker), and interventions (E.G., Video modeling, alternative and augmentative communication strategies, academic skills) will be considered.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: IL 2505

IL 2586 - AUTISM INTERVENTIONS IN SCHOOL AND COMMUNITY SETTINGS

Minimum Credits: 3

Maximum Credits: 3

This course is designed to prepare graduate students to teach school-aged students with ASD in a range school and community settings, with a particular focus on interventions and strategies appropriate for inclusive classrooms. Through readings, presentations, class discussions, and activities, students will acquire information and skills needed to implement evidence-based interventions approaches to assessment and intervention for students with ASD. As part of the final project, students will develop and deliver an assessment-based intervention for one of the suggested outcome areas.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: IL 2505

IL 2587 - SPECIAL TOPICS - INCLUSION

Minimum Credits: 3

Maximum Credits: 3

A flexible curriculum oriented to special research topics of interest to faculty or current issues of concern to educators. Focused on areas within programs.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

IL 2590 - RESEARCH SEMINAR IN SP ED

Minimum Credits: 3

Maximum Credits: 3

This course provides students with competencies necessary for utilizing and evaluating research in special education. Focus is on the critical analysis of research and examination of methodological and ethical considerations. Students in M/PD sections conduct single subject research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

IL 2591 - LITERACY TUTORING

Minimum Credits: 1

Maximum Credits: 1

The student works collaboratively with a sponsoring faculty member in the carrying out of a research project.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad HSU Basis

IL 2594 - INTERDISCIPLINARY LEADERSHIP SEMINAR DEVELOPMENTAL DISABILITY 1

Minimum Credits: 1

Maximum Credits: 3

This seminar provides the advanced master's or doctoral student with an opportunity to study and analyze with students and faculty from a variety of disciplines current issues affecting children with neurodevelopmental disabilities, their families, and their communities. Within a framework of family-centered and cross-cultural principles, the seminar examines issues related to advances in diagnosis, treatment, child development, service delivery, and policy/legislation. Leadership issues are also explicitly considered at the beginning and end of each term.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

IL 2596 - INTERNSHIP IN SPECIAL EDUCATION

Minimum Credits: 1

Maximum Credits: 3

An internship is proposed, then reviewed by faculty and implemented in varying types of special education settings.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad SN Basis

IL 2598 - DIRECTED STUDY IN SP ED

Minimum Credits: 1

Maximum Credits: 6

The student proposes and carries out an independent study project under the direction and supervision of an appropriate member of the faculty.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

IL 2690 - RESEARCH SEMINAR ONLINE

Minimum Credits: 3

Maximum Credits: 3

This is a required three-credit course for graduate level students in education. It offers opportunities for students to investigate research questions, collect and interpret data and present research documents. Overall, students will be expected to write and submit a research proposal, conduct the research described in the proposal, and use information in the proposal to write a research paper that describes their research. Students will also write an abstract of their research paper.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

IL 2691 - SUPERVISED RESEARCH - EARLY CHILDHOOD

Minimum Credits: 1

Maximum Credits: 3

The student works collaboratively with a sponsoring faculty member in the carrying out of a research project.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

IL 2698 - DIRECTED STUDY - EARLY CHILDHOOD

Minimum Credits: 1

Maximum Credits: 9

The student proposes and carries out an independent study project under the direction and supervision of an appropriate member of the faculty.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

IL 2700 - SPECIAL TOPICS

Minimum Credits: 1

Maximum Credits: 3

A flexible curriculum oriented to special research topics of interest to faculty or current issues in or about the arts that are of concern to educators.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

IL 2701 - FIELD SEMINAR: PRIMARY PLUS

Minimum Credits: 1

Maximum Credits: 1

Students participate in district-based in-service activities and complete field-based assignments aimed at promoting an understanding of the professional, personal, social, and political dimensions of schools.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

IL 2702 - ADVANCED PRACTICUM IN FOREIGN LANGUAGE

Minimum Credits: 3

Maximum Credits: 3

A flexible curriculum oriented to special research topics of interest to faculty or current issues of concern in foreign language education. This course is designated for students to pursue independent research in foreign language education under the supervision of appropriate faculty member.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

Course Attributes: Asian Studies

IL 2707 - FIELD SEMINAR IN EARLY CHILDHOOD EDUCATION

Minimum Credits: 1

Maximum Credits: 1

Students participate in district-based in-service activities and complete field-based assignments aimed at promoting an understanding of the professional, personal, social, and political dimensions of schools.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

IL 2710 - ADVANCED SOCIAL STUDIES METHODS

Minimum Credits: 3

Maximum Credits: 3

This course explores and examines theoretical discourses and advanced methods and materials for improving social studies instruction in the secondary (grades 7-12) social studies classroom. Course content, procedures, and activities focus on effective strategies for engaging and teaching learners from diverse backgrounds and developmental levels. Approaches include investigation and analysis of constructionist ideas, student empowerment, historical thinking, historiography, global citizenship, real-world connectedness, and various technologies as they apply to teaching and learning in the secondary social studies classroom.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2711 - SPECIAL TOPICS - FOREIGN LANGUAGE EDUCATION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

IL 2712 - HISTORICAL THINKING AND HISTORIOGRAPHY: SECONDARY SOCIAL STUDIES CLASSROOM

Minimum Credits: 3

Maximum Credits: 3

This online course is an examination of teaching strategies and techniques related to historical thinking and historiographical analysis in the secondary social studies classroom. Course participants will investigate recent research supporting historical thinking and historiographical analysis strategies and techniques, engage in various projects intended to increase their knowledge and skills in these strategies and techniques, and explore creative ways to enrich their own classroom instruction by getting students engaged in "doing" history.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: World Wide Web

IL 2720 - PRACTICUM IN SECONDARY ENGLISH 1

Minimum Credits: 1

Maximum Credits: 1

Practicum in secondary English language arts 1 teacher candidates engage in 20 hours of fieldwork in one or two secondary school sites weekly. Fieldwork includes working with individual and small groups of students, collaborating with mentor teachers to design lessons, supporting instruction in the classrooms, and observing classroom instruction. Assignments and weekly meetings are designed to help teacher candidates recognize and apply current research on effective English language arts instruction and theories of adolescent learning and development.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

IL 2722 - PRACTICUM IN FOREIGN LANGUAGE

Minimum Credits: 1

Maximum Credits: 3

Prospective teachers experience the reality of teaching the foreign languages in a public school setting.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

IL 2723 - PRACTICUM IN SECONDARY SOCIAL STUDIES 1

Minimum Credits: 1

Maximum Credits: 1

Teacher candidates engage in 20 hours of fieldwork in one or two secondary school sites weekly. Fieldwork includes tutoring individual students, supporting instruction in secondary classrooms, collaborating with mentor teachers to design and/or set up lessons, and careful observation of classroom instruction. Assignments and weekly meetings are designed to support teacher candidates' abilities in two areas as they move towards high-engagement social studies instruction: recognizing and applying adolescent learning and developmental theory, and understanding the role of social context surrounding the classroom.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

IL 2725 - PRACTICUM IN SECONDARY ENGLISH EDUCATION

Minimum Credits: 1

Maximum Credits: 1

Teacher candidates engage in fieldwork in a secondary school site daily. Fieldwork includes tutoring individual students, supporting instruction in secondary classrooms, collaborating with mentor teachers to design and/or set up lessons, and careful observation of classroom instruction. Teacher candidates will also be responsible for independent instruction. Teacher candidates will reflect critically and productively on their own instruction. Teacher candidates are responsible for timely submission of all required certification paperwork.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

IL 2729 - PRACTICUM IN K-12 FOREIGN LANGUAGE 1

Minimum Credits: 1

Maximum Credits: 1

In this course, students engage in 20 hours of fieldwork in one or two school sites weekly. Fieldwork includes tutoring individual students, supporting instruction in classrooms, collaborating with mentor teachers to design lessons, and careful observation of instruction. In addition to fieldwork, students engage in weekly assignments and meetings that support students' ability to apply theory and current methodology in school context and reflect critically on their own instruction. In this course, students engage in 20 hours of fieldwork in one or two school sites weekly. Fieldwork includes tutoring individual students, supporting instruction in classrooms, collaborating with mentor teachers to design lessons, and careful observation of instruction. In addition to fieldwork, students engage in weekly assignments and meetings that support students' ability to apply theory and current methodology in school context and reflect critically on their own instruction.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

IL 2740 - PRACTICUM IN SECONDARY MATHEMATICS

Minimum Credits: 1

Maximum Credits: 1

Teacher candidates engage in fieldwork in a secondary school site daily. Fieldwork includes tutoring individual students, supporting instruction in secondary classrooms, collaborating with mentor teachers to design and/or set up lessons, and careful observation of classroom instruction. Teacher candidates will also be responsible for independent instruction. Teacher candidates will reflect critically and productively on their own instruction. Teacher candidates are responsible for timely submission of all required certification paperwork.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

IL 2741 - PRACTICUM IN SECONDARY SCIENCE 1

Minimum Credits: 1

Maximum Credits: 1

Teacher candidates engage in 20 hours of fieldwork in one or two secondary school sites weekly. Fieldwork includes tutoring individual students, supporting instruction in secondary classrooms, collaborating with mentor teachers to design and/or set up lessons, and careful observation of classroom instruction. Assignments and weekly meetings are designed to support teacher candidates' ability to recognize and apply adolescent learning and developmental theory in the school context.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

IL 2750 - TECHNIQUES OF ORIENTATION AND MOBILITY 1

Minimum Credits: 3

Maximum Credits: 3

This first part of this two part methods course, which is offered on-campus in summer two, is designed to introduce the student to the elementary

level travel skills (e.g., Use of human guidance) and procedures (e.g., Sensory development) used when teaching O&M to individuals who are blind or visually impaired who may also possess additional disabilities. Students begin their knowledge of teaching travel skills indoors and gradually transition to the introductory level outdoor environment. Students wear simulation materials designed to fully or partially occlude vision while traveling.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2751 - METHODS AND MANAGEMENT IN SP ED

Minimum Credits: 3

Maximum Credits: 3

This course is designed for students entering the teacher preparation program in mental and physical disabilities. Instruction concerning how to prepare for instruction, write lesson plans, and implement lessons is provided. Field observations and micro-teaching experiences are also provided.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2752 - TECHNIQUES OF ORIENTATION AND MOBILITY 2

Minimum Credits: 3

Maximum Credits: 3

This second part of a two part methods course, which builds upon the knowledge gained in IL 2750, is offered on-campus in summer two. It introduces the student to developing instructional strategies for teaching more complex o & m travel skills (e.g., Use of public transportation systems) and procedures (e.g., Use of tactile maps) to individuals who are blind or visually impaired who may also possess additional disabilities who travel in a variety of indoor and outdoor environments. The course also covers teaching strategies for serving the o & m needs of children as well as adults through simulated teaching activities.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2753 - ORIENTATION AND MOBILITY FOR DIVERSE POPULATIONS

Minimum Credits: 3

Maximum Credits: 3

The focus of this online course is on designing assessment and instructional strategies for various populations of individuals who are blind or visually impaired. Specific populations to be examined include: persons with low vision, individuals with dual sensory loss (deaf blindness), infants and preschoolers, school-aged students, individuals with cognitive impairments, students with cortical visual impairments, and dog guide users.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: World Wide Web

IL 2780 - AUTISM ENDORSEMENT PRACTICUM

Minimum Credits: 3

Maximum Credits: 3

As part of this practicum course, students will get practical experience working with students with ASD of various age groups in different educational and community settings. They will also get an in-depth experience at their primary practicum placement by working closely with a mentor teacher and a University supervisor on a variety of application-based projects. All practicum activities will be completed at an approved practicum site (E.G., Autistic support classroom in a public school; general education classroom). Students will acquire competencies related to assessment, intervention, and collaboration with professionals, families, and community organizations. The practicum meetings will be used for group supervision and sharing of the experiences, ideas, and challenges with a team of peers.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade
Course Requirements: PREQ: IL 2505 and 2586

IL 2791 - SUPERVISED RESEARCH -FOREIGN LANGUAGE

Minimum Credits: 1

Maximum Credits: 3

The student works collaboratively with a sponsoring faculty member in the carrying out of a research project.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

IL 2798 - DIRECTED STUDY - FOREIGN LANGUAGE

Minimum Credits: 1

Maximum Credits: 9

The student proposes and carries out an independent study project under the direction and supervision of an appropriate member of the faculty.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

IL 2800 - STUDENT TEACHING-EARLY CHLDHED ED

Minimum Credits: 1

Maximum Credits: 10

Full-time practicum for teacher certification candidates. Provides opportunities to observe, plan, conduct, and evaluate instruction in the school setting and receive professional feedback from university supervisors and experienced master teachers.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

IL 2803 - STUDENT TEACHING SEMINAR - PRIMARY PLUS

Minimum Credits: 1

Maximum Credits: 1

This course supports student teaching. Students work on topics such as instructional management, behavior management, lesson planning, addressing student needs for the department of education.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

IL 2804 - STUDENT TEACHING - PRIMARY PLUS

Minimum Credits: 2

Maximum Credits: 5

This is a 14-week student teaching experience under the guidance of a mentor teacher and a supervisor from the university. Students are expected to learn to plan for and teach all four elementary subject areas for an extended period of time during the course of the term. Towards the end of the term, the student teachers are also expected to take on primary teaching responsibility for all subject areas for two weeks.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad HSU Basis

IL 2820 - TEACHING AND LEARNING IN SECONDARY ENGLISH 3

Minimum Credits: 3

Maximum Credits: 3

This course builds upon teaching and learning in secondary English language arts 2 by emphasizing the role of assessment, long-term curricular planning, language and grammar instruction, process drama, and technology in effective English language arts instruction. The course will also introduce current controversies in English language arts instruction and ways that teachers can address them. Teacher candidates will have opportunities to develop instructional plans and practice teaching techniques while receiving feedback from peers and the course instructor.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

IL 2822 - INTERNSHIP IN FOREIGN LANGUAGE

Minimum Credits: 1

Maximum Credits: 10

Full-time practicum for teacher certification candidates. Provides opportunities to observe, plan, conduct, and evaluate instruction in the school setting and receive professional feedback from university supervisors and experienced master teachers.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad LG/SU3 Basis

IL 2824 - STUDENT TEACHING SEMINAR IN ENGLISH OR COMMUNICATION EDUCATION

Minimum Credits: 1

Maximum Credits: 3

A seminar for student teachers in the certification field which emphasizes collaborative problem solving of practical teaching problems and continued professional development.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

IL 2826 - STUDENT TECHNG SEM-FOREIGN LANG

Minimum Credits: 1

Maximum Credits: 2

A seminar for student teachers in the certification field which emphasizes collaborative problem solving of practical teaching problems and continued professional development. A portfolio of teaching experiences serves as the centerpiece of class discussions.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Attributes: Global Studies

IL 2827 - TEACHING AND LEARNING IN SECONDARY SOCIAL STUDIES 3

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the development and support of learning contexts in which adolescents have opportunities to engage in challenging social studies learning. Drawing on cognitive change learning theory, teacher candidates learn to select and develop various assessments that reveal students' thinking and to draw upon their understanding of students' ideas to scaffold learning experiences in the classroom. Emphasis is placed on instructional strategies that build and support students' capacity to engage in powerful social studies discourse.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

IL 2828 - STUDENT TEACHING SEMINAR-SOCIAL STUDIES

Minimum Credits: 1

Maximum Credits: 2

A seminar for student teachers in the certification field which emphasizes collaborative problem solving of practical teaching problems and continued professional development.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad LG/SU3 Basis

IL 2834 - SPECIAL TOPICS - FOREIGN LANGUAGE

Minimum Credits: 1

Maximum Credits: 3

A flexible curriculum oriented to special research topics of interest to faculty or current issues of concern to educators. Focused on areas within programs.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

IL 2841 - INTERNSHIP IN SECONDARY SCIENCE

Minimum Credits: 1

Maximum Credits: 10

Full-time practicum for teacher certification candidates. Provides opportunities to observe, plan, conduct, and evaluate instruction in the school setting and receive professional feedback from university supervisors and experienced master teachers.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

IL 2842 - STUDENT TEACHING SEMINAR-MATHEMATICS

Minimum Credits: 1

Maximum Credits: 3

A seminar for student teachers in the certification field which emphasizes collaborative problem solving of practical teaching problems and continued professional development.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

IL 2843 - STUDENT TEACHING SEM - SCIENCE

Minimum Credits: 1

Maximum Credits: 2

A seminar for student teachers in the certification field which emphasizes collaborative problem solving of practical teaching problems and continued professional development.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

IL 2845 - PRACTICUM IN SECONDARY SCIENCE

Minimum Credits: 1

Maximum Credits: 1

Teacher candidates engage in fieldwork in a secondary school site daily. Fieldwork includes tutoring individual students, supporting instruction in secondary classrooms, collaborating with mentor teachers to design and/or set up lessons, and careful observation of classroom instruction. Teacher candidates will also be responsible for independent instruction. Teacher candidates will reflect critically and productively on their own instruction. Teacher candidates are responsible for timely submission of all required certification paperwork.

Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis

IL 2850 - PRACTICUM - PRESCHOOL

Minimum Credits: 1

Maximum Credits: 3

This course involves direct contact with preschoolers with disabilities. Students are placed in various types of supervised community settings where preschoolers with disabilities and their families are served. A seminar will be held weekly.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

IL 2852 - PRACTICUM - INFANTS & TODDLERS

Minimum Credits: 1

Maximum Credits: 3

This course involves direct contact with infants and toddlers with disabilities. Students are placed in various types of supervised community settings where infants and toddlers with disabilities and their families are served. A seminar will be held weekly.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

IL 2853 - STUDENT TEACHING - STUDENTS WITH HIGH INCIDENCE OF DISABILITIES

Minimum Credits: 2

Maximum Credits: 6

Teacher candidates engage in fieldwork five days a week in school sites with students with high incidence disabilities. Teacher candidates will collaborate with special education mentor teachers to develop and implement a plan by which the teacher candidate will, by the end of the experience, assume responsibility for the majority of provided instruction and classroom management. Experiences are designed to support teacher candidates' ability to recognize and apply evidence-based practices in the school context.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad HSU Basis

IL 2854 - STUDENT TEACHING WITH LOW INCIDENCE OF DISABILITIES

Minimum Credits: 3

Maximum Credits: 3

Teacher candidates engage in fieldwork five days a week in school sites with students with low incidence disabilities. Teacher candidates will collaborate with special education mentor teachers to develop and implement a plan by which the teacher candidate will, by the end of the experience, assume responsibility for the majority of provided instruction and classroom management. Experiences are designed to support teacher candidates' ability to recognize and apply evidence-based practices in the school context.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad HSU Basis

IL 2857 - LEVEL 3 INTERNSHIP PRACTICUM - ORIENTATION AND MOBILITY

Minimum Credits: 6

Maximum Credits: 6

Full or part-time clinical experience, minimum 350 clock hours of direct instruction is necessary to fulfill this course requirement. Students must be supervised by an on-site, full-time ACVREP certified O&M specialist, with supplemental support provided by university faculty. Placements are arranged by the vision studies program faculty. Students must be able to demonstrate teaching competence with a variety of individuals who are blind and visually impaired (i.e., Ages, cognitive level), as well as teaching competence in a variety of environments (i.e., Simple as well as complex travel

settings) successfully in order to apply to take the national certification exam in O&M.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad HSU Basis

IL 2858 - STUDENT TEACHING SEMINAR - SPECIAL EDUCATION TEACHER PREPARATION

Minimum Credits: 2

Maximum Credits: 2

This weekly seminar is offered concurrently with the full-time student teaching requirement. The seminar permits teacher candidates to discuss and process situations and problems as they arise in the field and assists teacher candidates in the completion of program and student teaching requirements. A focus on the preparation of a professional portfolio prepares teacher candidates for the job search and interview process.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

IL 2860 - PRACTICUM IN SECONDARY SPECIAL EDUCATION

Minimum Credits: 1

Maximum Credits: 1

Teacher candidates engage in fieldwork two days a week in secondary school sites. Teacher candidates will collaborate with a special education mentor teacher. Teacher candidates will be expected to observe and support instruction. Fieldwork includes conducting and interpreting assessment, and planning and delivering one-on-one and small group instruction for students with disabilities. Teacher candidates will follow guidance provided by the mentor teacher to support iep implementation in appropriate areas. Assignments and weekly meetings are designed to support teacher candidates' ability to recognize and apply evidence-based practices with adolescents in the school context.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad SN Basis

IL 2861 - PRACTICUM IN SECONDARY SPECIAL EDUCATION - SPECIAL EDUCATION TEACHER PREPARATION

Minimum Credits: 1

Maximum Credits: 1

Teacher candidates engage in fieldwork two days a week in secondary school sites. Teacher candidates will collaborate with a special education mentor teacher and will be expected to observe and support instruction. Fieldwork includes conducting and interpreting assessment and planning and delivering one-on-one and small group instruction for students with disabilities. Teacher candidates will follow guidance provided by the mentor teacher to support iep implementation in appropriate areas. This practicum experience will support the completion of assignments from coursework as well as prepare teacher candidates for the full-time student teaching experience.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

IL 2881 - INTERNSHIP-ENGLISH OR COM EDUC

Minimum Credits: 1

Maximum Credits: 9

School-based practicum for graduate students seeking teacher certification and the master of arts in teaching degree. Requires a half-time placement for the entire year under the supervision of a mentor. Interns observe, analyze, and practice basic teaching skills in different grade levels and subject fields.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad LG/SU3 Basis

IL 2882 - INTERNSHIP - FOREIGN LANGUAGE

Minimum Credits: 1

Maximum Credits: 5

In this course, students engage in supervised field work in a local school district. Students co-plan with their assigned mentor teacher and receive feedback from a university supervisor.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Instruction and Learning (MAT)

Course Attributes: Global Studies

IL 2883 - INTERNSHIP - SOCIAL STUDIES

Minimum Credits: 1

Maximum Credits: 9

School-based practicum for students seeking teacher certification and the master of arts in teaching degree. Requires placement for the entire school academic year under the supervision of a mentor teacher. Interns observe, analyze, and practice basic teaching skills while teaching the social studies at the secondary level.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad HSU Basis

IL 2890 - ADVANCED TEACHING PRACTICUM

Minimum Credits: 1

Maximum Credits: 9

Course designed for students seeking additional field teacher certification. Includes a school-based practicum in accordance with the student's experience and interests.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad HSU Basis

IL 2891 - SUPERVISED RES - SOCIAL STUDIES

Minimum Credits: 1

Maximum Credits: 6

The student works collaboratively with a sponsoring faculty member in the carrying out of a research project.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

IL 2892 - PRACTICUM IN K-12 FOREIGN LANGUAGE

Minimum Credits: 1

Maximum Credits: 1

TEACHER CANDIDATES ENGAGE IN FIELDWORK IN A SECONDARY SCHOOL SITE DAILY. FIELDWORK INCLUDES TUTORING INDIVIDUAL STUDENTS, SUPPORTING INSTRUCTION IN SECONDARY CLASSROOMS, COLLABORATING WITH MENTOR TEACHERS TO DESIGN AND/OR SET UP LESSONS, AND CAREFUL OBSERVATION OF CLASSROOM INSTRUCTION. TEACHER CANDIDATES WILL ALSO BE RESPONSIBLE FOR INDEPENDENT INSTRUCTION. TEACHER CANDIDATES WILL REFLECT CRITICALLY AND PRODUCTIVELY ON THEIR OWN INSTRUCTION. TEACHER CANDIDATES ARE RESPONSIBLE FOR TIMELY SUBMISSION OF ALL REQUIRED CERTIFICATION PAPERWORK.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

IL 2898 - DIRECTED STUDY - SOCIAL STUDIES

Minimum Credits: 1

Maximum Credits: 9

The student proposes and carries out an independent study project under the direction and supervision of an appropriate member of the faculty.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

IL 2905 - TEACHING INFANTS, TODDLERS AND PRESCHOOLERS

Minimum Credits: 3

Maximum Credits: 3

This course provides the foundation for teaching infants, toddlers, and preschoolers, in group settings in centers outside the home. Topics include developmentally appropriate curriculum and instruction, program design and implementation, legal compliance and program enhancement, family and community relations, professionalism, and advocacy.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2906 - COMMUNITY RESOURCES SEMINAR: YOUNG CHILDREN AND FAMILIES

Minimum Credits: 2

Maximum Credits: 3

This interdisciplinary course focuses on the role of the professional in supporting families of young children with and without disabilities by linking them with formal and informal community resources. The course explores rationale; family-centered principles; models and practices for supporting families; and considerations in the development of community resources. It surveys available resources through guest speakers, on-site visits, and the development of a resource directory.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

IL 2907 - COLLABORATIVE PARTNERSHIPS WITH FAMILIES AND THE COMMUNITIES

Minimum Credits: 3

Maximum Credits: 3

This course will focus on the role of the professional in supporting families of young children (pre-k - grade 4), including families of children with disabilities and other diverse characteristics. Students will learn about family systems, including how family characteristics affect the development of children, how to communicate, interact, and collaborate with families in school settings, and how to link families with formal and informal community resources.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 2928 - WEB LEGL & LEGISLTV FDS OF SP ED

Minimum Credits: 3

Maximum Credits: 3

This web-based course reviews the practical application of laws, regulations, court decisions, and public policy to the supervision of special education services and programs.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Attributes: World Wide Web

IL 2990 - RESEARCH SEMINAR FOR MAT INTERNS

Minimum Credits: 3

Maximum Credits: 3

The student proposes, carries out, and prepares a careful report of a study Germane to the student's professional role.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

IL 3002 - CLASSROOM DISCOURSE

Minimum Credits: 3

Maximum Credits: 3

The purpose of this course is to introduce students to the theoretical underpinnings, methodological concerns, and pedagogical implications of the study of classroom discourse ' the study of who can say what to whom, when and where, for what purposes, under what conditions, and with what outcomes in a range of classroom contexts. The course critically reviews empirical research on classroom discourse (both recent and classical investigations), and covers the accepted methods for conducting research on classroom discourse including different approaches to collecting, recording, and analyzing both verbal and nonverbal discourse. A range of theoretical approaches to analyzing discourse are also covered.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 3003 - RESEARCH INTERVIEWING

Minimum Credits: 3

Maximum Credits: 3

This course is designed to introduce doctoral students to the theories and methodologies of research interviewing in the social sciences. The course introduces students to aspects of research interviewing such as designing research questions that can be answered through interview data, identifying potential participants, creating interview protocols, transcribing interviews, coding interviews, and recognizing the role/bias of the interviewer. The course will also teach students how to critically analyze the representation and use of interview data in educational research. Students are expected to read published studies, collect and analyze data from interviews, and critically evaluate various approaches in light of their own research questions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 3004 - IDENTITY IN EDUCATIONAL SETTINGS

Minimum Credits: 3

Maximum Credits: 3

Recent approaches to conceptualizing and studying identity in complex social environments will be reviewed through course readings and discussions. The historical background of this work will also be addressed. Particular attention will be paid to the identity development of students who are often marginalized in educational settings. Qualitative and interpretive methods for studying identity will also be covered. Students will be expected to actively participate in discussions and complete a term project (either a review of the literature or a small-scale study of identity formation).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 3007 - CULTURE AND COGNITION

Minimum Credits: 3

Maximum Credits: 3

This course will introduce students to the field of cultural psychology and its perspective on the language and thinking of children, adolescents, and adults. Research conducted from a cultural psychology perspective will be reviewed and applied to the assessment of the thinking, speaking, and acting of people from diverse ethnic, racial, economic, and national backgrounds. Instructional practices that have been employed with multicultural populations will be reviewed and evaluated. Students will be expected to actively participate in discussions and complete several short papers and one in-class presentation.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

IL 3011 - THE STUDY OF TEACHING

Minimum Credits: 3

Maximum Credits: 3

Advanced graduate course for students interested in research on teachers and teaching. Covers mainstream and alternative paradigms, including behavioral, cognitive, and ethnographic modes of pedagogical inquiry. Offers a critical analysis of recent studies on the nature of expertise in teaching, and new approaches to teacher performance assessment.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 3012 - CRITICAL READING IN LANGUAGE LITERACY AND CULTURE 1

Minimum Credits: 3

Maximum Credits: 3

This course is part of a two-course sequence that provides opportunities for students to engage in thoughtful and critical ways with important texts related to language, literacy, and culture. Examining works by influential theorists and researchers, students will consider such fundamental questions as: how are discussions of language, literacy, and culture deeply rooted in broader social and political contexts? How do issues of language, literacy, and culture relate to education?

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

IL 3013 - CRITICAL READINGS IN LANGUAGE, LITERACY, AND CULTURE 2

Minimum Credits: 3

Maximum Credits: 3

This course is the second in a two-course sequence that provides opportunities for students to engage in thoughtful and critical ways with important texts related to language, literacy, and culture. Examining works by influential theorists and researchers, students will consider such fundamental questions as: how are discussions of language, literacy, and culture deeply rooted in broader social and political contexts? How do issues of language, literacy, and culture relate to education?

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

IL 3014 - THEORETICAL PERSPECTIVES IN LANGUAGE, LITERACY AND CULTURE 1

Minimum Credits: 3

Maximum Credits: 3

This course is the first in a two-course sequence that provides opportunities for students to investigate important theoretical perspectives informing research in language, literacy, and culture. Students consider fundamental questions such as: how do theories shape the choice of research questions and methodologies? And how do theories provide frameworks for analyzing data?

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 3015 - THEORETICAL PERSPECTIVES IN LANGUAGE, LITERACY AND CULTURE 2

Minimum Credits: 3

Maximum Credits: 3

This course is the second in a two-course sequence that provides opportunities for students to investigate important theoretical perspectives informing research in language, literacy, and culture. Students consider fundamental questions such as: how do theories shape the choice of research questions and methodologies? And how do theories provide frameworks for analyzing data?

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

IL 3016 - PHD WRITING SEMINAR

Minimum Credits: 1

Maximum Credits: 1

This course is a writing workshop designed to provide LLC Ph.D. students beyond their first year of study with regular feedback on their academic writing, including research articles, grant proposals, and milestone documents.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

IL 3089 - CURRICULUM ANALYSIS & DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

Students submit an individual goal proposal to analyze or develop curriculum materials in an area of interest to them. Criteria for curriculum analysis and development are developed jointly by the students and the instructor. Students will relate curriculum to instruction and evaluate the appropriateness of instructional strategies to curriculum designs.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

IL 3091 - SUPERVISED RESEARCH - SCIENCE

Minimum Credits: 1

Maximum Credits: 6

The student proposes and carries out a project under the direction and supervision of an appropriate member of the faculty.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

IL 3098 - DIRECTED STUDY - SCIENCE

Minimum Credits: 1

Maximum Credits: 9

The student proposes and carries out a project under the direction and supervision of an appropriate member of the faculty.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

IL 3099 - DOCTORAL DISSERTATION RESEARCH - SCIENCE

Minimum Credits: 1

Maximum Credits: 15

The student proposes and carries out a project under the direction and supervision of an appropriate member of the faculty.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

IL 3248 - SPECIAL TOPICS-LANGUAGE AND LITERACY

Minimum Credits: 1

Maximum Credits: 3

A flexible curriculum oriented to special research topics of interest to faculty or current issues of concern to educators. Focused on areas within programs.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

IL 3291 - SUPERVISED RESEARCH - READING

Minimum Credits: 1

Maximum Credits: 6

The doctoral student works collaboratively with a sponsoring faculty member in the carrying out and preparation of a written report of a research project.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad HSU Basis

IL 3295 - DIRECTED STUDY: LANGUAGE AND LITERACY

Minimum Credits: 1

Maximum Credits: 9

The student proposes and carries out a study project under the direction and supervision of an appropriate member of the faculty.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

IL 3296 - DOCTORAL DISSERTATION RESEARCH - LANGUAGE LITERACY AND CULTURE

Minimum Credits: 1

Maximum Credits: 9

The student prepares a proposal for a detailed research study, has that proposal approved by an appropriate faculty dissertation committee, completes the proposed study, and defends the completed draft in a dissertation final oral examination.

Academic Career: Graduate

Course Component: Full Time Dissertation

Grade Component: Grad HSU Basis

IL 3298 - DIRECTED STUDY - READING

Minimum Credits: 1

Maximum Credits: 9

The student proposes and carries out an independent study project under the direction and supervision of an appropriate member of the faculty.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

IL 3299 - DOCTORAL DISSER RES - READING

Minimum Credits: 1

Maximum Credits: 15

The student prepares a proposal for a detailed research study, has that proposal approved by an appropriate faculty dissertation committee, completes the proposed study, and defends the completed draft in a dissertation final oral examination.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

IL 3391 - SUPERVISED RESEARCH IN ENGLISH

Minimum Credits: 1

Maximum Credits: 9

The student works collaboratively with a sponsoring faculty member in carrying out a research project.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

IL 3398 - DIRECTED STUDY IN ENGLISH

Minimum Credits: 1

Maximum Credits: 6

The student proposes and carries out an independent study project under the direction and supervision of an appropriate member of the faculty.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

IL 3399 - DOCTORAL DISSERTATION RES IN ENG

Minimum Credits: 1

Maximum Credits: 18

The student prepares a proposal for a detailed research study, has that proposal approved by an appropriate faculty dissertation committee, completes the proposed study, and defends the completed draft in a dissertation final oral examination.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

IL 3452 - DISCIPLINING ENVIRONMENTAL EDUCATION: USING DIGITAL STORYTELLING TO UNPACK ENVIRONMENTAL ISSUES

Minimum Credits: 1

Maximum Credits: 1

In other parts of the world, such as Finland, environmental education is infused throughout the curriculum in history, science, technology, and math. This pop-up course serves as one way to provide a platform for Pitt students to experience Finnish nature schools in their backyard. The goal of the pop-up classes will be to provide a space for developing student projects at both the undergraduate and graduate levels. This course is geared for students interested in authoring visual content and testing the productive tensions of this new media. During the pop-up classes, we will establish a student-led AR/VR authoring club, training sessions for students, and work to amplify and circulate our content across our local and global communities.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

IL 3470 - CURRICULUM ISSUES IN MATHEMATICS AND SCIENCE EDUCATION

Minimum Credits: 3

Maximum Credits: 3

In this course students will draw on the research literature and their own professional experiences to examine current practices of large- and small-scale assessment and teacher evaluation in mathematics and science education - both historically and in terms of their forms and purposes in today's educational and political climate. Current research and practice will be examined with respect to equity, theories of learning, methodology, and policy.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 3471 - INSTRUCTIONAL ISSUES IN MATH AND SCIENCES EDUCATIONS

Minimum Credits: 3

Maximum Credits: 3

The aim of this course is to introduce students to current approaches to understanding and studying instructional practices in mathematics and science education. A historical perspective on the use of observations to document effective teaching will be reviewed. Students will be introduced to recent research on increasing students' agency, authority, and accountability through classroom discourse. Additional topics will include: the impact of high cognitive demand tasks on student learning and fostering equity in instruction. Students will apply course readings to the analysis of classroom artifacts and videotapes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 3473 - RSRCH,DESIGN & METHD IN MATH ED

Minimum Credits: 3

Maximum Credits: 3

Current research in mathematics education will be analyzed and evaluated with respect to methodological issues. Literature reviews, research methodologies, and professional writing will be discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 3474 - COLLEGE SCIENCE TEACHING PRACTCM

Minimum Credits: 3

Maximum Credits: 3

Issues associated with higher education in the science disciplines are explored to develop a perspective for the college science instructor. Supervised teaching handout preparation, cognitive patterns of the adult, and evaluation of learning are studied.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad HSU Basis

IL 3475 - PROFESSIONAL LEARNING IN MATH-SCIENCE EDUCATION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 3476 - ASSESSMENT & EVAL IN MATH & SCIENCE EDUCATION

Minimum Credits: 3

Maximum Credits: 3

International, national, and local perspectives on mathematics assessment will be presented. Areas include classroom and large-scale assessment and curriculum and program evaluation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

IL 3491 - SUPERVISED RESEARCH - MATH

Minimum Credits: 1

Maximum Credits: 6

The doctoral student works collaboratively with a sponsoring faculty member in the carrying out and in the preparation of a written report of a research project.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad HSU Basis

IL 3498 - DIRECTED STUDY - MATH

Minimum Credits: 1

Maximum Credits: 9

The student proposes and carries out a study project under the direction and supervision of an appropriate member of the faculty.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

IL 3499 - DOCTORAL DISSERTATION RESEARCH - MATH

Minimum Credits: 1

Maximum Credits: 15

The student prepares a proposal for a detailed research study, has that proposal approved by an appropriate faculty dissertation committee, completes the proposed study, and defends the completed draft in a dissertation final oral examination.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

IL 3501 - WEB FINANCING SPECIAL EDUCATION

Minimum Credits: 1

Maximum Credits: 1

This web-based course is designed to provide prospective special education supervisors with an overview of the development and content of mandated special education plans for school districts and intermediate units and to link those plans to the development of a comprehensive special education budget.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Attributes: World Wide Web

IL 3509 - ADV SEMINAR: EARLY INTERVENTION

Minimum Credits: 3

Maximum Credits: 3

This course will acquaint students with the latest research in early education and will apply those findings to infants, toddlers and preschoolers with disabilities.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

IL 3526 - PRACTICUM IN COLLEGE TEACHING

Minimum Credits: 1

Maximum Credits: 3

Students prepare and teach a course under the direct supervision of a faculty member.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad Letter Grade

IL 3536 - SINGLE SUBJECT RESEARCH

Minimum Credits: 3

Maximum Credits: 3

Course covers single subject research methodology applied in studies involving exceptional populations.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

IL 3541 - WEB INSTRNL PRACTICES SP EDUC

Minimum Credits: 3

Maximum Credits: 3

This web-based course focuses on the most current research on instructional practices for students with disabilities and prepares the prospective supervisor for what should be happening in special education classrooms and in the provision of special education services.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Attributes: World Wide Web

IL 3542 - WEB CURRNT ISSUES & TRENDS SP ED

Minimum Credits: 3

Maximum Credits: 3

This web-based course focuses on philosophical issues as well as research findings that impact on the education of persons with disabilities. Through critical analysis of assigned readings, the course facilitates a thorough understanding of various points of view on the education of students with disabilities.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Attributes: World Wide Web

IL 3548 - SPECIAL TOPICS-SPEC EDUCATION

Minimum Credits: 1

Maximum Credits: 3

A flexible curriculum oriented to special research topics of interest to faculty or current issues of concern to educators. Focused on areas within program.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

IL 3564 - APPLIED BEHAVIORAL ANALYSIS 1: FUNDAMENTALS 1

Minimum Credits: 3

Maximum Credits: 3

This is the first in a series of five courses designed to meet the total academic requirements for board certification in behavior analysis. This course focuses on defining applied behavior analysis, selecting, assessing and evaluating behavior to change, and functional and experimental analyses of behavior change. The primary goal of this and the second course is to provide students with a complete, accurate, and contemporary view of applied behavior analysis, and how functional analysis can be used to understand socially significant behaviors.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 3565 - APPLIED BEHAVIORAL ANALYSIS 2: FUNDAMENTALS 2

Minimum Credits: 3

Maximum Credits: 3

This is the second of five courses meeting the total course requirements for board certification as a behavior analyst. This course focuses on the development of new behaviors, various clinical interventions for decreasing interfering behavioral, and maintaining behavioral changes. The instructor presumes that students have limited or no background experiences with applied behavior analysis. Some students will have already completed the fundamentals 1 course. The primary goal of this and the first course is to provide students with a complete, accurate, and contemporary view of applied behavior analysis, and how functional analysis can be used to understand socially significant behaviors.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 3566 - APPLIED BEHAVIORAL ANALYSIS 3: APPLICATIONS IN DEVELOPMENTAL DISABILITIES

Minimum Credits: 3

Maximum Credits: 3

This is the third of five courses meeting the total academic requirements for board certification as a behavior analyst. This course focuses on the application of principles and procedures covered in IL 2564 and IL 2565 to a wide range of behavior disorders in individuals with developmental disabilities.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 3567 - APPLIED BEHAVIORAL ANALYSIS 4: EMOTIONAL BEHAVIORAL DISABILITIES OF CHILDREN AND ADOLESCENTS

Minimum Credits: 3

Maximum Credits: 3

This is the fourth of five courses meeting academic requirements for board certification as a behavior analyst. This course focuses on etiology, analysis, assessment and intervention for mental health disorders of childhood and adolescence with an emphasis on an applied behavior analysis of disorders.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 3568 - APPLIED BEHAVIORAL ANALYSIS 5: CURRENT DEVELOPMENTS IN ABA

Minimum Credits: 3

Maximum Credits: 3

This is the fifth and final course meeting the total academic requirements for board certification as a behavior analyst. This course is specifically focused on a number of advanced topics, including verbal behavior, ethics, and parent training.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 3569 - APPLIED BEHAVIORAL ANALYSIS PRACTICUM

Minimum Credits: 1

Maximum Credits: 3

The applied behavior analysis practicum provides students with intensive opportunities to learn and practice the various roles of a behavior analyst in a variety of different settings and to demonstrate competence as a beginning applied behavior analyst. Opportunities will include conducting assessment activities related to the need for behavioral interventions, designing, implementing and monitoring behavior analysis activities, overseeing implementation of behavior analysis programs by others, and other activities typically performed by a behavior analyst such as attending planning meetings and researching the literature to prepare a behavioral intervention. Each student will work closely with an assigned university supervisor and a mentoring professional from their individual placement site during the practicum. The practicum requires group seminar supervision, individual supervision, on-site observations, and small group supervision in amounts determined by the behavior analysis certification board (BACB) standards. The accompanying practicum seminar allows students to share experiences and knowledge gained in placement sites, as

well as to seek support and ideas from classmates.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad HSU Basis

IL 3571 - WEB SUPERVISION SPECIAL EDUCATN

Minimum Credits: 3

Maximum Credits: 3

This web-based course reviews problems and practices in special education supervision. Emphasis is placed in increasing interpersonal skills and developing technical skills in observing, planning and evaluating instruction.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: World Wide Web

IL 3577 - BRIDGE COURSE: BCBA CURRICULUM EDITION 3 TO 4

Minimum Credits: 2

Maximum Credits: 3

This course is designed to update the competencies of edition 3 of the board certified behavior analyst curriculum to edition 4 of the curriculum so that individuals who took all or part of their ABA studies under edition 3 may sit for the national exam under the current edition 4. The course will address 10 topics such as direct instruction, incidental teaching, alternative and augmentative communication, MAND training, precision teaching. The required competencies (e.g. measurement and data analysis; change systems; implementation, management and supervision; intervention and behavior change considerations) will be distributed across each topic.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

IL 3578 - APPLIED BEHAVIORAL ANALYSIS 6: ETHICS

Minimum Credits: 3

Maximum Credits: 3

This is one of six courses meeting the total academic requirements for board certification as a behavior analyst. This course focuses on ethical practices involving the application of principles and procedures covered in aba i through aba v. The ethical practices relate to working with individuals with autism spectrum disorders, developmental disabilities and other behavioral/emotional disorders.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: IL 3564 and 3565

IL 3579 - TREATMENT FIDELITY AND COACHING: AUTISM

Minimum Credits: 3

Maximum Credits: 3

This course will present information on the strategies used to monitor and enhance the accuracy and the delivery of evidence-based interventions for children with autism spectrum disorder (ASD) and other disabilities. The course will focus on defining intervention and implementation fidelity, exploring examples of the documentation, planning and assessment of treatment fidelity for evidence-based interventions, and learning skills for peer, parent, and supervisory coaching.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: IL 2505

IL 3585 - TECHNOLOGY-BASED INTERVENTIONS: AUTISM

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the application of assistive technology to interventions for children with autism spectrum disorder (ASD) and other non-physical disabilities. The course addresses a) the principles of assistive technology (at), b) assessment of students for at, and c) the at continuum of low, mid, and high technology. A range of hardware (E.G., ipad, computers, specialized speech generating devices), software (E.G., imovie, board maker), and interventions (E.G., Video modeling, alternative and augmentative communication strategies, academic skills) will be considered.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

IL 3590 - RESEARCH SEMINAR IN SPECIAL EDUCATION

Minimum Credits: 3

Maximum Credits: 3

This course provides students with competencies necessary for utilizing and evaluating research in special education. Focus is on the critical analysis of research and examination of methodological and ethical considerations. Students in m/ps sections conduct single subject research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

IL 3591 - SUPRVSD RESEARCH IN SPECIAL EDUC

Minimum Credits: 1

Maximum Credits: 9

The doctoral student works collaboratively with a sponsoring faculty member in the carrying out and in the preparation of a written report of a research project.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad HSU Basis

IL 3592 - SUPERVISION PRACTICUM IN SP ED

Minimum Credits: 1

Maximum Credits: 3

The student under faculty supervision works with prospective, beginning, or experienced teachers in the development of their professional supervision skills. This practicum may be completed in conjunction with the professional sequence of coursework in supervision at approved educational sites.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

IL 3593 - RESEARCH PRACTICUM IN SPEC EDUC

Minimum Credits: 1

Maximum Credits: 3

Course is a field-based internship in research methodology. Purpose of the course is to provide opportunities for students to get hands-on experience and direct supervision in the development, implementation and dissemination of educational research.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

IL 3594 - INTERDISCIPLINARY LEADERSHIP SEMINAR DEVELOPMENTAL DISABILITY 1

Minimum Credits: 1

Maximum Credits: 3

This seminar provides the advanced master's or doctoral student with an opportunity to study and analyze with students and faculty from a variety of

disciplines current issues affecting children with neurodevelopmental disabilities, their families, and their communities. Within a framework of family-centered and cross-cultural principles, the seminar examines issues related to advances in diagnosis, treatment, child development, service delivery, and policy/legislation. Leadership issues are also explicitly considered at the beginning and end of each term.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

IL 3596 - INTERNSHIP IN SPECIAL EDUCATION

Minimum Credits: 1

Maximum Credits: 3

An internship is proposed, then reviewed by faculty and implemented in varying types of special education settings.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad SN Basis

IL 3598 - DIRECTED STUDY IN SP ED

Minimum Credits: 1

Maximum Credits: 6

The student proposes and carries out an independent study project under the direction and supervision of an appropriate member of the faculty.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

IL 3599 - DOCTRL DISSER RES - SPECIAL ED

Minimum Credits: 1

Maximum Credits: 15

The student prepares a proposal for a detailed research study, has that proposal approved by an appropriate faculty dissertation committee, completes the proposed study, and defends the completed draft in a dissertation final oral examination.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

IL 3702 - SPECIAL PROJECT FOREIGN LANGUAGE EDUCATION PHD

Minimum Credits: 1

Maximum Credits: 3

A flexible curriculum oriented to special research topics of interest to faculty or current issues of concern in foreign language education. This course is designated for students to pursue independent research in foreign language education under the supervision of appropriate faculty member.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

Course Attributes: Asian Studies

IL 3791 - SUPERVISED RESEARCH - FOREIGN LANGUAGE

Minimum Credits: 1

Maximum Credits: 6

The doctoral student works collaboratively with a sponsoring faculty member in the carrying out and preparation of a written report of a research project.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis

IL 3798 - DIRECTED STUDY - FOREIGN LANGUAGE

Minimum Credits: 1

Maximum Credits: 9

The student proposes and carries out an independent study project under the direction and supervision of an appropriate member of the faculty.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

IL 3799 - DOCTORAL DISSERTATION RESEARCH - FOREIGN LANGUAGE

Minimum Credits: 1

Maximum Credits: 15

The student prepares a proposal for a detailed research study, has that proposal approved by an appropriate faculty dissertation committee, completes the proposed study, and defends the completed draft in a dissertation final oral examination.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

IL 3890 - ADVANCED TEACHING PRACTICUM

Minimum Credits: 1

Maximum Credits: 9

Course designed for students seeking additional field teacher certification. Includes a school-based practicum in accordance with the student's experience and interests.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

IL 3891 - SUPERVISED RES - SOCIAL STUDIES

Minimum Credits: 1

Maximum Credits: 6

The doctoral student works collaboratively with a sponsoring faculty member in the carrying out and preparation of a written report of a research project.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

IL 3898 - DIRECTED STUDY - SOCIAL STUDIES

Minimum Credits: 1

Maximum Credits: 9

The student proposes and carries out an independent study project under the direction and supervision of an appropriate member of the faculty.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

IL 3899 - DOCTRL DISSER RES-SOCIAL STUDIES

Minimum Credits: 1

Maximum Credits: 15

The student prepares a proposal for a detailed research study, has that proposal approved by an appropriate faculty dissertation committee, completes the proposed study, and defends the completed draft in a dissertation final oral examination.

Academic Career: Graduate

Course Component: Thesis Research
Grade Component: Grad SN Basis

IL 3928 - WEB LEGL & LEGISLTV FDS OF SP ED

Minimum Credits: 3
Maximum Credits: 3

This course reviews the practical application of laws, regulations, court decisions, and public policy to the supervision of special education services and programs.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

Integrative Molecular Biology

IMB 2000 - LABORATORY RESEARCH ROTATIONS

Minimum Credits: 1
Maximum Credits: 9

Students are required to perform three distinct four-week laboratory rotations in the summer term of the first year. These rotations provide students with an opportunity to perform experimental research in three different scientific areas, while experiencing diverse laboratory environments and practices. They also facilitate selection of the dissertation laboratory and advisor. Students select the laboratory rotations based on their research interests and in consultation with their academic advisor. To capitalize on the cross campus nature of the program, students are required to distribute the rotations between participating laboratories in the Department of Biological Sciences and the School of Medicine.

Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

IMB 2050 - PIMB RESEARCH SEMINAR

Minimum Credits: 1
Maximum Credits: 1

Students are required to attend a weekly research seminar. Students may attend seminars hosted by the School of Medicine and/or Department of Biological Sciences.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

IMB 2080 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9

This course provides the student an opportunity to carry out a specific research project in the dissertation laboratory prior to admission to candidacy for the doctorate.

Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis
Course Requirements: PLAN: Integrative Molecular Biology (PHD)

IMB 2090 - MS THESIS RESEARCH

Minimum Credits: 1
Maximum Credits: 14

A directed research project which results in a thesis for a master's degree.
Academic Career: Graduate

Course Component: Thesis Research
Grade Component: Grad SN Basis

IMB 3090 - PHD DISSERTATION RESEARCH

Minimum Credits: 1

Maximum Credits: 14

A directed research project which results in a dissertation for a doctoral degree.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: Integrative Molecular Biology (PHD)

Integrative Systems Biology

ISB 2000 - LABORATORY RESEARCH ROTATION

Minimum Credits: 1

Maximum Credits: 9

Students are required to perform three distinct four-week laboratory rotations in the summer term of the first year. These rotations provide students with an opportunity to perform experimental research in three different scientific areas, while experiencing diverse laboratory environments and practices. They also facilitate selection of the dissertation laboratory and advisor. Students select the laboratory rotations based on their research interests and in consultation with their academic advisor. To capitalize on the cross campus nature of the program, students are required to distribute the rotations between participating laboratories in the Department of Biological Sciences and the School of Medicine.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

ISB 2010 - APPROACHES IN MOLECULAR BIOLOGY

Minimum Credits: 5

Maximum Credits: 5

The semester-long approaches in molecular biology course is divided into three separate modules and will meet three times a week. Each week there will be two 1.5-Hour lectures and a 2-hour discussion section at which one or more papers from the primary literature are analyzed. Although each module is distinguished by its focus on the molecular basis of a human disease, we will use the disease paradigm as means to explore questions of fundamental significance in the field of modern molecular biology. The titles of the three modules are: 'cancer: regulation and misregulation of cell growth and control', 'heart disease: molecular and cellular foundations', and 'viral diseases: life cycle and evolution of prokaryotic and eukaryotic viruses'. The course will be taught by members of the program with expertise in each area and will emphasize the design and interpretation of experimental methods in modern biomedical research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ISB 2011 - APPROACHES IN MOLECULAR BIOLOGY 1: CANCER

Minimum Credits: 2

Maximum Credits: 2

The semester-long approaches in molecular biology course is divided into three separate course modules and will meet three times a week for two hours each session. Each week there will be two days of lecture and one discussion section at which one or more papers from the primary literature are analyzed. Although each module is distinguished by its focus on the molecular basis of a human disease, we will use the disease paradigm as means to explore questions of fundamental significance in the field of modern molecular biology. The titles of the three course modules are: cancer, heart disease, and viral diseases. The courses will be taught by members of the program with expertise in each area and will emphasize the design and interpretation of experimental methods in modern biomedical research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Integrative Molecular Biology (PHD)

ISB 2012 - APPROACHES IN MOLECULAR BIOLOGY 2: HEART DISEASE

Minimum Credits: 2

Maximum Credits: 2

The semester-long approaches in molecular biology course is divided into three separate course modules and will meet three times a week for two hours each session. Each week there will be two days of lecture and one discussion section at which one or more papers from the primary literature are analyzed. Although each module is distinguished by its focus on the molecular basis of a human disease, we will use the disease paradigm as means to explore questions of fundamental significance in the field of modern molecular biology. The titles of the three course modules are: cancer, heart disease, and viral diseases. The courses will be taught by members of the program with expertise in each area and will emphasize the design and interpretation of experimental methods in modern biomedical research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Integrative Molecular Biology (PHD)

ISB 2013 - APPROACHES IN MOLECULAR BIOLOGY 3: VIRAL DISEASES

Minimum Credits: 2

Maximum Credits: 2

The semester-long approaches in molecular biology course is divided into three separate course modules and will meet three times a week for two hours each session. Each week there will be two days of lecture and one discussion section at which one or more papers from the primary literature are analyzed. Although each module is distinguished by its focus on the molecular basis of a human disease, we will use the disease paradigm as means to explore questions of fundamental significance in the field of modern molecular biology. The titles of the three course modules are: cancer, heart disease, and viral diseases. The courses will be taught by members of the program with expertise in each area and will emphasize the design and interpretation of experimental methods in modern biomedical research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Integrative Molecular Biology (PHD)

ISB 2020 - SYSTEMS BIOLOGY 1

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ISB 2022 - APPROACHES IN MOLECULAR BIOLOGY 2: MODELING HUMAN DISEASE

Minimum Credits: 2

Maximum Credits: 2

The semester-long approaches in molecular biology course is divided into three separate course modules and will meet three times a week for two hours each session. Each week there will be one day of lecture and two discussion sections at which one or more papers from the primary literature are analyzed. Although each module is distinguished by its focus on the molecular basis of a human disease, we will use the disease paradigm as means to explore questions of fundamental significance in the field of modern molecular biology. The titles of the three course modules are: cancer, modeling human disease, and viral diseases. The courses will be taught by members of the program with expertise in each area and will emphasize the design and interpretation of experimental methods in modern biomedical research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Integrative Molecular Biology (PhD, ND) or Integrative Molecular Biology (PhD, ND)

ISB 2023 - APPROACHES IN MOLECULAR BIOLOGY 3: COMPUTATIONAL SYSTEMS BIOLOGY OF DISEASES

Minimum Credits: 2

Maximum Credits: 2

The semester-long approaches in molecular biology course is divided into three separate course modules and will meet three times a week for two hours each session. Each week there will be two days of lecture and one discussion section at which one or more papers from the primary literature are analyzed. The titles of the three course modules are: cancer, heart disease, and computational systems biology of disease. Although each module is distinguished by its focus on the molecular basis of human diseases, in module 3 we will use disease paradigms as means to explore questions of fundamental significance in the field of modern computational and systems biology. We will cover a variety of topics, from collection and analysis of high-throughput disease data, to viral diseases and drug design. The courses will be taught by members of the program with expertise in each area and will emphasize the design and interpretation of experimental and computational methods in modern biomedical research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Integrative Molecular Biology (MSIMB-PHD or IMB-PHD)

ISB 2025 - INTRODUCTION TO BIOINFORMATICS PROGRAMMING IN PYTHON

Minimum Credits: 3

Maximum Credits: 3

This course will introduce students to a selection of popular python packages used in bioinformatics and computational and systems biology. Students will be graded on programming assignments. Each assignment will explore a different sub-discipline of computational biology and introduce students to a new python package. Optional recitations will be available for students with programming and will assist in the development of basic programming skills. The course is designed for first-year graduate students in the corresponding fields of study. There will be a 1-hour lecture a week with time allocated for two 1-hour recitations. Both the lecture and recitations need to be scheduled in a computer lab (such as our classroom).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ISB 2035 - SYSTEMS BIOLOGY II

Minimum Credits: 3

Maximum Credits: 3

This course will introduce students to the use of model organisms and cell systems as research models. General and specific imaging approaches and imaging tools used to study these models will be covered. Model systems to be discussed include mouse, zebrafish, cell culture, yeast and C. elegans. Emphasis will be placed on the strengths that specialized techniques of each organism provide to the biomedical research community

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ISB 2050 - ISB RESEARCH SEMINAR

Minimum Credits: 1

Maximum Credits: 1

Students are required to attend a weekly research seminar. Students may attend seminars hosted by the School of Medicine and/or Department of Biological Sciences.

Academic Career: GRAD

Course Component: Seminar

Grade Component: Grad HSU Basis

ISB 2055 - SCIENCE WRITING

Minimum Credits: 1

Maximum Credits: 1

This course will help students prepare to write their comprehensive exam proposals and will address other essential science communication skills, including research papers, oral and poster presentations, pitching ideas to industry, and web-based communication platforms.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ISB 2060 - ISB CONFERENCE

Minimum Credits: 1

Maximum Credits: 1

This course will present an opportunity for students to become familiar talking about critical aspects of being a researcher that they deem important including but not limited to, current scientific literature, biological, biostatistical, or computational principles, laboratory techniques, and research-in-progress (RIP) reports. Each week, two students will lead 30 minute discussions either on their own primary research, or on topics of their choosing. For each presenter, time is allocated for questions and discussion of the relevant conclusions to allow development of presentation skills.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

ISB 2070 - THE BEDSIDE TO BENCH

Minimum Credits: 2

Maximum Credits: 2

This course introduced graduate students to biomedical research in a comprehensive format integrating organ system biology and clinical medicine with critical developments in the basic science research literature. Course topics include renal-electrolyte, cardiology, cancer, pulmonology, infectious diseases, endocrinology, neurology, rheumatology, and immunology, hepatology and liver disease, gastroenterology, geriatrics, and hematology/oncology. Course work includes an overview of each biomedical field, clinical tours, discussions with leading physicians on the current challenges in patient care, and analysis of the basic science literature in a journal club forum.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad SN Basis

ISB 2080 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

This course provides the student an opportunity to carry out a specific research project in the dissertation laboratory prior to admission to candidacy for the doctorate.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

Course Requirements: PLAN: Integrative Systems Biology (PHD)

ISB 2090 - MS THESIS RESEARCH

Minimum Credits: 1

Maximum Credits: 14

A directed research project which results in a thesis for a master's degree.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

ISB 3090 - PHD DISSERTATION RESEARCH

Minimum Credits: 1

Maximum Credits: 14

A directed research project which results in a dissertation for a doctoral degree.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: Integrative Systems Biology (PHD)

Intelligent Systems

ISSP 2000 - MS RESEARCH

Minimum Credits: 1

Maximum Credits: 9

Research and thesis MA degree.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 2015 - FOUNDATIONS OF CLINICAL AND PUBLIC HEALTH INFORMATICS

Minimum Credits: 3

Maximum Credits: 3

A survey of fundamental concepts and activities on information technology applied to health care. Topics include computer-based medical records, knowledge-based systems, telehealth, decision theory and decision support, human-computer interfaces, systems integration, the digital library, bioinformatics, and educational applications. Department-specific applications such as pathology, radiology, psychiatry and intensive care are also discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 2020 - TOPICS IN INTELLIGENT SYSTEMS

Minimum Credits: 1

Maximum Credits: 1

This course is an immigration course for the intelligent systems students.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad SN Basis

Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 2030 - ADVANCED TOPICS IN INTELLIGENT SYSTEMS

Minimum Credits: 1

Maximum Credits: 1

This course is a continuance of ISSP 2020. It is an immigration course for the intelligent systems students. Students continue with this course by carrying out their projects developed in ISSP 2020 and giving presentations presenting their results.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 2070 - PROBABILISTIC METHODS

Minimum Credits: 3

Maximum Credits: 3

This seminar provides an introduction to computational approaches for probabilistic modeling and inference. A particular focus is placed on Bayesian networks, although other probabilistic models also will be studied. Medical applications are emphasized, however, the principles are general and no medical knowledge is needed to take the course. The course does not require knowledge of a computer programming language. An understanding of basic probability theory would be helpful, but is not required.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ISSP 2081 - FOUNDATIONS OF BIOINFORMATICS

Minimum Credits: 3

Maximum Credits: 3

Provides an introduction to selected topics of bioinformatics also known as computational biology. In this course, the difficult computational problems involving different types of biological information are identified using case studies from current literature. Emphasis is on genomic aspects of computational biology with some overview of proteomics and structural aspects. The course is structured as a seminar course intending to draw students into participating in discussions related to both problems and existing solutions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 2083 - BIOMDCL INFORMATICS JOURNAL CLUB

Minimum Credits: 1

Maximum Credits: 1

This course meets once each week for one hour. The research being presented will be taken from recent journal papers.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 2090 - PRACTICUM IN ADV BIOMEDICAL IT

Minimum Credits: 1

Maximum Credits: 6

This course is designed for people who want a practicum experience in working with advanced information technology in the center for biomedical informatics.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 2130 - INFORMATION STORAGE & RETRIEVAL

Minimum Credits: 3

Maximum Credits: 3

Problems and techniques related to storing and accessing unstructured information with an emphasis on textual information. Overview of several approaches to information access with a primary focus on search-based information access. Covers automated retrieval system design, content analysis, retrieval models, result presentation, and system evaluation. Examines applications of retrieval techniques on the web, in multimedia and multilingual environments, and in text classification and event tracking.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ISSP 2160 - FOUNDATIONS OF ARTIFICIAL INTELLIGENCE

Minimum Credits: 3

Maximum Credits: 3

The principal topics of AI are: representation knowledge, reasoning and problem solving, knowledge acquisition and machine learning, robotics, and natural language understanding. This course surveys these areas in order to provide an understanding of artificial intelligence methods and research problems. Specific topics include: action and object-centered representations, the search paradigm, planning and constraint satisfaction, qualitative reasoning, analogical reasoning, default reasoning, induction, other methods of learning, and knowledge engineering.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 2170 - MACHINE LEARNING

Minimum Credits: 3

Maximum Credits: 3

This course will give an overview of many techniques and algorithms in machine learning, beginning with topics such as linear and logistic regression, multi-layer neural networks and ending up with more recent topics such as boosting and support vector machines. The basic ideas and intuition behind modern machine learning methods, as well as, a more formal understanding of how and why they work will be covered. Students will have an opportunity to experiment with various machine learning techniques or apply them to a selected problem or domain in the context of a term project.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 2180 - COMPUTER VISION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Intelligent Systems (PhD)

ISSP 2221 - HUMAN INFORMATION PROCESSING

Minimum Credits: 3

Maximum Credits: 3

Introduction to research and theory in human cognition, including perception, attention, pattern recognition, memory, representation of knowledge, language, problem solving, reasoning, and decision making, with implications for user interface design.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 2230 - INTRO NATURAL LANGUAGE PROCESSING

Minimum Credits: 3

Maximum Credits: 3

Overview of computational approaches to natural language processing. Issues in syntax, semantics, and pragmatics, as well as overall systems architectures.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 2240 - DECISION ANAL & DECISN SUPRT SYS

Minimum Credits: 3

Maximum Credits: 3

Rationality and rational behavior; uncertainty, probability, decision making. Psychology of decision making. Decision theory and decision analysis, structuring decision problems, elicitation of probabilities and utilities. Conflicting objectives, multi-attribute decision theory. Probabilistic methods in artificial intelligence. Group and team decision making. Decision support systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 2280 - ADAPTIVE INFORMATION SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

Introduces key principles of adaptive information systems and modern techniques for user modeling and personalization. Covers the construction of user models and user profiles. Examines the use of various personalization techniques such as adaptive search, recommendation, and navigation support. Reviews major types of adaptive information systems and explores important application areas.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Intelligent Systems (MS or PHD)

ISSP 2430 - SOCIAL COMPUTING

Minimum Credits: 3

Maximum Credits: 3

Introduction to key theories and technologies of social computing. Reviews major types of social computing systems. Several social computing systems are explored and used throughout the course. Final group project focuses on designing and implementing a social web system.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Intelligent Systems (MS or PHD)

ISSP 2900 - GRADUATE INTERNSHIP

Minimum Credits: 1

Maximum Credits: 3

A professional internship may be taken at any time during the course of graduate study. Ph.D. students may take this course up to two times for credit, MS students may take it at most once.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad SN Basis

Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 2902 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

Directed study.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 9

Independent study.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1

Maximum Credits: 9

Research and dissertation Ph.D.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 3120 - ADV TOPCS NATURAL LANG PROCSSNG

Minimum Credits: 3

Maximum Credits: 3

Natural language processing (NLP) is primarily concerned with creating computer programs that interact with human languages. The objective of this course is to continue the studies of natural language processing (NLP), to explore selected topics among syntax, semantics, and pragmatics more deeply, and to discuss recent advances in (NLP).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: ISSP 2230 or CS 2731 or INFSCI 2420; PLAN: Intelligent Systems (MS, PHD)

ISSP 3180 - VISUAL LANGUAGES AND PROGRAMMING

Minimum Credits: 3

Maximum Credits: 3

This course will include fundamentals of formal language theory, iconic and symbolic representations, formal theory of iconic systems, icon operators and semantics, icon oriented system compiler for visual interface design, computer graphics and visual programming, issues in the design of visual programming systems, visual database systems, iconic indexing, and advanced topics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Intelligent Systems (MS, PHD)

ISSP 3535 - ADV TOPICS IN MACHINE LEARNING

Minimum Credits: 3

Maximum Credits: 3

This course will survey advanced topics in machine learning, for example, inductive learning, reinforcement learning, and neural network learning.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: ISSP 2170 or CS 2750; PLAN: Intelligent Systems (MS, PHD)

ISSP 3565 - ADV TOPICS ARTIFICIAL INTELLGNC

Minimum Credits: 3

Maximum Credits: 3

This course will survey current topics in artificial intelligence.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: ISSP 2160 or CS 2710; PLAN: Intelligent Systems (MS, PHD)

Interdis Biomed Grad Prog

INTBP 2000 - FOUNDTNS OF BIOMEDICAL SCIENCE

Minimum Credits: 8

Maximum Credits: 8

Primary objectives of the course are to convey knowledge of the molecular and cellular mechanisms controlling cell, tis sue and organ function, and to develop an understanding of the experimental evidence supporting these concepts through an integrated presentation of material from biochemistry, cell biology, molecular genetics, pathology, pharmacology, and physiology. The development of critical thinking skills will be emphasized through an evaluation of experimental evidence and reading of the primary literature.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Molecular Biophy & Struct Bio (PHD) or Interdis Biomedical (UNK)

INTBP 2001 - FOUNDATIONS OF BIOMEDICAL SCIENCE STRUCTURAL BIOLOGY

Minimum Credits: 7

Maximum Credits: 7

Primary objectives of the course are to convey knowledge of the molecular and cellular mechanisms controlling cell, tis sue and organ function, and to develop an understanding of the experimental evidence supporting these concepts through an integrated presentation of material from biochemistry, cell biology, molecular genetics, pathology, pharmacology, and physiology. The development of critical thinking skills will be emphasized through an evaluation of experimental evidence and reading of the primary literature.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

INTBP 2005 - FOUNDATIONS CONFERENCE

Minimum Credits: 4

Maximum Credits: 4

Contemporary approaches to problem-solving in biology, as well as principles underlying modern methods of biomedical research will be integrated with the lecture component of the course through an analysis of mechanisms underlying bio logical phenomena. Students will present papers, critically analyze data and devise experimental approaches to biomedical problems considered in lecture.

Academic Career: Graduate

Course Component: Workshop

Grade Component: Grad Letter Grade

INTBP 2010 - LABORATORY RESEARCH ROTATION

Minimum Credits: 1

Maximum Credits: 1

This lab is designed to introduce the student to relevant laboratory methods as well as the layout and conceptualization of experiments. The course will serve to acquaint the student with the laboratory process, and to facilitate his/ her selection of a lab for dissertation research. Students are required to register for and complete rotations through three different laboratories, thereby ensuring broad exposure to method and practice.

Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

INTBP 2011 - LAB RESEARCH ROTATION SUPPLEMENT

Minimum Credits: 2

Maximum Credits: 4

Course supplement to INTBP 2010 for those students initiating their first rotation in summer.

Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis

INTBP 2013 - D2K: FROM DATA TO KNOWLEDGE- BIOMEDICAL EXPERIMENTAL DESIGN AND ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

Experimental biologists formulate hypotheses and models, design experiments, collect data and conduct analyses to draw conclusions. Deep understanding on biological principles requires D2K- the translation of data into knowledge that transcends first-order conclusions. This course for first year Ph.D. students in the biomedical sciences will examine basic principles of experimental design, together with measurement and sources of experimental error. The course will provide practical 'hands on' introduction to the quantitative tools required for experimental research using cellular, molecular, and systems based methods. Topics will include: goals of experimental design, making measurements, principles of parametric and non-parametric statistical inference, use of MS excel, graphpad prism and R, design of publication graphics and a brief introduction to big data approaches. Students will work in small groups to construct capstone projects by making 'you tube' style videos to illustrate key principles of experimental design and analysis.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

INTBP 2090 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

This course provides the student an opportunity to carry out a specific laboratory project in any area of interest in degree-granting programs under the interdisciplinary biomedical graduate program.

Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

INTBP 2100 - BIOLOGY OF VISION

Minimum Credits: 3

Maximum Credits: 3

This course is being designed to meet the requirements of the t-32 training grant (t32 ey017271-01 interdisciplinary visual science training program) from NIH. The target students are the graduate students, fellows and residents in the department of ophthalmology. In addition, the post-doctoral fellows working in the department of ophthalmology will be encouraged to take this course. We are planning to cover a wide array of subjects including the ocular anatomy, embryology, biochemistry, pharmacology, immunology, microbiology and genetics.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

INTBP 2290 - SCIENTIFIC ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH

Minimum Credits: 1

Maximum Credits: 1

The course is an introduction to the basic ethical issues which arise in the course of conducting scientific research. It is intended for graduate students and fellows in the biomedical sciences who have completed at least one year of graduate work. The course will be composed of informal lecture presentations followed by discussion of issues in small groups.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Computational Biology (PHD) or Molecular Biophy & Struct Bio (PHD) or Computational Biology (PHD) or Integrative Molecular Biology (PHD) or Interdis Biomedical (UNK)

INTBP 3240 - GRADUATE STUDENT WRITING SEMINAR

Minimum Credits: 2

Maximum Credits: 2

This course teaches fundamental grantmanship skills using actual NIH training grant submissions. Students construct a competitive research training grant and are instructed on methods to identify funding sources. This course consists of introductory lectures followed by a series of workshops staffed by the IBGP training faculty. Workshops cover peer scientific review and study section operation, avoidance of common pitfalls in grant writing, grant writing ethics and scientific community service.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Interdisciplinary

BIND 2024 - CONSULTING FIELD PROJECT

Minimum Credits: 3

Maximum Credits: 3

This course teaches management consulting in a real-world environment. Students are provided a unique opportunity to apply the analytical tools and concepts taught by Katz, and do so in a practical manner. Each project includes three to five students assembled as a team. Each project involves a single "client" organization, which may be a profit, non-profit, or governmental. Each client provides its assigned study team with a project of immediacy and an executive dedicated to working with the team. A faculty advisor is assigned to each team. Students schedule their own time, dovetailing with client schedules and that of their faculty advisor. Students are further supported through Saturday consulting workshops led by consultants from the Pittsburgh office of McKinsey & Company, management consultants. An end-of-term competitive competition is also held, the winner being awarded the McKinsey cup.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BACC 2401; PROG: Joseph M. Katz Grad Sch Bus

BIND 2031 - GLOBAL BUSINESS PROJECT

Minimum Credits: 3

Maximum Credits: 3

This graduate consulting project course is offered by a consortium of business schools in the United States and some in the target countries. The global business project asks students to apply both cross-cultural awareness and foreign language skills to produce strategic advice for a company that is focused, compelling and actionable. The course offers students the opportunity to increase their global business competency through guided hands-on business experience while also introducing them to the challenges of virtual teaming. Teams of five or six are constructed through a competitive application process with members drawn from any of the partner schools. At the beginning of the term each student is given an assignment to help him or her prepare for the assignment. All students attend a kickoff meeting in March where they meet with their team and their client; during this meeting they draw up a scope of work, project timeline, and work plan. During the remainder of the term, the teams work virtually, gathering data and investigating solutions to their client's challenges. In May, the teams spend two weeks in their target country doing research and preparing for the final presentation with the client. On the final day of this in-country segment, the team presents its findings to the client in a final presentation. Grades are determined by the faculty advisor for the project based on the following weighted individual grade is 55% and team grade is 45%. Inputs are received from the client and from peer assessment of team members.

Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BIND 2035 - APPLICATION GAME THEORY MANAGING DECISION MAKING

Minimum Credits: 2

Maximum Credits: 2

This course demonstrates how insights of game theory can be utilized by managers to address important decisions confronting the firm. The interaction of a business firm with its competitors, customers and suppliers can be formalized as a game situation. We will utilize game theoretic reasoning to analyze issues to entry into new markets or exit from established businesses, investment in research and development, the extent of product differences.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BECN 2401; PROG: Katz Graduate School of Business

BIND 2060 - INDEPENDENT STUDY BUSINESS ADMINISTRATION

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BIND 2061 - INDEPENDENT STUDY ENTREPRENEURSHIP/SMALL BUSINESS

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BIND 2063 - INDEPENDENT STUDY INTERNATIONAL BUSINESS

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BIND 2064 - INDEPENDENT STUDY ENTREPRENEURSHIP

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BIND 2065 - INDEPENDENT STUDY IN BUSINESS ADMINISTRATION 2

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BIND 2067 - KATZ EXCHANGE: KEDGE BUSINESS SCHOOL 1

Minimum Credits: 3
Maximum Credits: 3
Katz Exchange: Kedge Business School 1
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

BIND 2068 - KATZ EXCHANGE: KEDGE BUSINESS SCHOOL 2

Minimum Credits: 1.5
Maximum Credits: 1.5
Katz Exchange: Kedge Business School 2
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

BIND 2069 - KATZ EXCHANGE: KEDGE BUSINESS SCHOOL 3

Minimum Credits: 6
Maximum Credits: 6
Katz Exchange: Kedge Business School 3
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

BIND 2070 - HEALTH CARE LAW FOR MANAGERS

Minimum Credits: 1.5
Maximum Credits: 1.5
This course will introduce students to legal, ethical, and policy issues relevant to those in management roles in the health care system. Topics explored will include an overview of the U.S. legal system and policymaking, health care ethics, public health law, liability of health care providers and their institutions, health care reform and access to care, health care fraud and abuse, antitrust, consent for treatment and withholding of consent, fraud and abuse, and health privacy in the digital age.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad Letter Grade

BIND 2071 - LEADING EVIDENCE-BASED ORGANIZATIONAL CHANGE

Minimum Credits: 3
Maximum Credits: 3
This course focuses on the key processes of effective organizational change and the acquisition of the best available evidence from science, organizations, stakeholder, etc. to inform the change process. Our objective is to provide evidence-based frameworks and tools for successfully introducing and sustaining organizational change in healthcare organizations.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad Letter Grade

BIND 2072 - ENTREPRENEURSHIP START-UP ESSENTIALS

Minimum Credits: 1.5

Maximum Credits: 1.5

This course introduces students to the journey of starting a firm. Students will learn through experience how to prepare and deliver an "elevator pitch"

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad Letter Grade

BIND 2101 - PRACTICUM FOR EMBA HEALTHCARE STUDENTS

Minimum Credits: 6

Maximum Credits: 6

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

BIND 2111 - LANGUAGE ASSESSMENT WORKSHOP

Minimum Credits: 0

Maximum Credits: 0

This 12 week workshop is designed to enhance international students speaking and comprehension abilities. Students will engage in various exercises and real life scenarios.

Academic Career: Graduate

Course Component: Workshop

Grade Component: Grad HSU Basis

Course Requirements: Katz Grad School of Business students only.

BIND 2123 - CONSULTING FIELD PROJECT 2

Minimum Credits: 3

Maximum Credits: 3

This course is to provide MBA students with a meaningful and measurable business experience. Students should view projects as providing a unique opportunity to apply the various analytical tools and concepts taught at KATZ, in such a way as developing creating and useful business solutions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BIND 2024; PROG: Joseph M. Katz Grad Sch Bus

BIND 2124 - CONSULTING FIELD PROJECT 3

Minimum Credits: 3

Maximum Credits: 3

This course teaches management consulting in a real-world environment. Students are provided a unique opportunity to apply the analytical tools and concepts taught by KATZ, and do so in a practical manner. Each project includes three to five students assembled as a team. Each project involves a single 'client' organization, which may be for-profit, non-profit, or governmental. Each client provides its assigned study team with a project of immediacy and an executive dedicated to working with the team. A faculty advisor is assigned to each team. Students schedule their own time, dovetailing with client schedules and that of their faculty advisor. Students are further supported three Saturday consulting workshops led by consultants from the Pittsburgh office of McKinsey & company, management consultants. An end-of-term competitive competition is also held, the winner being awarded the McKinsey cup.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BIND 2131 - GLOBAL CONSULTING PROJECT 1

Minimum Credits: 1.5

Maximum Credits: 1.5

Intent of the course is, through experiential learning, to guide students in addressing global business problems. This is accomplished by providing students with a real corporate problem or issue whose roots are cross-functional, and whose solution requires global research and a global perspective. Students should expect global travel. The course is conducted across the fall and spring terms, providing the student with travel time during the various school breaks during Thanksgiving, the Christmas holidays and at other times as agreed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BIND 2024; PROG: Joseph M. Katz Grad Sch Bus (PKATZ)

BIND 2132 - GLOBAL CONSULTING PROJECT 2

Minimum Credits: 1.5

Maximum Credits: 1.5

A continuation of BIND 2131.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

BIND 2163 - GLOBAL ISSUE WORKSHOP

Minimum Credits: 0

Maximum Credits: 0

This number will serve as a billing course for the Global Issue Workshop (BIND 2263). May also serve as billing course for (BIND 2164 and BIND 2165).

Academic Career: Graduate

Course Component: Workshop

Grade Component: Non-Graded Component

BIND 2164 - GLOBAL ISSUE WORKSHOP 1

Minimum Credits: 1.5

Maximum Credits: 1.5

Students conduct an extensive analysis of a structural or external issue affecting an organization or industry abroad. A student team carries out in-depth international business research in the U.S. and travels abroad to conduct field research and speak to industry and organization experts.

Academic Career: Graduate

Course Component: Workshop

Grade Component: Grad LG/SNC Basis

BIND 2165 - GLOBAL ISSUE WORKSHOP 2

Minimum Credits: 1.5

Maximum Credits: 1.5

Continuation of BIND 2164

Academic Career: Graduate

Course Component: Workshop

Grade Component: Grad LG/SNC Basis

BIND 2200 - INTEGRATED PROJECT FOR MBA/MS IN ENGINEERING PROGRAM

Minimum Credits: 2

Maximum Credits: 2

All students in the MBA/MS in engineering joint degree program are required to complete an integrated project for a company or some other facility. Oversight of this project will be the joint responsibility of a faculty member from KGSB and one from the student's engineering department. It is the student's responsibility to identify these faculty members; program advisors will assist the student in this effort. Students must present a one or two page proposal prior to the start of the project outlining what they plan to do over the course of the project. Ideally, the project should blend skills learned from the business and engineering components of the program. The proposal must be approved by the business and engineering faculty members overseeing the project.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BIND 2203 - ORGANIZATIONAL TRANSFORMATION

Minimum Credits: 2

Maximum Credits: 2

This course recognizes the interrelated web of economic, social, political, and technological forces in the global economy that require organizations to transform their systems and processes--continuously and radically--if they wish to survive and succeed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BOAH 2401 or 2409; PROG: Katz Grad School of Business(PKATZ)

BIND 2204 - MANAGING THE PROFESSIONAL SERVICES FIRM

Minimum Credits: 2

Maximum Credits: 2

This 1.5 Credit course is intended for MBA and masters of accounting (MACC) students interested in professional consulting. By the end of this course, students should be able to intelligently discuss the practice of professional consulting, be their intent in business, it or accounting professions. Additionally, the student will gain an understanding for the highly fluid and evolving environment in which professional advisors operate, and how these professionals add value to their clients. Finally, students are made aware of key issues in managing the professional services firm, including scoping out client engagements, organizing and directing professional staff, handling clients and developing practical recommendations. Clinical professor bud smith is instructor, assisted by practicing professionals from the field.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BIND 2263 - GLOBAL ISSUE WORKSHOP

Minimum Credits: 3

Maximum Credits: 3

Students conduct an extensive analysis of a structural or external issue affecting an organization or industry abroad. A student team carries out in-depth international business research in the U.S. and travels abroad to conduct field research and speak to industry and organization experts.

Academic Career: Graduate

Course Component: Workshop

Grade Component: Grad LG/SNC Basis

BIND 2300 - RUSSIA TODAY

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

Course Attributes: Russian & East European Studies

BIND 2444 - MANAGEMENT SIMULATION CAPSTONE

Minimum Credits: 3

Maximum Credits: 3

The management game is an applied strategic management and general management exercise where teams of students operate computer simulated companies for 3 years acting as the executive committee of a multi-national manufacturing company. Groups of students compete against each other as they try to add value to their companies. The class teaches competitive dynamics group management skills, cross-functional management, and presentation skills. The class is intended to be taken during the student's last term in the program and is intended to provide an illustration of how to apply the tools acquired in other classes in a complex international business environment. A main focus of the learning is the unstructured nature of the problem. We want to train managers to solve open-ended problems with talented people in creative ways. External boards of directors may be utilized during the class for feedback and to assess student progress. Each team is asked to engage in externally focused exercises. Some examples of these exercises include negotiating a labor agreement with real union representatives and presenting their marketing plans to practicing marketing executives. The external feedback and evaluation structure of the course makes the exercise sharply realistic. The highly unstructured nature of the class makes it invaluable for students preparing to enter the job market as leaders instead of followers.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BACC 2401 and BQOM 2401 and BFIN 2409 and BMKT 2409

BIND 2510 - EXECUTIVE BOARDROOM SERIES 1

Minimum Credits: 1

Maximum Credits: 1

This interactive course brings in top pharmaceutical and health care executives and builds on the business and management concepts and principles learned in previous courses. Students are engaged in a structured understanding of the "business of pharmacy in health care" and related fields that impact the profession in an executive boardroom format. This course follows the dollar from patient to product and service in the following manner: patient->health insurance pharmacy benefit->p.m.->pharmaceutical industry->pharmacies. The selection process requires a one-page narrative on the potential contribution(s) of this course to the student's education and/or career goals.

Academic Career: Graduate

Course Component: Colloquium

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BIND 2511 - EXECUTIVE BOARDROOM SERIES 2

Minimum Credits: 1

Maximum Credits: 1

This interactive course brings in top pharmaceutical and health care executives and builds on the business and management concepts and principles learned in earlier courses including part 1 of this course. Students are engaged in a structured understanding of the "businesses of pharmacy in health care, and related fields that impact the profession in an executive boardroom format. This (one credit) is the second part of an elective series (offered on alternating years) which focuses on "entrepreneurship in medicines and health care". This course analyzes the fundamentals of entrepreneurship amongst successful executive finders, binders, and minders.

Academic Career: Graduate

Course Component: Colloquium

Grade Component: Grad Letter Grade

Course Requirements: Katz Grad School of Business students only.

BIND 2526 - BUSINESS PROCESS REDESIGN

Minimum Credits: 2

Maximum Credits: 2

Using a cross functional perspective, the course presents tools for the redesign of business processes, shows participants how to diagnose process problems, and explains how to generate and implement process redesign projects in different types of organizations. After the course, participants should be able to generate and implement business process redesign projects of their own.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BIND 2533 - ACCELERATED INTERMEDIATE FINANCIAL REPORTING

Minimum Credits: 3

Maximum Credits: 3

Accelerated Intermediate Financial Reporting fulfills the prerequisites of Intermediate Financial Reporting 1 and Intermediate Financial Reporting 2 for students who are entering the MACC program. This course studies the preparation, communication, interpretation and analysis of financial data with emphasis on the information needs of users of financial information prepared under USGAAP. General topics covered in this course include revenue recognition, inventory accounting, long term assets and impairment, investments, current liabilities and contingencies, long term liabilities, capital and retained earnings, leases, pensions and postretirement benefits, income taxes, and preparation of the statement of cash flows. Students are expected to have an accounting background. This course is designed to sit on top of an existing foundation in accounting and will assume students already have taken several financial accounting courses or knowledge obtained through work experience. It is expected that students are fluent with accrual accounting and the accounting cycle and that they have already studied some of the topics in the course in depth. The course will move quickly.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

BIND 2554 - ENTERING FOREIGN MARKETS 1

Minimum Credits: 2

Maximum Credits: 2

This course is designed to enhance students' awareness of the operational and legal challenges associated with three types of market-entry strategies: exporting, licensing/ franchising, and foreign direct investment.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BIND 2556 - DOING BUSINESS IN CHINA

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: EMBA Worldwide

BIND 2560 - PROFESSIONAL COMMUNICATION IN MANDARIN 1

Minimum Credits: 2

Maximum Credits: 2

This language course is offered by the international business center (IBC) and the graduate school of public and international affairs (GSPIA) and is specifically designed for graduate students in business, public administration, and international affairs.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

BIND 2561 - PROFESSIONAL COMMUNICATION IN MANDARIN 2

Minimum Credits: 2

Maximum Credits: 2

This language course is offered by the international business center (IBC) and the graduate school of public and international affairs (GSPIA) and is specifically designed for graduate students in business, public administration, and international affairs. This is a continuation of BIND 2560,

Professional Communion in Mandarin 1.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PREQ: BIND 2560 or PIA 2029; PROG: Joseph M. Katz Grad Sch Bus

BIND 2600 - MIB PRACTICUM COURSE

Minimum Credits: 3

Maximum Credits: 3

This course is intended to give students in the MBA/MIB dual degree program practical experience in their fields (finance marketing, MIS, etc.). Students will work fulltime for a period of approximately 4 months in an organization located in countries other than their own native countries. The internship location will be based on near-native competence in a second language.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BIND 2602 - CPT INTERNSHIP

Minimum Credits: 1

Maximum Credits: 1

This course prepares the student for their internship opportunity and helps them to leverage the internship experience by focusing on career management, organization and people skills in the context of global executive mobility. Students are provided with a unique opportunity to apply the skills taught at Katz in a practical manner. Each student completes a project during an internship or co-op experience for an employer, which may be a for-profit, non-profit or governmental agency. The employer will sign-off that the student has completed the project. A faculty advisor is assigned to the student. The student is required to attend a one-hour orientation session prior to the internship. The student will attend a full-day global executive skills workshop upon completion of the internship, where the student will provide an executive level presentation to the class. The emphasis is on practical skills to enhance professional success in today's globally mobile business environment for managers. This course is for Katz students only.

Academic Career: Graduate

Course Component: Credit Laboratory

Grade Component: Grad HSU Basis

BIND 2604 - GLOBAL RESEARCH PRACTICUM 2

Minimum Credits: 3

Maximum Credits: 3

This course is tied closely to field study abroad, providing a hand's on experience in a foreign culture. Main objectives are to challenge students to consider business issues from a global perspective and to expose them to actual business environments abroad.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BIND 2700 - MIB INTERNSHIP SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Exclusively designed for MIB students post internship experience.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BIND 2702 - GLOBAL RESEARCH PRACTICUM: LATIN AMERICA

Minimum Credits: 3

Maximum Credits: 3

This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture. Main objectives are to challenge students to consider business issues from a global perspective and to expose them to actual business environments abroad. Requirements include a team research project and an individual cultural report. The course includes a 9-day trip to various businesses in Chile. Students develop a research question in areas of managerial specialization and draw evidence from the field study to support their project report. While abroad, students visit a number of selected organizations and/or companies, and explore current business practices/issues. The group meets for three, 3-hour class sessions prior to the trip. Portions of these classes will focus on developing the research project. Also, to help prepare for the trip, selected outside speakers will share their experiences and perspectives on Latin American business and culture. At the final class session after the trip, projects are presented in both written and oral forms.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BIND 2704 - GLOBAL RESEARCH PRACTICUM

Minimum Credits: 3

Maximum Credits: 3

This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture. Main objectives are to challenge students to consider business issues from a global perspective and to expose them to actual business environments abroad. Requirements include a team research project and an individual cultural report. The course includes a 9-day trip to various businesses in at least two countries in Europe. Students develop a research question in areas of managerial specialization and draw evidence from the field study to support their project report. While abroad, students visit a number of selected organizations and/or companies, and explore current business practices/issues. Also, to help prepare for the trip, selected outside speakers will share their experiences and perspectives on Russian businesses and culture.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BIND 2705 - GLOBAL RESEARCH PRACTICUM: INDIA

Minimum Credits: 3

Maximum Credits: 3

This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture. Main objectives are to challenge students to consider business issues from a global perspective and to expose them to actual business environments abroad. Requirements include a team research project and an individual cultural report. The course includes a 9-day trip to various businesses in India. Students develop a research question in areas of managerial specialization and draw evidence from the field study to support their project report. While abroad, students visit a number of selected organizations and/or companies, and explore current business practices/issues. The group meets for three, 3-hour class sessions prior to the trip. Portions of these classes will focus on developing the research project. Also, to help prepare for the trip, selected outside speakers will share their experiences and perspectives on Latin American business and culture. At the final class session after the trip, projects are presented in both written and oral forms.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BIND 2706 - GLOBAL RESEARCH PRACTICUM: ISRAEL

Minimum Credits: 3

Maximum Credits: 3

This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture. Main objectives are to challenge students to consider business issues from a global perspective and to expose them to actual business environments abroad. Requirements include a team research project and an individual cultural report. The course includes a 9-day trip to various businesses in Israel. Students develop a research question in areas of managerial specialization and draw evidence from the field study to support their project report. While abroad, students visit a number of selected organizations and/or companies, and explore current business practices/issues. The group meets for three, 3-hour class sessions prior to the trip. Portions of these classes will focus on developing the research project. Also, to help prepare for the trip, selected outside speakers will share

their experiences and perspectives on Latin American business and culture. At the final class session after the trip, projects are presented in both written and oral forms.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BIND 2707 - GLOBAL RESEARCH PRACTICUM: GERMANY

Minimum Credits: 3

Maximum Credits: 3

This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture. Main objectives are to challenge students to consider business issues from a global perspective and to expose them to actual business environments abroad. Requirements include a team research project and an individual cultural report. The course includes a 9-day trip to various businesses in Germany. Students develop a research question in areas of managerial specialization and draw evidence from the field study to support their project report. While abroad, students visit a number of selected organizations and/or companies, and explore current business practices/issues. The group meets for three, 3-hour class sessions prior to the trip. Portions of these classes will focus on developing the research project. Also, to help prepare for the trip, selected outside speakers will share their experiences and perspectives on Latin American business and culture. At the final class session after the trip, projects are presented in both written and oral forms.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BIND 2708 - GLOBAL RESEARCH PRACTICUM: SOUTH ASIA

Minimum Credits: 3

Maximum Credits: 3

This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture. Deliverables from the practicum include a team research project and a professional portfolio designed to capture the international experience. The course includes a trip at the end of the fall semester to various businesses in the host country. Students develop a research question in areas of managerial specialization and draw evidence from the field study to support their project report. While abroad, students visit a number of selected organizations and/or companies, and explore current business practices/issues. Students will be required to attend a module preparing them for the class. This will be scheduled during the fall semester. During the spring semester, the group meets for 3-hour class sessions on Friday evenings as determined by the professors. Portions of these classes will focus on developing the research project. Selected outside speakers may also join the class to share their experiences and perspectives on business and culture.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BIND 2709 - GLOBAL RESEARCH PRACTICUM: BRAZIL

Minimum Credits: 3

Maximum Credits: 3

This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture. Main objectives are to challenge students to consider business issues from a global perspective and to expose them to actual business environments abroad. Requirements include a team research project and an individual cultural report. The course includes a 9-day trip to various businesses in Brazil. Students develop a research question in areas of managerial specialization and draw evidence from the field study to support their project report. While abroad, students visit a number of selected organizations and/or companies, and explore current business practices/issues. The group meets for three, 3-hour class sessions prior to the trip. Portions of these classes will focus on developing the research project. Also, to help prepare for the trip, selected outside speakers will share their experiences and perspectives on Latin American business and culture. At the final class session after the trip, projects are presented in both written and oral forms.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BIND 2710 - GLOBAL RESEARCH PRACTICUM: GLOBAL ENERGY (EASTERN EUROPE)

Minimum Credits: 3

Maximum Credits: 3

Immerse yourself in international business while earning 3 credits. The global research practicum introduces students to the global business of natural gas and other energy resources through visits to 4 interconnected locations: Washington county, PA, Washington, DC, Moscow, Russia and Sofia, Bulgaria. The global energy research practicum features: -first hand exposure to different, and oftentimes conflicting, perspectives on major energy topics -access to natural gas producers, policy makers, and scholars in the US, Russia, and Bulgaria. -Behind-the-scenes site visits to several multinational companies and government institutions. -Cultural trips to famous landmarks, restaurants, shops that teach you about the people and history of Russia and Bulgaria. The global research practicum requires students to complete a small research project drawing on secondary sources and experiences gathered during the trip. Leading the program is Susan Hicks, anthropologist and program manager at the center for Russian and East European studies at the University of Pittsburgh.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

BIND 2711 - GLOBAL RESEARCH PRACTICUM: ASIA

Minimum Credits: 3

Maximum Credits: 3

This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture. Main objectives are to challenge students to consider business issues from a global perspective and to expose them to actual business environments abroad. Requirements include a team research project and an individual cultural report. The course includes a 9-day trip to various businesses in Asia. Students develop a research question in areas of managerial specialization and draw evidence from the field study to support their project report. While abroad, students visit a number of selected organizations and/or companies, and explore current business practices/issues. The group meets for three, 3-hour class sessions prior to the trip. Portions of these classes will focus on developing the research project. Also, to help prepare for the trip, selected outside speakers will share their experiences and perspectives on Asia's business and culture. At the final class session after the trip, projects are presented in both written and oral forms.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

BIND 2712 - GLOBAL RESEARCH PRACTICUM- EUROPE

Minimum Credits: 3

Maximum Credits: 3

This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture. Main objectives are to challenge students to consider business issues from a global perspective and to expose them to actual business environments abroad. Requirements include a team research project and an individual cultural report. The course includes a 9-day trip to various businesses in Europe. Students develop a research question in areas of managerial specialization and draw evidence from the field study to support their project report. While abroad, students visit a number of selected organizations and/or companies, and explore current business practices/issues. The group meets for three, 3-hour class sessions prior to the trip. Portions of these classes will focus on developing the research project. Also, to help prepare for the trip, selected outside speakers will share their experiences and perspectives on Europe's business and culture. At the final class session after the trip, projects are presented in both written and oral forms.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

BIND 2713 - GLOBAL RESEARCH PRACTICUM - ASIA FULL-TIME

Minimum Credits: 0

Maximum Credits: 0

This number will serve as a billing course for the international research practicum for full-time MBA students.

Academic Career: Graduate

Course Component: Practicum

Grade Component: No Grade Required

BIND 2714 - GLOBAL RESEARCH PRACTICUM - ASIA PART-TIME

Minimum Credits: 0

Maximum Credits: 0

This number will serve as a billing course for the international research practicum for part-time MBA students.

Academic Career: Graduate

Course Component: Practicum

Grade Component: No Grade Required

BIND 2715 - GLOBAL RESEARCH PRACTICUM: INDIA (GLOBAL STRATEGY)

Minimum Credits: 3

Maximum Credits: 3

The course will offer a first-hand, up-close and thought-provoking experience of opportunities and hurdles that characterize business and industry in the second most populous country, which is expected to soon become a dominating economic power. The course will explore strategic responses to the challenges and opportunities of globalization and reverse innovation emanating from the base of the pyramid. Business models that generate value by effectively responding to human needs in growth economies in developing nations will be studied and developed.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

BIND 2716 - GLOBAL RESEARCH PRACTICUM: SOUTH AMERICA

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BIND 2717 - GLOBAL RESEARCH PRACTICUM - GERMANY FULL-TIME

Minimum Credits: 3

Maximum Credits: 3

This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture. Main objectives are to challenge students to consider business issues from a global perspective and to expose them to actual business environments abroad. Requirements include a team research project and an individual cultural report. The course includes a 9-day trip to various businesses in Germany. Students develop a research question in areas of managerial specialization and draw evidence from the field study to support their project report. While abroad, students visit a number of selected organizations and/or companies, and explore current business practices/issues. The group meets for three, 3-hour class sessions prior to the trip. Portions of these classes will focus on developing the research project. Also, to help prepare for the trip, selected outside speakers will share their experiences and perspectives on Latin American business and culture. At the final class session after the trip, projects are presented in both written and oral forms.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

BIND 2718 - GLOBAL RESEARCH PRACTICUM - CHINA FULL-TIME

Minimum Credits: 3

Maximum Credits: 3

This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture. Main objectives are to challenge students to consider business issues from a global perspective and to expose them to actual business environments abroad. Requirements include a team research project and an individual cultural report. The course includes a 9-day trip to various businesses in China. Students develop a research question in areas of managerial specialization and draw evidence from the field study to support their project report. While abroad, students visit a number of selected organizations and/or companies, and explore current business practices/issues. The group meets for three, 3-hour class sessions prior to the trip. Portions of these classes will focus on developing the research project. Also, to help prepare for the trip, selected outside speakers will share

their experiences and perspectives on Latin American business and culture. At the final class session after the trip, projects are presented in both written and oral forms.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

BIND 2719 - GLOBAL RESEARCH PRACTICUM - BRAZIL FULL-TIME

Minimum Credits: 3

Maximum Credits: 3

This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture. Main objectives are to challenge students to consider business issues from a global perspective and to expose them to actual business environments abroad. Requirements include a team research project and an individual cultural report. The course includes a 9-day trip to various businesses in Brazil. Students develop a research question in areas of managerial specialization and draw evidence from the field study to support their project report. While abroad, students visit a number of selected organizations and/or companies, and explore current business practices/issues. The group meets for three, 3-hour class sessions prior to the trip. Portions of these classes will focus on developing the research project. Also, to help prepare for the trip, selected outside speakers will share their experiences and perspectives on Latin American business and culture. At the final class session after the trip, projects are presented in both written and oral forms.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

BIND 2725 - GLOBAL RESEARCH PRACTICUM: SOUTH ASIA FULL-TIME

Minimum Credits: 0

Maximum Credits: 0

This number will serve as a billing course for the Global Research Practicum for Full Time students.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Non-Graded Component

BIND 2726 - GLOBAL RESEARCH PRACTICUM: SOUTH ASIA PART-TIME

Minimum Credits: 0

Maximum Credits: 0

This number will serve as a billing course for the Global Research Practicum for part-time students.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Non-Graded Component

BIND 2727 - GLOBAL RESEARCH PRACTICUM - GERMANY PART-TIME

Minimum Credits: 3

Maximum Credits: 3

This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture. Main objectives are to challenge students to consider business issues from a global perspective and to expose them to actual business environments abroad. Requirements include a team research project and an individual cultural report. The course includes a 9-day trip to various businesses in Germany. Students develop a research question in areas of managerial specialization and draw evidence from the field study to support their project report. While abroad, students visit a number of selected organizations and/or companies, and explore current business practices/issues. The group meets for three, 3-hour class sessions prior to the trip. Portions of these classes will focus on developing the research project. Also, to help prepare for the trip, selected outside speakers will share their experiences and perspectives on Latin American business and culture. At the final class session after the trip, projects are presented in both written and oral forms.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

BIND 2728 - GLOBAL RESEARCH PRACTICUM - CHINA PART-TIME

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

BIND 2729 - GLOBAL RESEARCH PRACTICUM - BRAZIL PART-TIME

Minimum Credits: 3

Maximum Credits: 3

This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture. Main objectives are to challenge students to consider business issues from a global perspective and to expose them to actual business environments abroad. Requirements include a team research project and an individual cultural report. The course includes a 9-day trip to various businesses in Brazil. Students develop a research question in areas of managerial specialization and draw evidence from the field study to support their project report. While abroad, students visit a number of selected organizations and/or companies, and explore current business practices/issues. The group meets for three, 3-hour class sessions prior to the trip. Portions of these classes will focus on developing the research project. Also, to help prepare for the trip, selected outside speakers will share their experiences and perspectives on Latin American business and culture. At the final class session after the trip, projects are presented in both written and oral forms.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

BIND 2731 - GLOBAL RESEARCH PRACTICUM - ASIA FULL-TIME

Minimum Credits: 3

Maximum Credits: 3

This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture. Main objectives are to challenge students to consider business issues from a global perspective and to expose them to actual business environments abroad. Requirements include a team research project and an individual cultural report. The course includes a 9-day trip to various businesses in Asia. Students develop a research question in areas of managerial specialization and draw evidence from the field study to support their project report. While abroad, students visit a number of selected organizations and/or companies, and explore current business practices/issues. The group meets for three, 3-hour class sessions prior to the trip. Portions of these classes will focus on developing the research project. Also, to help prepare for the trip, selected outside speakers will share their experiences and perspectives on Latin American business and culture. At the final class session after the trip, projects are presented in both written and oral forms. Logistics: travel typically takes place over the Katz spring break. Expenses related to all academic/group aspects of the course/trip are covered by the Katz school. Students are required to cover individual expenses such as tuition, airfare, ground transfers, hotel, and meals.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

BIND 2732 - GLOBAL RESEARCH PRACTICUM - ASIAPART-TIME

Minimum Credits: 3

Maximum Credits: 3

This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture. Main objectives are to challenge students to consider business issues from a global perspective and to expose them to actual business environments abroad. Requirements include a team research project and an individual cultural report. The course includes a 9-day trip to various businesses in Asia. Students develop a research question in areas of managerial specialization and draw evidence from the field study to support their project report. While abroad, students visit a number of selected organizations and/or companies, and explore current business practices/issues. The group meets for three, 3-hour class sessions prior to the trip. Portions of these classes will focus on developing the research project. Also, to help prepare for the trip, selected outside speakers will share their experiences and perspectives on Latin American business and culture. At the final class session after the trip, projects are presented in both written and oral forms. Logistics: travel typically takes place over the Katz spring break. Expenses related to all academic/group aspects of the course/trip are covered by the Katz school. Students are required to cover individual expenses such as tuition, airfare, ground transfers, hotel, and meals.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

BIND 2733 - GLOBAL RESEARCH PRACTICUM - SOUTH AMERICA FULL-TIME

Minimum Credits: 3

Maximum Credits: 3

This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture. Main objectives are to challenge students to consider business issues from a global perspective and to expose them to actual business environments abroad. Requirements include a team research project and an individual cultural report. The course includes a 9-day trip to various businesses in south America. Students develop a research question in areas of managerial specialization and draw evidence from the field study to support their project report. While abroad, students visit a number of selected organizations and/or companies, and explore current business practices/issues. The group meets for three, 3-hour class sessions prior to the trip. Portions of these classes will focus on developing the research project. Also, to help prepare for the trip, selected outside speakers will share their experiences and perspectives on Latin American business and culture. At the final class session after the trip, projects are presented in both written and oral forms. Logistics: travel typically takes place over the Katz spring break. Expenses related to all academic/group aspects of the course/trip are covered by the Katz school. Students are required to cover individual expenses such as tuition, airfare, ground transfers, hotel, and meals.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

BIND 2734 - GLOBAL RESEARCH PRACTICUM - PART-TIME - SOUTH AMERICAN

Minimum Credits: 3

Maximum Credits: 3

This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture. Main objectives are to challenge students to consider business issues from a global perspective and to expose them to actual business environments abroad. Requirements include a team research project and an individual cultural report. The course includes a 9-day trip to various businesses in south America. Students develop a research question in areas of managerial specialization and draw evidence from the field study to support their project report. While abroad, students visit a number of selected organizations and/or companies, and explore current business practices/issues. The group meets for three, 3-hour class sessions prior to the trip. Portions of these classes will focus on developing the research project. Also, to help prepare for the trip, selected outside speakers will share their experiences and perspectives on Latin American business and culture. At the final class session after the trip, projects are presented in both written and oral forms. Logistics: travel typically takes place over the Katz spring break. Expenses related to all academic/group aspects of the course/trip are covered by the Katz school. Students are required to cover individual expenses such as tuition, airfare, ground transfers, hotel, and meals.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

BIND 2735 - GLOBAL RESEARCH PRACTICUM - FULL-TIME - EUROPE

Minimum Credits: 3

Maximum Credits: 3

This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture. Main objectives are to challenge students to consider business issues from a global perspective and to expose them to actual business environments abroad. Requirements include a team research project and an individual cultural report. The course includes a 9-day trip to various businesses in Europe. Students develop a research question in areas of managerial specialization and draw evidence from the field study to support their project report. While abroad, students visit a number of selected organizations and/or companies, and explore current business practices/issues. The group meets for three, 3-hour class sessions prior to the trip. Portions of these classes will focus on developing the research project. Also, to help prepare for the trip, selected outside speakers will share their experiences and perspectives on Latin American business and culture. At the final class session after the trip, projects are presented in both written and oral forms. Logistics: travel typically takes place over the Katz spring break. Expenses related to all academic/group aspects of the course/trip are covered by the Katz school. Students are required to cover individual expenses such as tuition, airfare, ground transfers, hotel, and meals.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

BIND 2736 - GLOBAL RESEARCH PRACTICUM - PART-TIME STUDENTS - EUROPE

Minimum Credits: 3

Maximum Credits: 3

This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture. Main objectives are to challenge students to consider business issues from a global perspective and to expose them to actual business environments abroad. Requirements include a team research project and an individual cultural report. The course includes a 9-day trip to various businesses in Europe. Students develop a research question in areas of managerial specialization and draw evidence from the field study to support their project report. While abroad, students visit a number of selected organizations and/or companies, and explore current business practices/issues. The group meets for three, 3-hour class sessions prior to the trip. Portions of these classes will focus on developing the research project. Also, to help prepare for the trip, selected outside speakers will share their experiences and perspectives on Latin American business and culture. At the final class session after the trip, projects are presented in both written and oral forms. Logistics: travel typically takes place over the Katz spring break. Expenses related to all academic/group aspects of the course/trip are covered by the Katz school. Students are required to cover individual expenses such as tuition, airfare, ground transfers, hotel, and meals.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

BIND 2737 - GLOBAL RESEARCH PRACTICUM - PART TIME - NON-PENNSYLVANIA

Minimum Credits: 0

Maximum Credits: 0

This number will serve as a billing course for the international research practicum for part-time MBA students who are non-Pennsylvania residents.

Academic Career: Graduate

Course Component: Practicum

Grade Component: No Grade Required

Course Requirements: Katz Grad School of Business students only.

BIND 2738 - GLOBAL RESEARCH PRACTICUM - PART-TIME STUDENTS - PA RESIDENTS

Minimum Credits: 0

Maximum Credits: 0

This number will serve as a billing course for the international research practicum for part-time MBA students who are Pennsylvania residents.

Academic Career: Graduate

Course Component: Practicum

Grade Component: No Grade Required

BIND 2739 - GLOBAL RESEARCH PRACTICUM - FULL-TIME

Minimum Credits: 0

Maximum Credits: 0

This number will serve as a billing course for the international research practicum for full-time MBA students.

Academic Career: Graduate

Course Component: Practicum

Grade Component: No Grade Required

BIND 2749 - GLOBAL RESEARCH PRACTICUM - PART-TIME

Minimum Credits: 0

Maximum Credits: 0

This number will serve as a billing course for the international research practicum for part-time MBA students.

Academic Career: Graduate

Course Component: Practicum

Grade Component: No Grade Required

BIND 2750 - GLOBAL RESEARCH PRACTICUM - UK/BELGIUM: LONDON AND BRUSSELS - FT

Minimum Credits: 3

Maximum Credits: 3

This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture. Main objectives are to challenge students to consider business issues from a global perspective and to expose them to actual business environments abroad. Requirements include a team research project and an individual cultural report. The course includes a 9-day trip to various businesses in the UK. Students develop a research question in areas of managerial specialization and draw evidence from the field study to support their project report. While abroad, students visit a number of selected organizations and/or companies, and explore current business practices/issues. The group meets for three, 3-hour class sessions prior to the trip. Portions of these classes will focus on developing the research project. Also, to help prepare for the trip, selected outside speakers will share their experiences and perspectives on UK business and culture. At the final class session after the trip, projects are presented in both written and oral forms. travel typically takes place over the Katz spring break. Expenses related to all academic/group aspects of the course/trip are covered by the Katz school. Students are required to cover individual expenses such as tuition, airfare, ground transfers, hotel, and meals.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

BIND 2751 - GLOBAL RESEARCH PRACTICUM - UK/BELGIUM: LONDON AND BRUSSELS - PART-TIME

Minimum Credits: 3

Maximum Credits: 3

This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture. Main objectives are to challenge students to consider business issues from a global perspective and to expose them to actual business environments abroad. Requirements include a team research project and an individual cultural report. The course includes a 9-day trip to various businesses in the UK. Students develop a research question in areas of managerial specialization and draw evidence from the field study to support their project report. While abroad, students visit a number of selected organizations and/or companies, and explore current business practices/issues. The group meets for three, 3-hour class sessions prior to the trip. Portions of these classes will focus on developing the research project. Also, to help prepare for the trip, selected outside speakers will share their experiences and perspectives on UK business and culture. At the final class session after the trip, projects are presented in both written and oral forms. travel typically takes place over the Katz spring break. Expenses related to all academic/group aspects of the course/trip are covered by the Katz school. Students are required to cover individual expenses such as tuition, airfare, ground transfers, hotel, and meals.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

BIND 2752 - GLOBAL RESEARCH PRACTICUM - PROFESSIONAL

Minimum Credits: 3

Maximum Credits: 3

This course is tied closely to field study abroad, providing a hands-on experience in a foreign culture.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

BIND 2777 - INDEP STUDY IN FOREIGN LANGUAGES

Minimum Credits: 1

Maximum Credits: 3

This course will include various foreign languages specifically for MBA students.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BIND 2889 - BRAZIL TODAY

Minimum Credits: 1

Maximum Credits: 1

This short course will explore how these three factors interact in Brazil and in the position of Brazil as a world economy. Examples of questions that may be explored during the lectures and that students may want to explore for their paper are: what is Brazil's role in the world economy? What are the major impediments to Brazil's economic growth? What role does race, ethnicity and class play in shaping Brazil's politics and economy? To what extent is the deep social and economic inequality in Brazilian society rooted in discrimination between races? How has development and trade coupled with Brazil's national economic policy affected Brazil's environment? What are the major impediments to Brazil's economic and business growth? Compare and contrast policy debates, environmental impacts etc. Of economic growth between those of the India and Brazil what does the economic growth mean for: an economically well-off American citizen? An American of lower economic status? An affluent Brazilian citizen? A poor Brazilian citizen? What are the current and future challenges of multinational firms in Brazil and what needs to happen to move towards the path of overcoming these to assist the economic and human growth of Brazil? A review of policies and education on a Brazilian industrial sector such as manufacturing, textiles, shoes, chemicals, cement, lumber, iron ore, tin, steel, aircraft, motor vehicles and parts, other machinery and equipment. Compare and contrast policy debates, environmental impacts etc. Of economic growth between those of the Brazil and another emerging economy such as India)

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BIND 2902 - COMPARATIVE HEALTHCARE POLICY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: EMBA Healthcare Program

BIND 2903 - PREDICTIVE ANALYTICS IN HEALTH CARE

Minimum Credits: 1.5

Maximum Credits: 1.5

Healthcare is on a precipice of change. More health care-related data has been generated in the past five years than in the entire history of mankind, and this is expected to increase 50 times over the next few years. The overall objective of this course in Predictive Analytics in Health Care is to familiarize students with large data analytic techniques, and their wide-applicability in guiding decisions in such areas as patient care, research & development, policy, and cost effectiveness. For the most common techniques, the objective is to acquire sufficient mastery through hands-on analyses of data so that students are prepared to apply these techniques in future career positions. For other, more advanced techniques, the objective will be to develop a familiarity about how these methods are used and what questions they can answer.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BIND 9444 - MBA INTERNSHIP

Minimum Credits: 0

Maximum Credits: 0

The internship course is designed to allow students to develop knowledge and experience in a non-classroom setting. While registered for this course, students will be employed at a company that relates to their academic training and career objectives in business. After the successful completion of the internship, the student is expected to submit a letter from their internship supervisor to confirm the completion of the internship to their academic advisor.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad SN Basis

Course Requirements: Katz Grad School of Business students only.

BIND 9661 - LEARNING COMMUNITY WORKSHOP

Minimum Credits: 0

Maximum Credits: 0

Students in this workshop will experience real-life situations with actual companies.

Academic Career: Graduate

Course Component: Workshop

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BIND 9999 - KATZ FULL-TIME DEVELOPMENT FEE

Minimum Credits: 0

Maximum Credits: 0

Academic Career: Graduate

Course Component: Workshop

Grade Component: No Grade Required

Course Requirements: Katz Grad School of Business students only.

Interpersonal Skills

SWINT 2004 - GRIEF AND LOSS: INTERVENTIONS, IMPLICATIONS & UNDERSTANDING

Minimum Credits: 3

Maximum Credits: 3

This course explores the various models used by social workers who are interested in meeting the complicated needs of grieving clients and their families. Knowledge based practice patterns rooted in the framework of the tasks of mourning, the mediators of mourning and a review of the dual processing model are provided across a wide range of populations and practice settings.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWINT 2082 (MIN GRADE 'B-')

SWINT 2007 - INTRO PSYPHMCLGY SOCL WRK PRACT

Minimum Credits: 3

Maximum Credits: 3

This course is designed to familiarize students with the basic terminology and models of pharmacokinetics, and the role of social workers in medication management. The development of psychopharmacology from a historical and sociological perspective as well as an overview of neurochemistry and biological-psychological functioning will be addressed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWINT 2082 (MIN GRADE 'B-')

SWINT 2009 - FAMILY CONFERENCE AND TEAMING

Minimum Credits: 3

Maximum Credits: 3

This course will familiarize students with Family Group Decision Making (FGDM), a cross system practice that builds on the strengths of families by supporting prevention strategies and planning for and ensuring the safety, permanency and well-being of children. Family group decision making recognizes the importance of involving family groups in decision making about children who need protection or care, and emphasizes family empowerment by acknowledging that families should be given the opportunity and responsibility to make their own decisions regarding their children and family members.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWINT 2082; Minimum grade of B-

SWINT 2011 - SOCIAL WORK PRACT WITH FAMILIES

Minimum Credits: 3

Maximum Credits: 3

This course explores various basic models used by social workers for examining, understanding, and intervening in family processes. Video, role play, and case material are used in developing skills for advanced practice in working with families.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWINT 2082 (MIN GRADE 'B-')

SWINT 2016 - INTERPERSONAL PSYCHOTHERAPY

Minimum Credits: 3

Maximum Credits: 3

This course builds on the student's knowledge of psychotherapies gained in the prerequisite course, SWINT 2082, Models of Intervention, and expands this knowledge to include a focus on the evidence-based model of interpersonal psychotherapy (IPT). The course enables students to learn skills in applying the latest IPT assessment and treatment methods for a variety of mood and non-mood disorders. Particular attention will be paid to empirical methods of evaluating client progress and outcomes. The course will also focus on the relevance of utilizing engagement strategies and IPT treatment approaches to clinical social work practice with "difficult-to-engage" and "at risk" populations confronting issues of age, race/ethnicity, poverty, gender, sexual orientation, religion, and disability.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWINT 2082 (MIN GRADE 'B-')

SWINT 2018 - CLINICAL SKILLS PSYCHOPATHOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course is an introduction to the concepts and techniques employed in clinical work with severely mentally ill and/or chemically dependent clients. Categories of disturbance will include: schizophrenia, mood disorders, other psychoses, severe personality disorders and alcohol and/or other substance abuse. The overall purpose is to equip the beginning practitioner with the knowledge and skills requisite for working with the types of clients most commonly seen at public mental health/drug and alcohol services.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWINT 2082 and SWBEH 2065 (MIN GRADE 'B-' for Listed Courses)

SWINT 2025 - SOCIAL WORK PRACTICE IN INTEGRATED HEALTH

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the clinical and administrative skills, roles and functions of social work practice which take place in a wide range of community based agencies and institutions at the primary, secondary and tertiary levels of intervention with and on behalf of a diverse population. Knowledge skills and ethics are integrated toward promoting readiness for employment in the healthcare field.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWINT 2082 (MIN GRADE 'B-')

SWINT 2030 - DIRECT PRACT WITH ELDERLY

Minimum Credits: 3

Maximum Credits: 3

This course defines the range of interpersonal practice with and for the elderly in terms of primary, secondary and tertiary levels of intervention. A broad range of clinical practice roles is addressed in regards to practice across a broad spectrum of settings. All of the established social work practice approaches are looked at in detail for treatment procedures which can be applied to work with the elderly. An eclectic perspective to practice with the elderly is stressed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWINT 2082 (MIN GRADE 'B-')

SWINT 2031 - ADV DRCT PRAC: COGNITV/BEHVRL

Minimum Credits: 3

Maximum Credits: 3

Building on the student's knowledge of cognitive/behavioral theory gained in the prerequisite course in generalist practice and models of intervention, this course will focus on these theoretical frames of reference in terms of application to interpersonal practice with individuals, families and groups.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWINT 2082 (MIN GRADE 'B-'); SBPLAN: Direct Practice (Social Work-MSW)

SWINT 2032 - ADV DRCT PRAC: SOCIAL SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

Building on the student's knowledge of social systems theory gained in the prerequisite course in generalist practice and models of intervention, this course will focus on these theoretical frames of reference in terms of application to interpersonal practice with individuals, families and groups.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWINT 2082 (MIN GRADE 'B-'); SBPLAN: Direct Practice (Social Work-MSW)

SWINT 2033 - ADV DRCT PRAC: PSYCHODYNAMIC

Minimum Credits: 3

Maximum Credits: 3

Building on the student's knowledge of psychosocial theory gained in the prerequisite course in generalist practice and models of intervention, this course will focus on these theoretical frames of reference in terms of application to interpersonal practice with individuals, families and groups.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWINT 2082 (MIN GRADE 'B-'); SBPLAN: Direct Practice (Social Work-MSW)

SWINT 2034 - DRCT PRACT DIVERSE POPULATIONS

Minimum Credits: 3

Maximum Credits: 3

This course will focus upon issues of cultural diversity and oppression. It will emphasize empowerment as its overarching framework and as a major goal for social work direct practice with individuals, families and small groups.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Social Work students only.

SWINT 2035 - INTIMATE PARTNER VIOLENCE

Minimum Credits: 3

Maximum Credits: 3

This course examines the dynamics and treatment implications of working with family members who have experienced various forms of physical and/or sexual maltreatment from other family members. Physical and sexual child abuse, spouse abuse and marital rape are topics of concern.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWINT 2082 (MIN GRADE 'B-')

SWINT 2042 - SOCIAL WORK DRUG & ALCOHOL ABUSE

Minimum Credits: 3

Maximum Credits: 3

This course provides a basic orientation to alcohol and drug abuse as problems requiring social work interventions. Emphasis is placed on examining a variety of treatment approaches in providing services to alcoholics, drug abusers, and their families. Special efforts are made to focus the content on the needs of working populations experiencing problems with alcohol and drugs, as well as their families.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWINT 2082 (MIN GRADE 'B-')

SWINT 2046 - PLANNED SHORT-TERM TREATMENT

Minimum Credits: 3

Maximum Credits: 3

A pluralistic theoretical framework for planned short-term treatment, highlighting contributions from interpersonal and social learning orientations is examined, and major research studies supporting short-term intervention are reviewed. Attention is given to the goals and process of the initial interview and major change strategies (behavioral rehearsal, task assignment, skill training, and cognitive restructuring) are discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWINT 2082 (MIN GRADE 'B-')

SWINT 2047 - CHILD PERMANENCY

Minimum Credits: 3

Maximum Credits: 3

This course is designed to provide the history, definitions, forms and skill sets for permanence for children and families served by the child welfare system. Based on an historical understanding of program development and human development needs, the course will offer a paradigm for providing healing interventions for children who come to the attention of the child welfare system. The course will explore ways that support is needed and provided to all parties in the work of permanency. The course also will look at the implications of permanency with regards to social/community health and wellness.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWINT 2082 (MIN GRADE 'B-')

SWINT 2049 - DIRECT PRACTICE WITH CHILDREN

Minimum Credits: 3

Maximum Credits: 3

This course prepares students to work directly with children in social work settings. A variety of teaching techniques are used to help students: utilize different theories and models of working with children; differentiate fact from inference and normal from deviant development; be comfortable with a variety of play media; and examine in-depth the theme of separation and its effect on the child.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWINT 2082 (MIN GRADE 'B-')

SWINT 2050 - COUPLES THERAPY: THEORY & TECHNIQUES

Minimum Credits: 3

Maximum Credits: 3

This course concentrates on theory and techniques of treatment with the marital dyad. Emphasis is on empirically validated methods, with particular focus on developing an eclectic approach for advanced social work practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWINT 2082 (MIN GRADE 'B-')

SWINT 2053 - GROUP INTERVENTIONS WITH HIGH-RISK POPULATIONS

Minimum Credits: 3

Maximum Credits: 3

Theory and concepts related to advanced social work practice with groups, including knowledge of group types, processes, selection, and composition, as well as group leader roles and functions are all considered.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWINT 2082 (MIN GRADE 'B-')

SWINT 2058 - SOCIAL WORK EDUCATIONAL SETTINGS

Minimum Credits: 3

Maximum Credits: 3

This course provides a knowledge base for the practice of social work in school or school-related settings. Focus is on application of knowledge, and values and skills of social work practice toward resolution of diverse problems encountered by pupils, schools and communities in the effort to achieve educational goals.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWINT 2082 (MIN GRADE 'B-')

SWINT 2063 - ISSUES IN CHILD MALTREATMENT

Minimum Credits: 3

Maximum Credits: 3

This course will provide a comprehensive examination of child sexual maltreatment issues at the micro, meso, and macro levels: etiology; identification; child welfare system response; treatment; the impact the maltreatment has upon individuals, families, groups, and the community (including those coming into contact with maltreatment in the course of their work) and resilience in the face of maltreatment. Emphasis will be on the student's development of assessment skills, knowledge of the therapeutic process of recovery, and the role and function of organizations. Social work interventions and treatment modalities, including outcome data, will be presented. Students will be offered information about maltreatment among diverse populations. All topics will be related to and examined in the light of the core values, ethical principles, and standards of the national association of social workers code of ethics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWINT 2082 (MIN GRADE 'B-')

SWINT 2072 - SOCIAL WORK PRACTICE AND TRAUMATIC STRESS

Minimum Credits: 3

Maximum Credits: 3

This course addresses theories of primary and secondary (vicarious) traumatic stress; the nature of traumatic events and environments; and the potential impacts on individuals, families, groups, and communities. Students will be offered information about traumatic exposure and stress among diverse populations. Interventions and treatment modalities for working with those affected by traumatic stress using the person-in-environment perspective will be presented. All topics will be related to and examined in the light of the core values, ethical principles, and standards of the national association of social workers code of ethics. Emphasis will be on the student's development of practice competencies such as critical thinking, supporting the therapeutic process by the use of research-informed and strengths-based practice, identifying opportunities for advocacy, effective self-care, and understanding the role and function of organizations in creating trauma-informed human services environments.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWINT 2082, Minimum grade of B-

SWINT 2073 - INTEGRATED HEALTHCARE AND PHARMACOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course is designed to develop general knowledge of medical terminology and the social worker's role in medication management. Students learn how to educate and support patients in adhering to recommended medication treatment and in being knowledgeable about possible side effects. Social workers have an extremely important role to play in the patient's ability to adhere to medication requirements. They can support patient compliance with medication by providing information and education that allows that patient to have realistic expectations for what may be achieved with medication. In addition, they can also work with patients to achieve their goals for improving medication adherence.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: SWINT 2082; Minimum grade of B-

SWINT 2074 - SPIRITUALITY AND SOCIAL WORK

Minimum Credits: 3

Maximum Credits: 3

This course explores the role, nature, and impact of spirituality in and upon social work practice and the populations that social workers serve. It builds upon an understanding of spirituality and religious practice as aspects of human diversity which occurs in the context of ecosystems theory, theories of human development, and models of helping. Students will gain spiritual assessment and intervention skills within the scope of social work practice including micro, mezzo and macro levels of practice. Course will highlight themes of cultural competence, variety of spiritual and/or religious practices and traditions, potential harms and benefits, professional development, and ethical considerations for practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWINT 2082; Minimum grade of B-

SWINT 2076 - HUMAN SEXUALITY

Minimum Credits: 3

Maximum Credits: 3

This course presents current research about human sexuality, discusses the range of sexual life-styles, and develops a treatment typology for therapists working with couples and individuals with sexual dysfunctions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWINT 2082 (MIN GRADE 'B-')

SWINT 2082 - MODELS OF INTERVENTION

Minimum Credits: 3

Maximum Credits: 3

The course provides a framework for understanding and differentially using treatment models in interpersonal social work practice. It examines four basic treatment models: psychosocial, crisis intervention, behavior modification, and an interpersonal approach based upon either communication theory, the client-centered approach, or an experiential humanist approach. These basis models are compared and contrasted.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWGEN 2098 and SWBEH 2063 and SWWEL 2081; CREQ: SWRES 2021; SBPLAN: Direct Practice (Social Work-MSW)

SWINT 2087 - SPECIAL TOPICS

Minimum Credits: 1

Maximum Credits: 3

Given the changing nature of social work practice, the MSW program occasionally offers courses in new and/or unique content areas. When offered, this course is designed to provide skill and knowledge content not covered in other direct practice skill courses.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Social Work students only.

SWINT 2096 - CLIN SOCL WRK AFRCN AMERCN FMLY

Minimum Credits: 3

Maximum Credits: 3

The overall objective of this course is to provide a knowledge base on African-American families within a community context that is the basis for developing methods and skills relevant for clinical intervention with African American families. It will provide the student with the opportunity to expand on concepts, skills and assumptions about clinical transactions learned in basic clinical method courses. Conceptual models for assessment/intervention will assist students to clarify and become comfortable with theoretical and practice approaches with black families.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWINT 2082 (MIN GRADE 'B-')

SWINT 2097 - DRCTD STUDY INTERPERSONAL SKILLS

Minimum Credits: 1

Maximum Credits: 3

A student-initiated educational experience, guided by a faculty member that significantly supplements the social work interpersonal skills curriculum and conforms to academic course content expectations.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

SWINT 2099 - FIELD WORK

Minimum Credits: 1

Maximum Credits: 8

The field practicum emphasizes the integration and application of social work values, knowledge and skills in practice settings. Placements are in community service delivery systems and are individualized to combine the student's choice of concentration area, certification program and specialized skills interest.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad SN Basis

Course Requirements: PREQ: SWGEN 2099; SBPLAN: Direct Practice (Social Work-MSW)

Italian

ITAL 2088 - TOPICS IN ITALIAN DIASPORA STUDIES

Minimum Credits: 3

Maximum Credits: 3

This graduate-level seminar explores the notion of Italian Diaspora, possibly addressing any of the following questions: the history of emigration from Italy; the languages, literatures, cinemas, and/or cultures of Italian emigration, in Italian or any of the languages of destination countries; the materiality of the Italian Diaspora; the critical human geography of the Italian Diaspora; Italian emigration from the perspective of any destination culture (Italian American, Italian Argentinian, and so forth); italianità, or globally-inflected notions of Italianness created through or in diasporic movements initiating in Italy; comparative studies of Italian Diasporas and other migratory phenomena that engage Italy (over the Mediterranean, from Eastern Europe, or from Asia, for example).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ITAL 2092 - ITALIAN TRANSLATION STUDIES

Minimum Credits: 3

Maximum Credits: 3

This course explores the field of Translation Studies from the Italian perspective. It may address any or all of the following issues: the history of translation as a literary practice, editorial projects that involve translation, the ethics of translation, translation between standard and dialect languages, translation and power relations, the relative primacy of source and target texts, the relationship between translation and global literatures. Students will develop and pursue final projects that involve commentary on published translation or new translation projects with annotation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

ITAL 2200 - DANTE

Minimum Credits: 3

Maximum Credits: 3

A close reading of selected cantos from Dante's divine comedy.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ITAL 2315 - RENAISSANCE HUMANISM

Minimum Credits: 3

Maximum Credits: 3

This course examines the major figures in Renaissance humanism, moving from the civic humanism of Florentine authors like Bruno to the philological humanists such as Poliziano. Attention is given also to the independent vernacular humanists, Alberti and Leonardo.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

ITAL 2410 - SETTECENTO

Minimum Credits: 3

Maximum Credits: 3

A survey of Italian literature of the xviiith century: particular attention will be paid to the works of Pietro Metastasio, Carlo Goldoni and Vittorio Alfieri, as well as critical and theoretical texts of the period on theater.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: West European Studies

ITAL 2420 - GOLDONI

Minimum Credits: 3

Maximum Credits: 3

A course in Goldoni's plays and history of the theater in the 17th and 18th centuries.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

ITAL 2500 - OTTOCENTO 1

Minimum Credits: 3

Maximum Credits: 3

A course in the literary and critical trends of the first quarter of the nineteenth century.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

ITAL 2610 - SICILY WRITING AND WRITTEN

Minimum Credits: 3

Maximum Credits: 3

This graduate-level seminar provides a forum for the analysis of Sicilian cultural production and a laboratory for the production of new knowledge about this Mediterranean Island. The seminar's texts are chiefly drawn from narrative and poetic genres, but also considers cinema, theatre, journalism, essays, and the visual and plastic arts that seek to express and represent the Sicilian experience.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

ITAL 2701 - SPECIAL TOPICS

Minimum Credits: 3

Maximum Credits: 3

Period and literary topics are determined by the instructor.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

ITAL 2710 - INTRODUCTION TO LITERARY AND CULTURAL THEORY

Minimum Credits: 3

Maximum Credits: 3

In this course intended for beginning graduate students in the modern languages, students will survey major movements and concepts in literary and cultural theory of the 20th/21st centuries. These theories have provided us important ways to think about how to read and interpret literature, film, and other cultural artifacts, and, as such, are an important aspect of graduate studies in the humanities. This course is meant to provide students a general background in theory that they can further develop in certain areas as they continue their studies. The course will be taught in English, and all readings will be available in English.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Russian & East European Studies, West European Studies

ITAL 2751 - LITERARY LIVES: AUTOBIOGRAPHYS AND LETTERS

Minimum Credits: 3

Maximum Credits: 3

This course explores the genre of the autobiography as it manifested itself in Italian literature from Petrarch to the present, as well as a study of individual authors, their motivations for telling the story of their lives, their idea of themselves and their notion of the political, social and cultural environment in which they lived. Autobiography is to be understood here in the broadest sense, and to be considered in all of the disparate forms (poems, letters, confessions, memoirs, journals, apologies, orations, prefaces, etc.) it took on at different times.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

ITAL 2801 - HISTORY OF ITALIAN LANGUAGE

Minimum Credits: 3

Maximum Credits: 3

The course will be organized around the central problem that has persisted throughout the history of the language, the so-called *Questione Della lingua*, or the question of which, if any, of its many co-existing forms is the true or correct or in some way the preferable form of Italian.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

ITAL 2902 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 3

This course enables M.A. Candidates to do research under the direction of a faculty member, on a topic of mutual interest.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

ITAL 2903 - MA RESEARCH PAPER DIRECTED STUDY

Minimum Credits: 3

Maximum Credits: 3

In partial fulfilment of the MA in Italian Language and Literature, all students must write a Master's Research Paper (or *tesina*) of professional article quality and length (30 pp min.). Students must conduct research beyond the scope of any single graduate term paper, but are encouraged to develop and formulate their topic in the context of one particular seminar (or two, if seminars are thematically or otherwise related). Students will work closely with the faculty member whose field is most relevant to the chosen topic (typically the faculty member who initially taught the seminar that generated the initial term paper) to identify, appropriate areas for expansion, additional texts or case studies, and relevant methodologies. The paper must be written in Italian.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

ITAL 2910 - COMPREHENSIVE EXAMINATION MA

Minimum Credits: 1

Maximum Credits: 3

This course is intended for M.A. Candidates in their last term of study when they present themselves for the ma comprehensive examination.

Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis
Course Attributes: West European Studies

ITAL 2970 - TEACHING OF ITALIAN

Minimum Credits: 3

Maximum Credits: 3

This course will review the theory and practice of Italian language teaching. This will include all aspects of language teaching and testing, cultural understanding, bi lingual education and the teaching of reading.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

ITAL 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 3

This independent course is for M.A. Students who have completed, or are completing in their last term of study, all course requirements for the M.A. Degree.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

Course Attributes: West European Studies

Japanese

JPNSE 2023 - ASPECTS OF THE JAPANESE LANGUAGE

Minimum Credits: 3

Maximum Credits: 3

This course introduces the student to the Japanese language through a study of its structure, vocabulary and cultural heritage. Some topics discussed include word order, basic structural patterns, particles such as Wa and Ga, sexism, and word formation. This course is useful for the Japanese studies student wishing to have a deeper understanding of the language as well as the linguistics student interested in gaining knowledge of a non-Indo-European language.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

JPNSE 2035 - PRAGMATICS OF JAPANESE

Minimum Credits: 3

Maximum Credits: 3

This course will provide an introduction to the usage aspects of Japanese by reading articles on pragmatic aspects of the language. The instructor will lecture on salient points and lead discussion on specific issues and the appropriate use of the language.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

JPNSE 2056 - JAPANESE LITERATURE AND THE WEST

Minimum Credits: 3

Maximum Credits: 3

A critical study of modern Japanese works and selected modern Western literary materials with special emphasis on intensive analysis by means of

modern Western criticism. The course is designed to encourage the student to examine significant similarities and differences between Japanese and non-Japanese materials and to judge the content from an oriental as well as a Western perspective.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

JPNSE 2057 - JAPANESE CULTURE AND SOCIETY THROUGH CINEMA

Minimum Credits: 3

Maximum Credits: 3

This course provides a critical study of selected international prize winning Japanese films and compares these films with Western films dealing with similar themes. The student learns to analyze and interpret films; becomes familiar with particular genres of Japanese films compared with Western; studies the history of Japanese cinema and its place in international cinematography and exposes the inter cultural benefits of judging the content of the films from oriental and Western aesthetic perspectives.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

JPNSE 2058 - WESTERNS AND SAMURAI FILMS

Minimum Credits: 3

Maximum Credits: 3

A focus on the critical comparative study of two filmic genres--the samurai representing Japanese cinema and the Western representing American cinema. The course demonstrates the analytical processes of the film leading to its structural unity; shows the significance of both genres with respect to the history of Japanese, American and European cinema; compares approaches to films of different countries and provides the overall benefits of approaching films from an intercultural standpoint.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

JPNSE 2059 - JAPANESE LITERATURE ON SCREEN

Minimum Credits: 3

Maximum Credits: 3

This course will investigate how literature and film treat some major ideological and socio-cultural issues in Japanese society. Readings of pre-modern tales, modern fiction and contemporary novels. Film adaptations will represent the best of Japan's postwar cinematic tradition. The course is designed for the student interested in Japanese society, culture and intellectual currents through film and literature.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

JPNSE 2070 - WORLD OF JAPAN

Minimum Credits: 3

Maximum Credits: 3

Students will receive a grounding in basic principles of Japanese classical literature, poetry and aesthetics. They will read the entire text in English of the Tale of the Genji and examine important works in Japanese literature composed in later periods.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

JPNSE 2071 - THE WORLD OF JAPAN

Minimum Credits: 3

Maximum Credits: 3

This course covers the period between 1570 and 1870. Beginning with the unification of Japan under sixteenth century military war lords and ending 1963

with the collapse of the Tokugana Shogunate. Students will read selections from the major scholarly literature on the period.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

JPNSE 2080 - GHOSTS, MASKS AND ACTORS

Minimum Credits: 3

Maximum Credits: 3

A critical study of three major dramatic genres of Japan--noh, bunraku and kabuki--in cultural origins. Areas to be explored are the use of masks in the world of the noh theatre, the kabuki with its female impersonators and the near-lifesize puppets of the bunraku. Also discussed is the impact that noh and kabuki have had on modern Japanese and non-Japanese theatrical and film genres.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

JPNSE 2081 - FORMS OF JAPANESE THEATRE

Minimum Credits: 3

Maximum Credits: 3

This course will provide a survey of various major forms of Japanese theatre using English language materials. Students will have access to relatively ancient forms of Japanese theatre such as kagura and no, kabuki drama and the bunraku puppet theatre through film and videocassette. The modern and avant-garde theatre are also accessible through translation and videocassette material. This course is designed for upperclass majors in theatre arts and non-majors in related fields.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

JPNSE 2700 - INTRODUCTION TO THEORY AND PRACTICE OF TRANSLATION

Minimum Credits: 3

Maximum Credits: 3

This is an introductory course that answers to a growing interest in the theory and practice of translation from Japanese to English. The genres of texts that will be dealt with include literary works of various kinds (novels, poems, children's books), magazine and newspaper articles, web posts, manga, subtitling of anime and other videos, and texts of technical nature. Students will first learn broadly about the discipline of translation studies, including a history of translation and issues in translation (invisibility of the translator, culturally specific translatability issues, etc.). Students will then learn specific types of translation issues that come up when translating Japanese into English, using excerpts from a variety of genres as case studies. Special attention is paid to the structural differences between Japanese and English, cross-cultural differences in stylistics, writing with clarity, reference work, etc.

Academic Career: Graduate

Course Component: Lecture

Grade Component: LG/SNC Elective Basis

Latin

LATIN 2218 - LATIN SEMINAR: RHETORIC

Minimum Credits: 3

Maximum Credits: 3

This seminar will study the theory and practice of Roman rhetoric in varying literary, philosophical and historical contexts. We will read key passages and orations from a selection of authors including Cicero, Seneca, and Tacitus, and analyze their rhetorical structure and argument. At the same time, we will approach the genre of rhetoric as a window into the social and cultural settings in which the authors wrote.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

LATIN 2902 - DIRECTED STUDY FOR M.A. STUDENTS

Minimum Credits: 1

Maximum Credits: 9

Directed study on classical topics for students in the M.A. Program.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

LATIN 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 9

In this course a student undertakes study in Latin in consultation with a member of the faculty.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

LATIN 2992 - GRADUATE READING EXAMINATION

Minimum Credits: 0

Maximum Credits: 0

Permits graduate students from other departments to demonstrate competence in the reading of Latin through examination.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

LATIN 2995 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

Directed study on Latin topics for students in the graduate program.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Law - JD course offerings

LAW 5020 - CONTRACTS

Minimum Credits: 4

Maximum Credits: 4

What promises are legally enforceable? Why does the law enforce those promises? What does it mean to enforce a promise? This course explores those questions, using the basic concepts, principles, and doctrines of contract law, sometimes called "the law of broken promises." Specific topics include the requirements for formation of a contract (such as offer and acceptance), justifications for enforcing promises (such as consideration or detrimental reliance), justifications for denying or limiting enforcement (such as unconscionability or mistake), interpretation of contract terms, and remedies for breach of contract.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5024 - PROPERTY

Minimum Credits: 4

Maximum Credits: 4

Property law, broadly defined, governs relationships among people with respect to "things." These "things" include land ("real property"), tangible objects such as a casebook ("personal property"), and intangibles such as a publisher's right to prevent others from reproducing the original content in a book ("intellectual property"). The property course examines how property rights may be limited, in situations where more than one person has rights to the same piece of property, and in situations where one owner's rights must be balanced against the rights of the owner of a separate piece of property. Topics covered in the property course may include: modes of acquisition of property (e.g., Capture, find, creation), present possessory estates and future interests, co-ownership of property, marital property, landlord-tenant law, land sales, title recording systems, easements, restrictive covenants, nuisance, public land use regulation (including zoning, eminent domain, and the issue of regulatory takings), and global property issues.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5028 - TORTS

Minimum Credits: 4

Maximum Credits: 4

This course explores the methods and policies for allocating losses from harm to one's person, property, relations, and economic and other interests. The course covers the substantive principles of tort claims and their defenses. The course examines the three main theories of tort liability: intent, negligence, and strict liability and analyzes the theoretical and practical aspects of tort liability.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5032 - LEGISLATION AND REGULATION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5033 - CIVIL PROCEDURE

Minimum Credits: 4

Maximum Credits: 4

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5038 - ENERGY LAW AND REGULATION

Minimum Credits: 3

Maximum Credits: 3

This course provides an introduction to energy law with emphases on public utility regulation, electricity, and the effect of fuel choice on electricity regulation. The course consists of four modules. The first module on public utility regulation addresses the basic function of public utilities; the contemporary public utility scheme for energy; the basics of ratemaking economics. The second module on electricity regulation addresses the evolution of electricity regulation from the monopoly model to modern restructuring and competition; a technical understanding of electricity generation, transmission, and distribution; the functioning of electricity markets; Pennsylvania's framework for regulating electricity markets. The third module on the relationship between fuels and electricity regulation addresses the conversion of fuels to electricity; a comparative analysis of coal, wind and solar power; major issues in public utility regulation and litigation that relate to the transition from traditional to renewable fuels; Pennsylvania's framework for renewable energy. The fourth module consists of a brief introduction to natural gas regulation at the federal level and

in Pennsylvania. The course provides students with an understanding of (1) public utility regulation of energy, with a focus on electricity; (2) the relationship between electricity regulation and fuels, especially coal and renewables; (3) the public utility regulation of natural gas; (4) the regulatory framework for electricity and natural gas in Pennsylvania.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5039 - MEDIA LAW

Minimum Credits: 2

Maximum Credits: 2

The last two years have seen the revelation of "deep throat", the most famous confidential source of all time, juxtaposed with the spectacle of reporters going to jail for refusing to divulge confidential sources. Representing a media client today requires an understanding of the constitutional and statutory issues surrounding the gathering of news and protection of confidential sources. Although the confidential source issue is the hottest issue today, representing a media client involves much more. This course is designed to provide an overview of both the legal framework and the 'real world' considerations related to libel, invasion of privacy, access to courtrooms and judicial records, access to public records, protection of confidential sources, pre-publication review, and responding to subpoenas."

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5041 - LAWYERING: A HISTORY

Minimum Credits: 3

Maximum Credits: 3

This course will survey the history of lawyering from ancient times to the present day. Students will be invited to meet Cicero and the Roman jurists, look inside medieval courtrooms to see English common lawyers and European civilians at work, experience the rhetoric of John Adams and Daniel Webster while considering the daunting challenges faced by the emerging bar in early America, and assess the economic, industrial and organizational conditions that contributed to the cultural ascendancy of lawyers in the twentieth century United States. We will investigate both the historical successes of the legal profession and its failures, its championing of great causes and its complicity in great injustices. We will look at lawyering in its changing social, ethical and technological contexts, examining how lawyers over time and in various national settings have constructed their identities, established their power, viewed their duty, and articulated their collective mission. We will investigate how lawyers have been trained, and how different methods of legal education have shaped them. We will learn about legal lives lived far away and right here in Pittsburgh. We will look at today's American bar, assessing its recent history as a business dominated by the rise of the billable hour, and at the end of the course we will peer into some of the possible futures awaiting attorneys working in a digital age.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5043 - INT'L COMMERCIAL ARBITRATION

Minimum Credits: 3

Maximum Credits: 3

This course will begin with coverage of basic aspects of the law of international commercial arbitration, including arbitral jurisdiction, arbitration procedure, choice of law, and enforcement of awards. This will include coverage of the New York Arbitration Convention and the U.S. Federal Arbitration Act, along with a focus on the UNCITRAL Model Law on International Commercial Arbitration and the UNCITRAL Arbitration Rules. In order to provide a practical context for consideration of arbitration law and policy, we will work with the problem for the Vis International Arbitration Moot that will become available the first week of October. After a review of the problem, we will catalogue the major issues and each student will be assigned a topic from that list for his or her course paper. We will work through all of the arbitration procedure issues as a class, using the contributions of each student to build the arguments and analysis for each side in the Vis problem. We will also cover the basic substantive law issues raised under the United Nations Convention on Contracts for the International Sale of Goods (CISG). Each student will also be assigned a position to be presented in a mock arbitration at the end of the semester, using the Vis problem studied during the semester. The Pitt Law Vis Moot team for the following year may be selected at the end of the semester from the J.D. students in the course, consistent with announcements made prior to the beginning of the semester.

Academic Career: LAW
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5046 - CRIMINAL LAW

Minimum Credits: 3

Maximum Credits: 3

Traditional and contemporary doctrines of substantive criminal law are analyzed, with focus on such issues as: theories of punishment, the formal elements of criminal culpability, the theory and degrees of homicide, criminal causation, inchoate crimes, accessorial and vicarious liability, conspiracy, and defenses of excuse and justification.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5047 - CRIMINAL PROCEDURE

Minimum Credits: 3

Maximum Credits: 3

The subject matter is supreme court decisional law and policy issues relating to the application and scope of the fourth, fifth, sixth, and fourteenth amendments to the United States constitution. Topics typically covered include: incorporation theory, right to counsel and related entitlements, the exclusionary rule, pretrial identification procedures, search and seizure law, and interrogation law. Students should gain both knowledge relating to constitutional law, which governs the permissible parameters of police conduct and defendants' rights, and an informal sense of how the criminal justice system actually operates.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5060 - INTRODUCTION TO THE STUDY OF LAW

Minimum Credits: 0

Maximum Credits: 0

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5061 - PITT LAW ACADEMY

Minimum Credits: 0

Maximum Credits: 0

This speaker series on lawyers' roles will provide students, at the beginning of their law school careers, with exposure to and understanding of the variety of roles that lawyers play in the profession and society. The series consists of nine programs over the course of the academic year, and first-year students are required to attend at least six of those programs. Each program, moderated by a full-time faculty member, features multiple presenters with law degrees who work in various professional settings, including practicing attorneys with widely varying specialties, judges, or other professionals working outside of law practice. The presentations should help first-year students gain a better appreciation of the practical and intellectual aspects of different professional roles and to preview some of the important personal and professional issues and concerns that may confront them in the course of their careers.

Academic Career: Law

Course Component: Lecture

Grade Component: No Grade Required

Course Requirements: PROG: School of Law (LAWSC)

LAW 5062 - PITT LAW ACADEMY

Minimum Credits: 0

Maximum Credits: 0

This speaker series on lawyers' roles will provide students, at the beginning of their law school careers, with exposure to and understanding of the variety of roles that lawyers play in the profession and society. The series consists of nine programs over the course of the academic year, and first-year students are required to attend at least six of those programs. Each program, moderated by a full-time faculty member, features multiple presenters with law degrees who work in various professional settings, including practicing attorneys with widely varying specialties, judges, or other professionals working outside of law practice. The presentations should help first-year students gain a better appreciation of the practical and intellectual aspects of different professional roles and to preview some of the important personal and professional issues and concerns that may confront them in the course of their careers.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5075 - LEGAL ANALYSIS AND WRITING

Minimum Credits: 4

Maximum Credits: 4

Students in this first year course will begin to develop the art of analytical legal writing. In classes, students engage in discussions and practical exercises as they learn to analyze cases, statutes and other authorities. The course emphasizes student development in the following skills: organizing the analysis of legal issues logically and coherently; expressing written legal analysis clearly, concisely, and effectively; developing and defending legal arguments, both in writing and orally; performing basic legal research; drafting selected legal documents; and using proper citation form. Exercises and other assignments promote the students' awareness and appreciation of relevant ethical standards. Registration in this course is limited to spring term transfer students.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5076 - LEGAL ANALYSIS AND WRITING

Minimum Credits: 4

Maximum Credits: 4

Students in this first year course will begin to develop the art of analytical legal writing. In classes, students engage in discussions and practical exercises as they learn to analyze cases, statutes and other authorities. The course emphasizes student development in the following skills: organizing the analysis of legal issues logically and coherently; expressing written legal analysis clearly, concisely, and effectively; developing and defending legal arguments, both in writing and orally; performing basic legal research; drafting selected legal documents; and using proper citation form. Exercises and other assignments promote the students' awareness and appreciation of relevant ethical standards.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5082 - CLIMATE CHANGE AND THE LAW

Minimum Credits: 2

Maximum Credits: 2

This course examines the problems of climate change and how law and policy and corporate America are responding to them. The course begins by describing what is encompassed under the current "climate change" debate; considering what science can tell us about the climate change issue, including the uncertainties in that science and the significance and role of descent from the mainstream view of the science. It then considers, given the current state of the science, how we should assess the actions that should be taken to respond to this problem. That assessment should take account mitigation vs. Adaptation. The course also considers the legal responses to the issue of climate change. This course will discuss the united nations framework convention on climate change (UNFCCC), the Kyoto protocol, and the likely future of both. This course will discuss the domestic federal legislation with regard to GHGS as well as certain regional initiatives and voluntary commercial GHG reduction schemes. This part of the

course will be examining the "Boomlet" in global warming litigation in federal and state courts looking at the administrative and tort actions pending in U.S. Courts. Finally, the course will address sustainability issues for business, including green building, carbon neutral strategies, certain esoteric accounting issues, some carbon trading issues. Lectures will include voluntary and NGO-driven business initiatives (proactive approaches) as well as certain secondary effects caused by climate change that affect businesses.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5089 - PUBLIC HEALTH LAW

Minimum Credits: 3

Maximum Credits: 3

Public health law touches the lives and livelihoods of every person. Understanding the intent, basic structure, and methods for employing the local, state, and federal laws governing public health activities will facilitate legal practice in a variety of disciplines, including: municipal, healthcare, environmental, and judicial practice. This is a survey course, intended to introduce students to the most commonly encountered national and world public health law issues. Specific topics include: an overview of the epidemiologic principles underlying public health law; police powers; balancing public and private interests at stake; privacy and confidentiality of public health information, emergency preparedness; search, inspection, embargo and condemnation of private property; abatement of nuisances and dangerous conditions; and the major federal statutes affecting public health. In addition, material concerning world public health issues will be presented to help students understand the community health benefit from comprehensive public health legislation. Finally, ongoing local public health law interventions will be analyzed using the basic principles introduced early in the course.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5090 - CONSTITUTIONAL LAW: FREEDOM OF RELIGION

Minimum Credits: 2

Maximum Credits: 2

This course will examine the Establishment and Free Exercise Clauses of the First Amendment to the United States Constitution. We will examine the history and purposes of the clauses. We will also examine the Supreme Court's doctrinal tests to analyze how the Court's theories regarding the clauses have changed over time and how to approach litigation strategy. Classroom discussion will focus on the application of these tests, the limitations of each test, and whether each test fulfills the purposes of the Religion Clauses. We will discuss majority, concurring, and dissenting opinions to flesh out the issues. Throughout the course, we will discuss how the requirements of the Establishment Clause and Free Exercise Clause can be reconciled and whether any of the current tests or theories can provide a workable solution and balance.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5093 - THE LAW OF PROFESSIONAL SPORTS

Minimum Credits: 2

Maximum Credits: 2

Focusing on the 4 major professional sports leagues, this course will examine how the common law, state and federal statutes, and even certain constitutional doctrines have been applied to professional sports franchises, its players and agents, and its fans. The topics for discussion will include: the role and power of the commissioner; the importance of collective bargaining agreements, including uniform player contracts, in the development of a body of law governing the relationship between a player and his club; the current state of antitrust law in pro sports; the agent-player relationship; contract negotiations, including the salary arbitration process; the variety of intellectual property issues applicable to leagues, its teams and its players; the rights (or lack thereof) of pro sports fans, including the application of tort law principles to fan injuries; the attempts by pro-sports leagues and teams to control the off-field behavior of its players, and the approaches by the various leagues to regulate performance enhancing drugs.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5101 - CONSTITUTIONAL LAW

Minimum Credits: 4

Maximum Credits: 4

An introduction to American constitutional law, with an emphasis on U.S. Supreme court decisions. The course will explore various methodologies of constitutional interpretation and modes of constitutional analysis. Topics covered include the role of the judiciary in reviewing acts of the political branches of government; the separation of powers and relations among the three branches of the federal government; the powers of the national government and federalism-based limits on congress and the states; and individual constitutional rights.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5103 - EVIDENCE

Minimum Credits: 3

Maximum Credits: 3

This course is an introductory course on the rules of evidence and will focus on the federal rules of evidence. We will cover hearsay and its exceptions, relevance, the use of character evidence, cross-examination and impeachment, among other subjects.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5105 - FEDERAL INCOME TAXATION

Minimum Credits: 4

Maximum Credits: 4

This course will introduce the basic concepts found in the internal revenue code, as interpreted by the internal revenue service and the courts. We will explore the concept of "income," and specifically consider the difference between ordinary income and capital gain, the timing of income inclusion, and the determination of a taxpayer's basis in property (which relates to the calculation of income). We will also explore exclusions and deductions that may reduce a taxpayer's income. This course has two primary goals: first, to give the students a basic familiarity with the internal revenue code so that they will be aware of tax issues that may arise in their practice, and second, to prepare students who have (or acquire) a deeper interest in tax for more advanced courses in taxation.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5110 - ESTATES AND TRUSTS

Minimum Credits: 3

Maximum Credits: 3

This course provides a survey of the gratuitous, post-mortem transfer of wealth, including the substantive law of wills and trusts. Topics in estate law include probate and non-probate property; intestacy; bars to succession; constructive trusts; mental capacity; disclaimers; will formalities; holographic wills; revocation; integration; republication; revival; incorporation by reference; acts of independent significance; payable on death provisions; and predeceased beneficiaries. Topics in trust law include formation; parties; beneficiaries; resulting trusts; constructive trusts; discretionary trusts; trust protectors; self-settled asset protection trusts; and powers of appointment.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5112 - BUSINESS ORGANIZATIONS

Minimum Credits: 3

Maximum Credits: 3

This elective course surveys the law of modern business organizations, including corporations, limited liability companies, and partnerships. The course covers topics such as business planning, corporate governance, fiduciary duties, shareholder liability and rights, as well as transactions in shares. The course also provides exposure to a variety of subjects, including agency, corporate finance, corporate taxation, mergers and acquisitions, and federal securities laws. No exposure to accounting, economics, or finance is necessary or presumed.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5116 - COMPARATIVE LEGAL CULTURES

Minimum Credits: 3

Maximum Credits: 3

The course is designed to introduce students to the civil law tradition, with specific reference to French and German civil law tradition. Constant reference will also be given to the Italian civil law tradition. The introduction to the civil law will mostly avail itself of comparisons between civil law and common law traditions. This approach will therefore call for a previous investigation on the theoretical underpinnings of "comparative" law as a legal discipline. Emphasis will be placed on the historical ancient and more recent roots that help explaining why civil law systems have developed features that distinguish the two law systems. Attention will also be given to the supposed converging trends between the two legal families. In a world that is globalizing universal structures are on the increase and the exponential growth of technologies poses new challenges that need to be addressed by giving prompt and creative answers, without waiting for legislative solutions. The course will consider topics such as legal reasoning the education of lawyers, the system of the civil codes, the judicial interpretation of statutes, the force of precedents and the role of judicial review. Firsthand experience of the civilian every day legal life will be shared as much as possible. The ultimate goal will be the student not only to "learn" but also, to some extent, to "experience" how civil lawyers approach the law.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

Course Attributes: Global Studies

LAW 5124 - THE CIVIL LAW TRADITION IN U.S. COURTS

Minimum Credits: 3

Maximum Credits: 3

The civil law is the legal tradition of all of continental Europe and many other parts of the world. In our time of globalization, lawyers have increasing contacts with colleagues and clients from abroad. This course is designed to introduce you to the civil law legal tradition, and to familiarize you with foreign legal assumptions, institutions and reasoning through an examination of various areas of law, including civil and criminal. The cases and codifications studied will be principally those of France and Germany. The course also seeks to develop in students a comparative law approach to understanding foreign law more generally.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

Course Attributes: West European Studies

LAW 5126 - CORPORATE FINANCE

Minimum Credits: 3

Maximum Credits: 3

This course examines basic financial aspects of corporate matters. Covered topics include accounting, capital structure, portfolio theory, risk bearing, as well as valuation of derivatives, options, and securities.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 5112 or LAW 5141 ; PROG: School of Law (LAWSC)

LAW 5129 - FEDL COURTS & FEDL LITIGATION

Minimum Credits: 3

Maximum Credits: 3

One of the defining features of the American legal system is federalism, the division of powers between the national and the state governments. This course deals primarily with two recurring problems in civil practice that have their roots in this division of powers. First, do one or both litigants have a choice between federal and state court, and, if so, how can the litigants maximize the likelihood of securing the preferred forum? Second, when does federal law trump state law? A dominant theme of the course is the relationship between legal doctrines and the practical consequences of those doctrines in light of existing (and possible future) institutional arrangements. In particular, defendants in civil cases often prefer federal court; plaintiffs tend to prefer state court. But the rules and doctrines that determine which side gets its preferred forum will often be invisible to the average lawyer. One purpose of this course is to alert students to the pitfalls that can trap the unwary; here, more than in other areas of the law, a little learning can be a dangerous thing. Representative topics include: the prerequisites for Supreme Court review of state-court judgments; elements of federal question jurisdiction; removal of cases from state to federal court; and the power of the federal courts to apply rules of law different from those applied in state courts. Attention will be given to litigation strategy (especially the choice of forum) as well as to critical analysis of the doctrines and statutes. This course will be taught by a sitting Federal Appeals Court Judge who will incorporate his perspective as both a former practitioner and as a jurist.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5132 - LAW AND HUMAN BEHAVIOR

Minimum Credits: 3

Maximum Credits: 3

In order to be effective, lawyers must understand both their clients and the operation of the legal system. Often, legal analysis imbues both clients and the legal system with the qualities of rationality: clients engage in cost-benefit calculations of success and the standard of the legal system is the "reasonable person." Recent developments in the social and natural sciences raise questions about the sufficiency of these models. The standard definition of rationality may be too narrow - a client may want an apology from an adversary rather than just a monetary award - and clients and legal systems do not always act in rational ways. This course will provide students with concrete insights from the social and natural sciences to help them become lawyers better able to assess both clients and the workings of the legal system as a whole. Examples will be drawn from a wide array of legal contexts: from client contacts to jury selection to subtle forms of discrimination to judicial ideology. Emphasis will be on understanding human behavior both as a predicate for effective legal regulation and as a predicate for the values - including economic, ideological, and religious values - that inform voting and legislative determinations. Several school faculty who employ these insights in their scholarship will visit the class to discuss their work. The course's goal is to provide students with a richer set of analytic and practical tools for them to become more effective attorneys in whatever area they may come to practice.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5133 - UNDST LGL SERVC MKTPLC

Minimum Credits: 2

Maximum Credits: 2

Today's increasingly competitive marketplace demands that new attorneys have an understanding of the commercial landscape of the legal services industry as complement to their substantive legal knowledge and as a means towards making a contribution to their firm, company or organization. This course is an exploration of the industry from three perspectives. The first is a birds-eye view that will examine macro-trends in the industry. The second is the view from the demand side of the industry where we will explore the types of issues driving demand for legal services, factors driving the decisions to procure legal services, and how legal services purchasers/users evaluate the services rendered. Throughout the course we will evaluate real-life, contemporary scenarios and interact with practicing attorneys, clients, and judges. The third is the view from the supply side of the industry where we explore the sales, marketing, operations and soft skills associated with the provision of legal services in the law-firm and in-house contexts.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5135 - COMMERCIALIZING NEW TECHS

Minimum Credits: 3

Maximum Credits: 3

The key challenge addressed in this joint project course between the Katz Business School and the Law School is how to commercialize new technologies. Commercialization is the process of transforming an invention (i.e. A new technique or artifact that performs a useful function) into an innovation (i.e. A product or service that creates value in a specific use). Whether a new technology originates in a university, in an established company, or with an individual inventor, several issues must be addressed in order to determine whether it is worth investing in further, and to decide how the technology can be commercialized for maximum long-term value. We will focus on four types of analyses as input to a commercialization strategy: (i) technology analysis, (ii) market analysis, (iii) competitive assessment, and (iii) business model evaluation. For each, you will be provided with one or two practical articles, which outline an analytical tool or approach, and we will discuss their application to one of the cases. Although we'll walk through these steps in the order listed, they will need to be conducted iteratively (e.g. As you learn more about market opportunities you may wish to revisit your initial assessment of the technology's core elements). Throughout the course, law students will have the opportunity to assist the team in assessing legal matters that impact commercialization (from intellectual property matters, to regulatory landscape impacts, to alliance considerations) while also gaining an understanding of key business goals, strategies and tactics.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5138 - FEDERAL APPELLATE ADVOCACY

Minimum Credits: 3

Maximum Credits: 3

This course in federal appellate advocacy will select a recent case on appeal from a circuit court, where certiorari has been granted by the U.S. Supreme court. There will be an emphasis in the course on the federal rules of appellate procedure, an examination of jurisdiction and standards of review. Students will be paired up to write a brief, present oral argument, decide the case and write an opinion. There may be an opportunity to view oral argument before the third circuit in Pittsburgh and arrangements will be made to allow students to visit the U.S. Supreme court to hear oral argument on the selected case.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5139 - TRANSIT LAW

Minimum Credits: 2

Maximum Credits: 2

This is a course on the law and legal principles used to create, operate and maintain mass transportation infrastructure. The focus is on the legal functions and processes used in planning and operating mass transit and the rules and alternatives for spending government appropriated funds. This course gives an overview of regulatory, procurement and grant practice. Also covered are public/private collaboration as well as private sector participation in government assisted or sponsored projects, including the relationships between and among the federal government, state and local governments and the private sector. This course provides an introduction to basic government contracts and regulatory practice in the context of mass transportation.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5142 - LEGAL WRITING FOR THE TRANSACTIONAL LAWYER

Minimum Credits: 2

Maximum Credits: 2

This course will introduce students to the craft of drafting transactional agreements. This course is meant to fill a void that currently exists between formal law school education and actual work as a practicing attorney. Oftentimes, the first experience that young transactional lawyers have with drafting agreements follows a familiar pattern, the young lawyer is given a form as a starting point, then asked to make changes to the form to "draft"

the needed document. The young lawyer may successfully edit the party names and dates, but usually has little understanding of the rest of the agreement or even the basic business terms that the agreement must memorialize. Unfortunately, the realities of modern law practice may preclude inexperienced drafters from taking the time to properly hone their craft. This course will prepare students for entering a transactional practice by allowing students to practice drafting and editing agreements, examine strategies for avoiding ambiguities by crafting precise language, and work in a fast paced, team-oriented environment.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5143 - WATER & SHALE GAS DEVELOPMENT

Minimum Credits: 1

Maximum Credits: 1

Water plays a critical role in the development of our shale gas resources. This course will examine the relationship between water and shale gas extraction. The emphasis will be on the life cycle of water used in shale gas well development, beginning with common law, statutory and regulatory rights and requirements governing the ownership and allocation of water resources, with particular attention paid to interstate compacts and basin wide water allocation mechanisms. The course will place an emphasis on emerging issues that attorneys face in practice and will include guest lectures by hydro-geologists, geochemists, and other professionals. Some of the issues that will be covered include: common law water quantity rights; basin commission water quantity regulations, and their impact on shale development's significant water withdrawals; the application of the clean water act and the state version of it (the clean streams law) to the shale extraction process; treatment and disposal of wastewater; groundwater contamination; local zoning and land use; and trends in shale-based litigation.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5145 - SECTION 1983 LITIGATION: CONSTITUTIONAL LAW IN ACTION

Minimum Credits: 3

Maximum Credits: 3

This is a course in advanced constitutional rights litigation brought pursuant to 42 USC §1983-- the federal statute which puts constitutional rights in action. It focuses on the means by which constitutional rights claims are actually litigated in lawsuits against public officials and local governments. Topics will include what it means to act "under color of state law;" absolute and qualified immunities; government liability for the acts of individual officials; remedies for constitutional violations, including monetary and injunctive relief; structural reform litigation; and the award of attorney's fees. The objective of the course is to provide students with the threshold substantive knowledge-- to be able to bring or defend a § 1983 case--- with the presentation facilitated by using "real-life cases" actually litigated by the instructors-- who between them have over 80 years of combined §1983 federal court trial and appellate litigation experience; and--who accordingly--expect to provide practical insights into how §1983 cases are litigated.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5146 - LANDLORD TENANT LAW

Minimum Credits: 3

Maximum Credits: 3

This course will examine issues relating primarily to the relationship between residential landlords and tenants, including the creation of the tenancy, the rights and duties of the parties, interpretation and application of critical lease provisions, and the framework for prosecuting and defending various types of eviction proceedings based upon a violation of law or breach of lease. Other topics may include discrimination in rental housing, rent regulation, public housing and housing-related public policy initiatives. There will be discussion and analysis of federal, state and local statutory authority and recent case law developments. Students will also have an opportunity to hear from lawyers and judges to get their "real-world" perspective on landlord-tenant practice.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5147 - ADVANCED INTERNATIONAL ARBITRATION

Minimum Credits: 1

Maximum Credits: 1

This one-credit course will cover selected issues raised over the course of arbitration, including drafting of the arbitration clause, initiation of arbitration proceedings, selection of a tribunal and potential challenges, case management, taking of evidence, and post-award proceedings for both challenging and enforcing an award. It will build upon a basic knowledge of arbitration, but will have no pre-requisites. The class will be presented over a one week period in March, with readings required prior to each class session.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

LAW 5149 - LAW OF ARMED CONFLICT

Minimum Credits: 2

Maximum Credits: 2

The Law of Armed Conflict (LOAC), also known as International Humanitarian Law (IHL), is an area of public international law. It is responsible for regulating the conduct of armed hostilities, and balances the desire of states to prevent unnecessary suffering and destruction on one hand with the need to permit the effective waging of battle on the other. LOAC makes special provision for the protection of civilians, prisoners of war, the wounded, sick, and shipwrecked. LOAC applies to international armed conflicts (conflicts between states) and to non-international armed conflicts (conflicts between states and certain non-state groups). This course will explore: how conflicts are characterized (as IACs/NIACs or purely "domestic" actions); the main rules underlying the conduct of hostilities; and how those rules are enforced. Real-world examples and case studies will be used to elucidate theory.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5150 - LAW OF THE WTO

Minimum Credits: 2

Maximum Credits: 2

Trade has become one of the most important areas of international law and policy - particularly since the adoption of the WTO Agreement in 1994. This course will consider the WTO's structure and institutions, its core rules, the exceptions to those core rules and the powerful dispute settlement mechanisms in place to underpin the regime. The course is designed for those who wish to enter trade policy work or practice WTO law in any of its specialties. It will also be helpful for those who wish to enter domestic commercial practice but are nonetheless interested in understanding the international law and policy framework affecting trade between nations.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5197 - ADVANCED TORTS

Minimum Credits: 2

Maximum Credits: 2

An in-depth study of the practical considerations and specialized rules which lawyers need to employ when handling cases such as auto accidents, product liability, medical malpractice, local and state government torts claims, and premises liability. The course will not only concentrate on various types of tort actions, but also on considerations which may be involved in all of those actions such as insurance coverage, emotional distress, bystander claims, damages, apportionment of fault and special duties. The course also will cover tort reform issues.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 5028; PROG: School of Law (LAWSC)

LAW 5200 - INT TO ACCOUNTING FOR LAWYERS

Minimum Credits: 1

Maximum Credits: 1

Introductory accounting for lawyers will provide students with a fundamental understanding of the principles underlying financial accounting. Additionally, students will gain an understanding of the development and analysis of financial statements including the balance sheet, income statement and statement of cash flow. Other topics will include a discussion of financial analysis and financial theory. The course is intended to equip students with the basic mechanics to review and analyze an entity's financial statements, identify significant issues and to form a general familiarity with financial statements to aid in preparing for litigation or assisting with business transactions.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROGRAM: School of Law

LAW 5201 - ADMINISTRATIVE LAW

Minimum Credits: 3

Maximum Credits: 3

It is next to impossible to practice law today without dealing with administrative agencies, federal or state, or the law they create. Indeed, more cases are adjudicated in administrative bodies than in the courts. The substantive law that is created and implemented by agencies is the subject matter of individual courses such as environmental law, securities regulation, taxation, and banking. It is the procedural/structural law that governs the creation and implementation of substantive law by agencies that is the focus of administrative law. We will discuss the different types of functions undertaken by agencies, for example, rulemaking and adjudication in all its forms and how those disparate functions determine the appropriate structure of decision-making. At the federal level, where we will focus our attention, the procedures that apply originate in a variety of sources, including the United States constitution, the administrative procedure act and other statutes, and agency rules. There is often a complex interplay among these sources of law, which will be one of the topics we will explore. Another is the relationship of agencies to the chief executive and the legislature, an area that implicates important constitutional doctrines, statutes, and executive orders. Finally, we will spend considerable time on the availability, timing, and scope of judicial review of agency action, including the doctrines of standing, ripeness, exhaustion of administrative remedies, and judicial deference to agency findings of fact, interpretations of law, and exercises of discretionary power.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5206 - AGENCY AND PARTNERSHIP

Minimum Credits: 3

Maximum Credits: 3

This course introduces principles of agency law and surveys fundamental aspects of partnership-based entities (i.e., General partnerships, limited partnerships, limited liability partnerships). Covered agency topics include actual authority, apparent authority, fiduciary duties, respondent superior, and sub agency. Covered partnership-based entity topics include formation, fiduciary duties, liability schemes, management, and dissolution.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5207 - ANTITRUST

Minimum Credits: 3

Maximum Credits: 3

This course provides an introduction to the law of antitrust. The course examines practices by which firms allegedly eliminate competition among themselves (e.g., Cartels, conspiracies, horizontal mergers), as well as exclude actual or potential competition from their markets (e.g., Boycotts, price discrimination, tying arrangements, vertical integration). The course will cover the Clayton, Sherman, and Robinson-Patman acts. No exposure to corporate/securities law, economics, or finance is necessary or presumed.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5210 - PATENT LAW

Minimum Credits: 2

Maximum Credits: 2

For over two hundred years the United States patent system has stimulated innovation by conveying time-limited exclusionary rights to inventors who adequately disclose their novel and nonobvious inventions to the public. Throughout this time, technological advancements in various industries have repeatedly confronted the patent system with fascinating policy and doctrinal challenges. In a constant effort to keep up with the pace of innovation and ensure that the patent system fulfills its constitutional purpose to promote the progress of useful arts, patent case law has become one of the most rapidly evolving and adapting areas of American law. Through study of judicial decisions and statutory provisions, this course will examine the substantive legal doctrine and policy underlying two primary aspects of United States patent law: (1) the requirements for obtaining a patent; and (2) the means by which an issued patent is enforced (and its validity challenged). Specific topics include patentable subject matter (including computer-implemented inventions and biotechnology), novelty, nonobviousness, utility, loss of right, disclosure requirements, patent claim interpretation, literal infringement, the doctrine of equivalents, prosecution history estoppel, defenses to patent infringement resulting in invalidity and/or unenforceability, injunctive relief, damages, and the unique role of the United States court of appeals for the federal circuit in shaping patent law.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5212 - BUS PLANNING, ENTREP & TECHN

Minimum Credits: 2

Maximum Credits: 2

This course will address key legal and business issues faced by entrepreneurs when establishing a commercial enterprise. Specifically it will address the protection and development of ideas, the commercialization of technology, and the legal and business aspects involved in forming, funding, operating, and managing the emerging business enterprise. The course will be taught from a business planning perspective. Through participation in the course students will be exposed to advanced business law concepts applicable to emerging companies in the business, technology, and medical fields.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 5112 or LAW 5141 ; PROG: School of Law (LAWSC)

LAW 5213 - CONFLICT OF LAWS

Minimum Credits: 3

Maximum Credits: 3

Disputes between parties from different states or countries and disputes having contacts with multiple jurisdictions raise a host of challenging legal questions, including: (1) which jurisdiction's law will govern the dispute; (2) whether and in what circumstances a judgment rendered in one state or country will be recognized and enforced in other jurisdictions; and (3) how courts should make these determinations. State laws, the federal constitution, and international and foreign law all play a role in deciding these issues, which can have a profound impact on the ultimate resolution of the controversy.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5216 - EMPLOYMENT DISCRIMINATION

Minimum Credits: 3

Maximum Credits: 3

This course will examine federal statutory law as it applies to employment discrimination, with an emphasis on discrimination based on race, sex, color, ethnicity, national origin, religion and age. The most prominent statutes in this area are title vii of the civil rights act of 1964, the age discrimination in employment act, and an older civil rights statute from the reconstruction era, 42 U.S.C. §1981. The course will explore the substantive meanings of "discrimination" under these acts, the models of proof for establishing a claim, the theoretical underpinnings of the statutes,

and some of the procedural and remedial issues relevant to employment discrimination law.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5218 - WHITE COLLAR CRIMES

Minimum Credits: 2

Maximum Credits: 2

This course will examine the prosecution and defense of federal white collar crimes, including mail and wire fraud, Rico, criminal tax violations, bank fraud, health care fraud, perjury, obstruction and false statements. Close examination will also be given to the law enforcement techniques used by federal prosecutors in white collar cases, including the grand jury, immunity, search warrants and subpoenas. The fifth amendment self-incrimination privilege and the attorney-client privilege will also be studied. Emphasis will be given to providing students with the background and tools to reason through practical problems faced by white collar practitioners.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5219 - FAMILY LAW

Minimum Credits: 3

Maximum Credits: 3

An introduction to the conceptual and practical issues involved in the modern practice of family law. Topics include: the legal definition of marriage, of family; the rights, powers, duties and obligations among family members; the extent and means of state involvement in the family's conduct of its own affairs; dissolution of the family, and the continuing obligations among family members thereafter; problems of jurisdiction and choice of law.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5221 - JURISPRUDENCE

Minimum Credits: 3

Maximum Credits: 3

"Jurisprudence -- philosophy of law -- explores the nature of law and its role in society. This course tackles classic jurisprudential questions, focusing around what is known as "theory of adjudication" - the theory of how judges actually do decide cases and how they should decide them. Do legal rules and doctrines really constrain legal decision making (and if so, how)? What makes something a legal rule? Is there some necessary connection between law and morality (perhaps inherent in the concept of rights)? Is judicial decision-making really different from political decision-making (and if so, how)? Most of our readings will be from twentieth- and twenty-first century writers: legal positivists (e.g., H.L.A. Hart), natural law theorists (e.g., Ronald Dworkin), legal realists (e.g., Felix Cohen and Karl Llewellyn), and critical theorists (e.g., Duncan Kennedy and Patricia Williams). But we will also dip into some older classics, e.g., William Blackstone and Jeremy Bentham. Some of the reading will be challenging, but no prior experience with either jurisprudence or philosophy will be assumed. What will be useful is the knowledge of legal doctrine and decision making that you've acquired in law school so far. We will look back at some of the classic cases that you read in con law, civil procedure, and property and see how they reflect different jurisprudential approaches. In fact, at some point in the semester you will probably find yourself thinking something like, "So that's what Professor X was trying to get at when we read that case"! We will also look at how jurisprudence informs current political and social issues in legal decision making. For instance, consider those driverless cars you see all around Oakland. Besides being programmed to avoid collisions, they must be instructed to follow traffic laws. Exactly what should those instructions entail? When you have finished this course you won't be writing briefs that say, "you should rule for me because the legal positivists say so." But in another sense jurisprudence is of immense practical use: Jurisprudence brings to the surface conflicting assumptions lurking within different legal arguments and conclusions. When you learn to recognize those ideas, you understand something about how legal decision making operates on a deep level, and that makes you a better lawyer."

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5223 - ADVANCED TRIAL EVIDENCE

Minimum Credits: 2

Maximum Credits: 2

This course will focus on evidentiary issues that arise frequently in trials. Each week a vignette or series of vignettes, which address common trial evidence situations, will be assigned. The vignettes will be based on case files, in order to provide continuity throughout the course and for students to see the impact of evidentiary rulings on continuing cases. Each student will be responsible for weekly written assignments, which may include motions in limine or outlines of direct and/or cross-examination of the witness(es) for vignettes(s). Each student will also be responsible for preparing to offer timely and well-stated objections to the evidence sought to be introduced. Students will be required to understand the rationale for both the introduction of evidence and the objections thereto.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 5103; PROG: School of Law (LAWSC)

LAW 5224 - INSURANCE

Minimum Credits: 3

Maximum Credits: 3

The course will focus on insurance law and theory and the role of the state and federal courts in shaping insurance law based on perceptions of public policy (e.g., Should public policy preclude coverage for punitive damages? For intentional torts? For "criminal" acts that result in unintended consequences?). The course will survey significant categories of insurance, particularly liability and property insurance, as well as life, automobile, reinsurance, and the duties of liability insurers to defend their insureds in lawsuits and to make reasonable settlements of claims against their insureds. Insurance concepts will be examined in the context of recent events, such as the world trade center attack.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5225 - INTERNATNL BUSINESS TRANSACTIONS

Minimum Credits: 3

Maximum Credits: 3

This course analyzes basic international business transactions and the effects of U.S. Law, specific foreign law, and treaties on the conduct of the parties involved. The course covers issues of commercial law, regulation of cross-border transactions, dispute resolution, tax considerations, and antitrust law. Although a basic understanding of each of the areas of the law in the domestic context is helpful, there are no course prerequisites. Students are expected to develop an understanding of the U.S. Laws applicable to private international transactions and an awareness of the risks inherent in doing business in or with other countries and their nationals.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

Course Attributes: Russian & East European Studies

LAW 5226 - INTERNATIONAL LAW

Minimum Credits: 3

Maximum Credits: 3

This course explores how international law regulates, or attempts to regulate, relations between states, and between states and individuals. It therefore examines both classical and contemporary topics such as the sources of international law, rights and responsibilities of states, jurisdiction, the incorporation of international law into domestic law, individuals as bearers of rights and obligations at the international level (in particular human rights law and humanitarian law), the law of treaties, the law on the use of force and the role of the United Nations and the International Court of Justice in the peaceful settlement of international disputes. Several specific topics will be examined to illustrate the increasing impact of international law on domestic legal practice, and the influence of the United States on the development of modern international law.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: Global Studies, West European Studies

LAW 5229 - ADVANCED TOPICS IN PATENT LAW

Minimum Credits: 2
Maximum Credits: 2
Academic Career: LAW
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5232 - LEGAL PROCESS IN LATIN AMERICA

Minimum Credits: 2
Maximum Credits: 2
The purpose of this course is to provide an introduction to the legal tradition and legal systems of Latin America. The course begins with a consideration of the historical and formal sources of the civil law and the reception of the civil law tradition in Latin America. Thereafter, particular attention is paid to selected aspects of the legal process, constitutionalism, and other areas of law in various Latin American republics.
Academic Career: LAW
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5236 - PRE-TRIAL PRA-PLEADINGS DISCV

Minimum Credits: 2
Maximum Credits: 2
This course will focus on pre-trial practice issues that arise during the pleading and discovery phase of a civil case. Students will learn about a variety of substantive issues under federal and state law including pleading requirements the scope of discovery, various forms of discovery, privilege issues, and many other related issues. In addition to those and other substantive issues, great emphasis will be placed on giving students the opportunity to draft pleadings, argue discovery motions and take oral depositions.
Academic Career: LAW
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5242 - PATENT LAW PRACTICE

Minimum Credits: 2
Maximum Credits: 2
A course designed for students with a special interest in patent law, and for those students preparing to take the patent bar examination. Students are taught claim drafting, rules of practice and procedure followed by the United States patent and trademark office, how to draft patent documents and how to write a patentability search report.
Academic Career: LAW
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5245 - SECURED TRANSACTIONS

Minimum Credits: 2
Maximum Credits: 2
This course focuses on security interests in personal property, which are governed by article 9 of the uniform commercial code. Related sections in articles 1 and 2 will also be examined. The course primarily deals with the creation, perfection, priority and enforceability of security interests in

personal property and fixtures, although it also deals with rights of secured creditors generally. The course examines: (1) the rights and remedies of the secured creditor and the debtor; (2) the mechanisms and law underlying obtaining perfected interests in collateral; and (3) the priority of the secured creditor over others such as other article 9 security interests holders, the bankruptcy trustee, sellers, buyers and federal tax liens. The treatment of secured parties in bankruptcy proceedings will also be covered.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5246 - SECURITIES REGULATION

Minimum Credits: 3

Maximum Credits: 3

This elective course surveys the legal and regulatory framework for publicly traded securities. The course covers the securities act of 1933, the securities exchange act of 1934, and state "blue sky" laws. This course focuses on procedural and substantive aspects of registration, distribution, and trading of securities. No exposure to accounting, economics, or finance is necessary or presumed. Students are not permitted to take this course unless they already have taken business organizations.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5251 - BIOTECHNOLOGY LAW

Minimum Credits: 2

Maximum Credits: 2

Virtually every aspect of our lives is touched by biotechnology, so this class is designed as an introduction to many of the critical issues related to biotech and society. Specific topics include genetically modified organisms (Franken foods), patenting life, vaccination laws, human and animal testing, bioterrorism, biological weapons laws, bio-prospecting, pharmaceutical pricing, FDA laws, as well as scientific (and investor) fraud in biotech. The class also focuses on the policy relationships between law and public health, as well as related underlying economic incentives that can create tension in the life sciences. The class includes a number of guest speakers from industry including biotech licensing professionals and an FDA practice attorney. This class will be useful for anyone planning to practice law related to the life sciences including patent law. The issues are presented in a non-technical manner so the class is accessible to anyone interested in the field. It may be helpful to have exposure to patent law in general but it is not required.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5252 - INT'L & EURPN LABOR MARKTS LAW

Minimum Credits: 2

Maximum Credits: 2

This course examines international and European labor markets law, including how the "European social model", as opposed to the Anglo-Saxon or American model, which has generated European union wide standards for employment and labor protection. While the course begins with an introduction to the international labor organization, the bulk of the course focuses on the European union as the cradle of pan-European labor and employment law. The course begins with the basic constitutional framework of the EU, and the essential characteristics of EU-law, including the pseudo-federal nature of the EU, supremacy of EU law, the theory of enumerated powers and subsidiarity, and the functioning of the European court of justice as a genuine supreme court. This is followed with a historical overview of the political and legal roots of the famed European social model, with particular emphasis on its international origin. In its institutional section, the course will explain the position of social policy in the founding treaties and the emergence of a European labor movement complete with European-wide collective bargaining agreements. In its substantive part, the course will address relevant and topical issues with a focus on business relevance, such as employee protection in a transfer or restructuring of companies, information and consultation rights, the European company, and the exponential rise of employment discrimination law.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5253 - TRANAT LITIGATN CRT AROND WRLD

Minimum Credits: 3

Maximum Credits: 3

This course covers the basic concepts a U.S. lawyer needs to understand when practicing law with an international dimension. The coverage will extend from U.S. understandings to that of foreign courts, including issues of discovery abroad, foreign understandings of relevant legal concepts, and international arbitration.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5258 - CAPITAL PUNISHMENT, THRY & PRA

Minimum Credits: 2

Maximum Credits: 2

There are few areas of law whose jurisprudence has been fully developed within a period of the last forty years. Eighth amendment jurisprudence relative to the death penalty in the United States is such an area of law. We will explore how the United States supreme court has approached the development of this jurisprudence, and include within our examination some elements of due process as well, to see how the court, out of whole cloth, has created a practical jurisprudence for analyzing the constitutionality of capital punishment, and why the court was motivated to do so. This jurisprudence provides students with a window to the tug between justices who view the constitution as a 'living' document that adapts to the times and the society, and those who view the constitution as a static outline of the powers of respective governments within a federal system to be understood as the framers of the document would have understood it. Additionally, this jurisprudence provides students with a window to the strengths and weaknesses of a federal system in which the interplay between the power of the federal government and the power of the state governments must be understood and respected, even within the context of a constitutional jurisprudence that recognizes the imperative of the supremacy clause.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5259 - ESTATE AND GIFT TAX

Minimum Credits: 3

Maximum Credits: 3

This course involves a study of the federal transfer taxes imposed on gifts and estates. With respect to the gift tax, we will explore the transfers that are subject to tax as well as the annual exclusion and gifts to minors. With respect to the estate tax, we will explore the transfers (both during life and at death) that are included in a decedent's "gross estate," as well as certain of the deductions that are available to reduce the size of the gross estate (and, ultimately, the estate tax owed).

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5260 - INTELLECTUAL PROPERTY

Minimum Credits: 3

Maximum Credits: 3

In the information age, intellectual property (IP) law has taken on even greater significance. IP law is designed to encourage the production of certain forms of information by granting property rights to the producers, enabling them to appropriate the value of the information they produce. In this course, we survey state intellectual property law (e.g., Unfair competition and trade secrets) as well as federal intellectual property law including trademark, patent and copyright. We examine some of the ramifications of recent technological developments on intellectual property law and some of the problems of international protection of intellectual property.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

Course Attributes: Global Studies

LAW 5265 - LABOR LAW: PRIVATE SECTOR

Minimum Credits: 2

Maximum Credits: 2

This course, after a short review of American labor history, will focus almost exclusively on the national labor relations act, the nation's premier statute dealing with labor management relations in the private sector, and the model for many public sector state laws covering the field. The course deals with the rights of individual employees, employers, and unions with respect to concerted activity, unionization, the establishment of collective bargaining units, elections conducted by the national labor relations board, and the collective bargaining process. The course will also cover strikes, picketing and hand-billing by unions, the current restrictions or limitations on such conduct, and the administration of collective bargaining agreements, grievance processing, and the arbitration of disputes. We will study and critically examine procedural and substantive case law developed by the national labor relations board, and its impact upon labor-management relations in both unionized and non-union environments. The course concludes with a discussion of the future of labor relations. We will discuss more recent tactics employed by unions and management and engage in a debate as to whether and how the current labor laws should be amended. Classes will be a combination of both lecture and dialogue. We also will discuss critical issues with representatives from Pittsburgh's union and business communities.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5268 - CONSTITUTIONAL LAW 2: GOVERNMENT POWERS, FEDERALISM AND THE PRESIDENCY IN THE TRUMP ERA

Minimum Credits: 3

Maximum Credits: 3

This upper-level constitutional law course advances issues raised by the structural parts of the United States Constitution, as opposed to individual rights. Attention will be given to the relationships of the three federal branches of government, with emphasis on some of the powers and limitations of the executive, legislative and judicial bodies that arise from principles of separation of powers and national checks and balances. The course will also consider federalism and the respective roles of the national and state governments in some detail. These structural aspects of the Constitution will be discussed against the backdrop of the Trump Presidency, including, but not limited to, questions concerning judicial processes of indictment, Presidential pardons, the Emoluments Clause, the 25th Amendment, plenary powers over foreign affairs, the constitutionality of an international wall, congressional impeachment processes, and the legitimacy of sanctuary cities. Students will be expected to discuss the issues in a dispassionate, civil and academic fashion.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5272 - BANKRUPTCY

Minimum Credits: 3

Maximum Credits: 3

The study of bankruptcy law is the study of how the prospect and availability of bankruptcy affects legal relationships; therefore, bankruptcy attorneys must understand the full range of law, to determine the impact an insolvency proceeding has on the parties in interest and community at large. This course provides an introduction to federal bankruptcy law under the bankruptcy code of 1978 as amended, title 11 U.S.C.A. the code was substantially changed in 2005 and the course will deal with the revisions. The course focuses on substantive provisions of the bankruptcy code that apply in all varieties of bankruptcy proceedings and some of the associated rules of procedure. Covered topics include eligibility for federal bankruptcy relief; commencement of bankruptcy proceedings; jurisdiction and procedure; defining property of the bankruptcy estate; the automatic stay; adequate protection; discharge and discharge ability of debts; priorities; allowing, valuing and estimating claims; selected issues usually encountered in business, such as executory contracts and leases; the trustee's avoiding powers; set-off and recoupment; professionals. The course proceeds by analysis of problems and cases. Familiarity with the law of secured transactions (especially article 9 of the uniform commercial code) is necessary.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: CREQ: LAW 5245 or 5360; PROG: School of Law (LAWSC)

LAW 5273 - STATE AND LOCAL TAX

Minimum Credits: 2

Maximum Credits: 2

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: CREQ: LAW 5105; PROG: School of Law (LAWSC)

LAW 5275 - INT'L & FOREIGN LEGAL RESEARCH

Minimum Credits: 1

Maximum Credits: 1

Finding the law of foreign places, knowing the resources produced by international entities, and searching within the variety of documents that govern our world can qualify you for some of the best jobs in the legal market. In this one credit course you will acquire those skills while completing five short research projects and compiling your own vade mecum for future reference.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

Course Attributes: African Studies

LAW 5276 - PATENT LITIGATION

Minimum Credits: 2

Maximum Credits: 2

This is an advanced, participation-oriented course that addresses issues that arise in patent litigation. The participation activities will include preparation and argument of preliminary and procedural motions, discovery practice, for example, preparation of protective orders, written discovery, participation in mock depositions, and preparation and argument of pretrial and dispositive motions, and a brief introduction to trial and appellate work in patent cases. Class time will involve both lecture and discussion, with substantial time devoted to mock situations using an adversarial team structure.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 5209 or LAW 5242 or LAW 5260; PROG: School of Law (LAWSC)

LAW 5282 - NATIONAL SECURITY LAW

Minimum Credits: 2

Maximum Credits: 2

The Preamble to the U.S. Constitution, which famously begins "We the People," makes clear the high value our founders placed on national security and the role of law. The Preamble describes the Constitution's very purpose as including "establish[ing] Justice, insur[ing] domestic Tranquility, provid[ing] for the common defence,... and secur[ing]... Liberty." Today, national security remains a priority responsibility for our federal leaders. Our nation continues to strive for the right balance between security and liberty, mixed with a healthy dose of Justice, all in the name of "form[ing] a more perfect Union." The Constitution has continued to provide a framework for our government's exercise of national security powers. At the same time, the field of national security law has witnessed rapid growth and significant change, particularly over the past fifteen years. The coming years will be no less dynamic. This course examines national security law through a study of essential legal sources, historical precedents, and current and emerging national security issues. Topics include: each branch's role (and limitations) in national security decision-making, war powers and military force, crime and counterterrorism, and the role of information in national security. Together, we will aim to better understand the role of law in keeping our homeland safe, and the relationship (and necessary balance) between security, liberty, and justice.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5283 - MENTAL HEALTH LAW

Minimum Credits: 2

Maximum Credits: 2

This course provides an introduction to the laws and issues that affect individuals with mental illness, many of whom find themselves in the criminal or civil justice systems. Emphasis will be on the issues surrounding civil commitment and the emerging use of treatment courts on the criminal side. This will require a review of Pennsylvania's mental health procedures act and other state and federal statutes, cases, and regulations. Students will be permitted to attend a session of mental health court.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5284 - HEALTH CARE COMPLIANCE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5288 - TAX CONTROVERSY PRACTICE

Minimum Credits: 3

Maximum Credits: 3

This course will walk students through the representation of a client during various administrative and judicial proceedings concerning compliance with federal tax law. Students will become familiar with the rules for practicing before the Internal Revenue Service (IRS) as well as the Rules of Practice and Procedure for the United States Tax Court. In addition, students will consider ethical issues that arise while representing clients before the IRS. During the semester, students will advise their clients with respect to an IRS examination, prepare a Tax Court petition, draft other documents and filings associated with a Tax Court proceeding and the collections process, and prepare an administrative ruling request. Each student will be responsible for weekly reading and research assignments as well as periodic written assignments including client communications, communications with the IRS, and Tax Court filings.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: CREQ: LAW 5105; PROG: School of Law (LAWSC)

LAW 5290 - EMPLOYMENT LAW

Minimum Credits: 3

Maximum Credits: 3

This course discusses select areas of employment laws and considers both legal principles and their applications. (The course will not cover labor law.)

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5291 - M & A TRANSACTION PRACTICE

Minimum Credits: 2

Maximum Credits: 2

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 5112 or LAW 5141

LAW 5294 - MINING LAW, HISTORY & PRACTICE

Minimum Credits: 2

Maximum Credits: 2

Mining law may seem a niche area- a "world apart which one can quite easily go through life without ever hearing about," as George Orwell said of mining-however, it is a unique combination of administrative law, employment law, contract law, tort law, and health and safety regulatory law. Federal regulatory agencies are increasingly the site of where the action is, and using mining law as a means of understanding this vast area of law will be of use to all students.

Over the period of this course, students would be introduced to the three primary aspects of mining law: 1) The history of mining, mining disasters, and passage of mining legislation in the United States; 2) Key elements of federal mining legislation; 3) The interpretation and evolution of mining law in the Commission and Courts.

Academic Career: LAW

Course Component: Lecture

Grade Component: GradLG/SU3

Course Requirements: PROG: School of Law (LAWSC)

LAW 5295 - EXPERT WITNESS

Minimum Credits: 2

Maximum Credits: 2

In recent years, the use of expert witnesses has proliferated as both civil and criminal litigation have become more complex and technical. In this course, students will learn when expert testimony is needed; where to find appropriate experts; how to work with the expert to develop a theory of the case; and many more issues leading up to the actual trial of the case. Once the case reaches the courtroom, students will learn how to organize and present their own expert's testimony in a clear and concise fashion, and how to pursue the challenging task of "doing battle" with the opposing expert. In the end, students will achieve a greater appreciation for the subtleties of expert testimony, while at the same time acquiring the tools to deal with witnesses who speak in technical and unfamiliar language.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5296 - CORPORATE GOVERNANCE

Minimum Credits: 2

Maximum Credits: 2

This course will examine the internal structures, processes and standards of behavior that are required by law in the governance of corporate organizations, utilizing a series of hypothetical problems. Particular attention will be given to the corporate director's duties of oversight, care and loyalty, to the shareholders' ability to enforce those duties, and to the concept of fiduciary "independence." Some features of the Sarbanes-Oxley act of July 2002 and related rules will also be considered.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5297 - WORKERS' COMPENSATION

Minimum Credits: 2

Maximum Credits: 2

This course deals with the law, theory and practice of workers' compensation under state and federal administrative programs, including the Pennsylvania and other state acts; longshore and harbor workers' compensation act (LHWCA); federal employees' compensation act (FECA); and the federal employers' liability act (FELA). The student will study the essential aspects of such laws, including their development and purpose,

coverages, the various levels and varieties of benefits provided and how claims are established and enforced. Special emphasis is placed on how such laws affect the rights of individuals to other remedies such as the ability to sue in tort or assert discrimination claims; how compensation programs are implicated in contemporary efforts to reform healthcare coverage and delivery; and the role workers' compensation plays in occupational safety and health. The student will become familiar with the uniform policy of insurance for compensation coverage and how compensation coverage and other regulatory requirements are policed by governmental authorities. A pervasive theme of the course is the status of workers' compensation as a unique hybrid of administrative law and tort, with the consequent effects of such status on the law, theory and practice of the field.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5298 - LAND, RACE AND PROPERTY RIGHTS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5299 - CONTEM CHIN LGL INSTN US LAWYR

Minimum Credits: 2

Maximum Credits: 2

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5300 - FOOD AND DRUG LAW

Minimum Credits: 1

Maximum Credits: 1

The U.S. Food and drug administration has the regulatory mandate to protect the American food supply, and to ensure that drugs are safe and effective for the purposes for which they are prescribed. This course will survey selected topics in food and drug law, including the new drug approval process, regulation of food additives and carcinogens, food labeling and nutrition, prescription vs. OTC drug status, and restrictions on pharmaceutical marketing. Related legal standards affect all of us as consumers in everyday life, and have even greater impact in circumstances like end-of-life decision making. In examining food and drug law issues, we will focus on the tension between information gathering, risk regulation, and paternalism as themes in FDA policy making.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5303 - COMMERCIAL PAPER AND BANKING

Minimum Credits: 2

Maximum Credits: 2

This course will examine the law and practice concerning payment systems. The course examines the state and federal laws and cases governing negotiable instruments such as promissory notes and checks (articles 3 and 4 of the uniform commercial code, reg cc, and check 21), letters of credit (UCC article 5 and uniform customs & practices 600), electronic funds transfers and credit and debit cards (UCC article 4a, the federal electronic funds transfer act, expedited funds availability act, truth in lending act, the consumer credit protection act and the various applicable regulations, such as reg cc, reg e, reg z and reg j).

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5304 - COMMERCIAL TRANSACTIONS

Minimum Credits: 3

Maximum Credits: 3

This course explores the primary U.S. Legislation governing agreements to transfer an interest in goods -- article 2 of the uniform commercial code. It emphasizes aspects of UCC article 2 that are not covered in the first year contracts course. Subjects covered include applicability of article 2, selected contract formation rules; warranties; acceptance, rejection and revocation of acceptance of goods; risk of loss; excuse for failure to perform; and remedies for breach.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

Course Attributes: Global Studies

LAW 5308 - EDUCATION LAW

Minimum Credits: 3

Maximum Credits: 3

Consists of detailed considerations of selected practical and theoretical legal problems in the area of education. Among the topics will be student discipline and student rights; the rights and duties of professional personnel under probationary and tenure appointments; selection of school board members; powers and duties of the board of education; internal and external authority with respect to such issues as curriculum, admission, and purpose. Involves extensive constitutional analysis of the appropriate balance among divergent need of the state, the family and the child.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5311 - LAW AND ETHICS OF LAWYERING

Minimum Credits: 3

Maximum Credits: 3

The usual vantage point of the law student and the lawyer is one outside the system of law. Law is something we study, shape, use, support, attack, change, or act upon in one way or another. But this vantage point is an illusion. This course examines the boundaries of that illusion. It seeks to make manifest what has been implicit all along: we, too, lawyers and law students, live within a world of law that demands our attention and response-a world of law that shapes our identities and relationships, threatens our disobedience with sanctions, and expresses some sense of the collective morality through which we can test our personal morality and commitment. The course examines the content of the law that governs the conduct of lawyers, including for example, agency law, criminal law (what constitutes aiding and abetting a client's fraud?), Tort law (duties to clients and to third parties), civil procedure (the demands of rule 11), and the codes of professional responsibility. It examines the world that law creates, and in which it operates: the criminal justice system, a corporate boardroom, law firms, and the law school.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5313 - REPRDCTV LAW & POLICY

Minimum Credits: 2

Maximum Credits: 2

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5319 - LAWYERS IN AMERICAN CULTURE

Minimum Credits: 3

Maximum Credits: 3

Lawyers like to think of themselves as members of one of the most helpful and important professions in American society. All too often, however, we encounter suspicion, derision or open hostility, not to mention nasty jokes. Public and private criticism of lawyers in the United States has become noticeably more intense in recent decades, but we have rarely attempted to survey its range, explore its roots, assess its legitimacy, or evaluate our own responses to it. This course proposes to do these things by examining characterizations and representations of lawyers in American culture from colonial times to the present day. We will relate changing views of American lawyers and lawyering to shifting social and professional circumstances; we will also explore the impact of those circumstances on fictionalized depictions of lawyers in American plays, novels, films, radio and TV, humor, art and song. We will consider what members of other prominent groups in American society, from 17th Puritan clergy to 20th century businessmen ' have said or alleged about lawyers. We will also discuss how, where and with what effect lawyers have presented, promoted and defended themselves before the American public. We will conclude the course by considering how lawyers might learn from past experience and leverage the opportunities and challenges of 21st century law practice to restore or at least improve their public standing.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5320 - LITIGATION STRATEGY & PLANNING

Minimum Credits: 2

Maximum Credits: 2

This course will focus on the planning that a litigator must do throughout the life of a case in developing strategies for the conduct of the litigation. It covers in part taking a case, anticipating pretrial procedures, preservation of evidence, deciding on causes of actions, obtaining expert witnesses, discovery strategy, motions practice, development of trial themes, demonstrative evidence, jury selection, order of witnesses, and settlement considerations.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5324 - INSURANCE

Minimum Credits: 2

Maximum Credits: 2

Among the topics to be covered are the nature and function of insurance, insurance contract formation and meaning, and insurance regulation. Some specific attention will be paid to particular types of insurance, including fire and first party insurance, life insurance, liability insurance, and automobile insurance. Additional issues considered include coordinating multiple coverages and the secondary markets. Some special emphasis is placed upon toxic tort and environmental coverage cases.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5325 - FEDERAL TAX PRACTICE & PROCEDURE

Minimum Credits: 2

Maximum Credits: 2

This course will be conducted by two experienced practicing tax lawyers. The principal subject matter will be an examination of federal tax practice and procedure with particular emphasis upon issues of current importance and interest to tax counsel. The faculty will also cover material relevant and important to students who participate in the law school's low income tax clinic. In addition to procedural matters, the course will delve into matters of tax policy and issues of particular current interest in tax litigation and tax enforcement.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 5105; PROG: School of Law (LAWSC)

LAW 5328 - COPYRIGHT

Minimum Credits: 3

Maximum Credits: 3

Copyright law deals with legal protection for certain kinds of expressive work -- literature, music, film, photography, and computer software, among other things -- which is an essential element of modern culture, knowledge, and communication. The copyright law course will teach you about the many roles that copyright law plays in constructing businesses, markets and other institutions for creating, distributing, and consuming that work. For authors and publishers, how does copyright law help them make money based on their creative works, or based on others' creative works? For readers and consumers and society as a whole, how does copyright law preserve the power to access and use knowledge? The course will teach those things in the context of teaching the skills of copyright lawyering. How do practicing lawyers work with clients? How do practicing lawyers develop and exercise professional judgment? How do practicing lawyers solve copyright problems? The course will put students in the role of practicing lawyers and teach them to think, write, and act as lawyer's generally and especially as copyright lawyers.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

Course Attributes: Global Studies

LAW 5330 - EMPLOYEE BENEFITS

Minimum Credits: 3

Maximum Credits: 3

This course examines the law of employee retirement benefits as well as welfare benefits, chiefly health care benefits. The course will focus on the federal employee retirement income security act of 1974 (Erisa). Close attention will be paid to the statute and the case law that has developed to explain and apply that statute. Classes will feature detailed discussions of the relevant statutory provisions and the resulting case law. Students will be expected to discuss the statute, cases and the problems in the assigned case book. The course is designed to make students understand how federal law governs and protects pensions, retirement benefits such as 401(k) plans, and health care benefits for employees, retirees and their spouses and dependents.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: CREQ: LAW 5110 and (LAW 5112 or LAW 5141); PROG: School of Law (LAWSC)

LAW 5336 - LAND USE

Minimum Credits: 3

Maximum Credits: 3

The objective of this course is to provide students with a basic introduction to the mechanics and legal theories underlying land use controls. The course will strive to go beyond the theoretical by presenting a series of guest speakers (ranging from judges and zoning officials to land use planners and civil and transportation engineers) who deal with land use issues on a daily basis. Students will also be provided an opportunity to observe zoning board and court proceedings first hand and prepare class projects and papers based upon these proceedings. The course will emphasize the inter-relationship and conflict with environmental regulations. Class discussions and projects will focus upon recent judicial and legislative developments in land use law.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5339 - LAW OF DISABILITY DISCRIMINATION

Minimum Credits: 2

Maximum Credits: 2

This course will provide in-depth analysis and discussion of the major federal disability discrimination statutes, including the Americans with

disabilities act, the individuals with disabilities education act, and section 504 of the rehabilitation act. Readings and class discussions will focus on the application of these laws to issues such as employment, public accommodations, education, architectural barriers, transportation and insurance. The course will explore how disability discrimination statutes interact with other statutes, such as the social security act, the family and medical leave act, and the genetic information nondiscrimination act.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5340 - ENVIRONMENTAL LAW

Minimum Credits: 3

Maximum Credits: 3

This course focuses on domestic environmental law and, in particular, on federal law rather than state law. The diverse and technical nature of modern environmental law is such that, in practice, lawyers often specialize in very narrow areas. Nevertheless, the same or similar moral, scientific, and policy arguments familiar to one area of the law are found in many of the others and similar regulatory approaches have been adopted or proposed for adoption to deal with very different types of environmental hazards. This course will focus its attention on the clean air and water acts, the national environmental policy act, the resource conservation and recovery act, the comprehensive environmental response, compensation, and liability act, and wetland protection, with passing coverage of various federal public land management statutes. We will explore the basic regulatory and non-regulatory approaches currently in place, including market-based systems to achieve better environmental quality, as well as proposals for changes to those approaches. A significant portion of the course will also be devoted to exploring issues presented by government and citizen suit enforcement of environmental laws. While administrative law is obviously relevant to much of environmental law given the fact that it is agencies which make and administer the law involved, the course will offer students an overview of administrative law principles which will be sufficient background for the purposes of this course.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

Course Attributes: Global Studies

LAW 5347 - ELDER LAW

Minimum Credits: 3

Maximum Credits: 3

Elder law examines the aspect of aging that impact law and public policy. The law attempts to protect the elderly and grants rights and privileges to them. In this course we will examine and evaluate the interplay of law and public policy as we survey significant legal issues and governmental programs such as social security, Medicare, Medicaid, long-term care, guardianship and mental capacity, and other selected topics.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC) CREQ: LAW 5110

LAW 5350 - EU FROM AN INTERNATIONAL LAW PERSPECTIVE

Minimum Credits: 3

Maximum Credits: 3

As the European Union deals with the withdrawal of existing members and other threats to its continuation in the current form, an understanding of the EU and its impact on the international arena is more important than ever. This course will introduce both undergraduate and law students to the EU and its policy framework from an International law perspective. It will provide a basic but critical understanding of the historical, institutional, constitutional, and substantive law dimensions of the EU and of the sui generis character of the Union legal order. It will also explore fundamentals of EU business law and the legal challenges that non-Member State businesses face when entering the EU market. The course will begin with a general introduction to the history, institutional structure, and competence of the EU. It will cover sources and principles of EU Law and their status within Member States. The course will then examine the relationship between EU law and public international law, including the status of the EU as a sui generis legal order, and the rising role of the EU as a co-creator of the international legal order. The third part of the course will deal with the fundamentals of European business law in an international setting.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5351 - INTRO TO EUROPEAN UNION LAW

Minimum Credits: 3

Maximum Credits: 3

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5355 - NON-PROFIT ORGANIZATIONS

Minimum Credits: 2

Maximum Credits: 2

This class will survey the state and federal laws governing nonprofit tax exempt organizations. The course will examine the formation of nonprofit corporations under the Pennsylvania nonprofit corporation law of 1988, principles of corporate management, and options for fundamental organizational change. In addition, the course will analyze the process of qualifying for exemption under the internal revenue code and under the laws of Pennsylvania. Issues of private inurement, unrelated business income, charitable giving and fundraising regulations will be discussed. The course will include statutory and regulatory analysis, selected case law and case studies based on actual NPO's.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5359 - WORKERS' COMPENSATION PRACTCM

Minimum Credits: 2

Maximum Credits: 2

The student undertakes this practicum concurrently with the workers' compensation course taught by adjunct professor Torrey. The practicum is not a requirement of the workers' compensation course. The workers' compensation course provides the student with an exposure to the history and theory of the law, a survey of the different state and federal systems, and the manner in which employers insure for workers' compensation. The practicum works as a supplement, and provides the student with firsthand exposure to and activity in the field. The student will observe lawyers meeting with clients and evaluating their cases. In addition, the student will learn how lawyers communicate and/or work with physicians, and how employers contesting claims obtain and present rebuttal medical evidence. The student will be introduced to the practice of taking trial depositions of medical and other experts, and have the opportunity to attend a deposition to observe attorneys at work. The student will also have the opportunity to attend hearings and observe the procedures of the opposing attorneys and the judge. In addition, the student will gain an understanding of the specific petitions that are advanced by the worker prosecuting the claim and the employer and/or insurance company that has contested entitlement. The participant in the practicum will be instructed in how to prepare written legal argument to the workers' compensation authorities, and briefs to the appeals courts. The student will also gain exposure to current practices surrounding evaluation of workers' compensation cases for possible lump sum settlement.

Academic Career: LAW

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5360 - SECURED TRANSACTIONS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5364 - ADVANCED BANKRUPTCY

Minimum Credits: 3

Maximum Credits: 3

Lectures on chapter 11 issues and procedures will set the stage for what is going to happen in the class. Practicing attorneys or other professionals will be invited when the issues involve direct participation with a client and decisions that must be made from the business or legal side of the case. Lectures will cover the theoretical underpinnings to the bankruptcy code and rules, as applicable, and illustrate the points with appropriate case law. Discussion will cover the nature of chapter 11 reorganization, kinds of relief available in business cases, need for cash, why certain motions are needed early in the case whereas others wait, how the business issues interplay with the bankruptcy case, pre and post filing issues, solicitation of creditors committee, plan negotiation process and more. Students will be required to read and analyze the relevant statutory text and rules and relevant cases. They will be assigned certain drafting work and/or papers to write regarding the issues involved. "Papers" may take the form of legal briefs. Each student will be required to argue on behalf of a "client" an assigned topic. To simulate the practice of law, students will file all assignments on the bankruptcy court's test data base for electronic filing.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 5272; PROG: School of Law (LAWSC)

LAW 5365 - INTRO RUSS & UZBEK LEGAL SYS

Minimum Credits: 2

Maximum Credits: 2

This course is designed to introduce students to the legal systems of the Russian federation and Uzbekistan. The foundation of the legal systems of these countries is almost identical, and by comparing one country's system to another, students will become more familiar with civil law systems. Special attention will be given to constitutions, court systems, the role of judges, state prosecutors, courtroom advocates and lawyers, as well as to the important commercial laws and treaties. I will use examples from my professional experience to give my students a realistic view of the legal systems of these countries. The class is intended to enhance student awareness of the legal environment and issues that often result from a decision to engage in relations or do business across national boundaries. Students must be prepared to actively discuss the assigned reading or other material in class each week.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

Course Attributes: Russian & East European Studies

LAW 5370 - EMPLOYMENT LAW

Minimum Credits: 2

Maximum Credits: 2

This course will provide an introduction to the laws that govern the employment relationship, and will likely cover the following topics: the rise and fall of employment at will, prohibitions on discrimination based on an employee's status, the regulation of wages and working conditions, employee leaves of absence and related issues, employee privacy, work place torts, and the restrictions on the ability to compete after separation from employment.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5371 - PARTNERSHIP TAXATION

Minimum Credits: 3

Maximum Credits: 3

This course involves the study of the federal income tax treatment of partners and partnerships. We will examine the tax issues that arise in connection with the formation, operation, and liquidation of partnerships. We will also study the tax consequences of acquiring or transferring a partnership interest and of transactions between partners and partnerships. Some attention may be given to comparisons with the tax treatment of C and S corporations.

Academic Career: LAW
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: LAW 5105; PROG: School of Law (LAWSC)

LAW 5378 - JUVENILE JUSTICE

Minimum Credits: 3

Maximum Credits: 3

For over a century this country has wrestled with how to treat youth in the juvenile justice system. This struggle centers on the tension between recognizing youth as developmentally distinct from adults, thus deserving of second chances and rehabilitative services, and historically and culturally driven notions of accountability, justice, and safety. This course will explore this tension and examine how that internal struggle has shaped the building of the juvenile justice system as a separate legal institution governed by unique criminal law, procedure, and policy. Students will gain an in-depth understanding of juvenile justice from both policy and legal perspectives through analyzing case decisions, social science research, legal theory, and empirical studies. During this course the class will probe questions such as: what does juvenile justice actually look like? How does the social construction of adolescence impact legal definitions? What role do the advances in science on brain development play in the administration of juvenile justice? How has race, gender, and class impacted juvenile courts' jurisprudence? What factors have influenced the court's ever shifting understanding of culpability by age? Where are the overlaps and intersections between the juvenile justice and adult criminal justice systems?

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5380 - CYBERCRIME

Minimum Credits: 3

Maximum Credits: 3

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5386 - FOUNDATIONS OF LEGAL RESEARCH

Minimum Credits: 1

Maximum Credits: 1

Foundations of legal research is a one-credit practical skills course that builds on basic research skills learned in the first year legal writing program and emphasizes legal research as an integrated part of the practice of law. The course will integrate traditional print resources with online database resources and "free" internet resources, with emphasis on locating resources efficiently and cost-effectively.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5388 - EUROPEAN UNION LAW

Minimum Credits: 2

Maximum Credits: 2

This course is a wide introduction to the law of the European union. The course will begin with an examination of the history and institutions of the European community, including the legislative process. Particular attention will be given to the European court and the course will examine the specific powers the court holds. Additional topics will include internal market policy, competition policy, external relations, environmental protection and equal rights.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

Course Attributes: West European Studies

LAW 5391 - ELDER LAW CLINIC

Minimum Credits: 7

Maximum Credits: 7

The civil practice clinics offer students who have completed three semesters of law school an opportunity to represent clients and develop practical lawyering. Students enrolled in the clinics are certified to practice law and take primary responsibility for client representation under the supervision of their faculty/supervising attorneys. Elder law clinic representation focuses on issues of capacity in medical treatment, mental health law, estate planning, contractual relations, and property management. Emphasis will be placed on long term planning, including estate planning and medical assistance (Medicaid) eligibility. Litigation skills focuses on practice in the orphans' court division, for example, guardianship proceedings and settlement of small estates. Students will develop practical skills such as interviewing, counselling, research, drafting, negotiation, and trial practice skills. Students may work in teams to represent their clients. The classroom component is an integral part of the clinic experience, consisting of a series of discussions focusing on substantive law, policy, and practical skills training. The skills component of the course will be taught in tandem with the health law clinic. Experts in the fields of social work, psychology, psychiatry, and medicine will provide insights into interdisciplinary issues.

Academic Career: Law

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5393 - HEALTH LAW CLINIC

Minimum Credits: 7

Maximum Credits: 7

The civil practice clinics offer students who have completed three semesters of law school an opportunity to represent clients and develop practical lawyering skills. Students enrolled in the clinics are certified to practice law and take primary responsibility for client representation under the supervision of their faculty/supervising attorneys. Health law clinic students represent their clients at all stages of seeking disability benefits through the social security administration. Students also represent clients in orphans' court in guardianship cases and in the US District Court on health related matters. They interview clients initially and if the case is accepted, proceed to gather and interpret evidence, develop case theory, prepare hearing memoranda, and represent clients at hearings or in court. The classroom component is an integral part of the clinic experience and consist of a series of lectures and discussions focusing on substantive law, policy, and practical skills training. Classroom simulations are designed to ready students for client work, and include an ADR exercise. The skills component of the course will be taught in tandem with the elder law clinic. Students may work in teams of two.

Academic Career: Law

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5395 - HEALTH LAW AND POLICY

Minimum Credits: 3

Maximum Credits: 3

This is a survey course of fundamental issues, covering a broad range of topics, in health law and policy intended both for students who merely wish to become acquainted with the field, and for those who plan on concentrating in the field. For those planning on concentrating, this course provides a foundation for in-depth courses such as health care business transactions, health care fraud and abuse, health care antitrust, and financing in the healthcare industry. For students not concentrating in health law, it provides an introduction to the multitude of issues with which lawyers working with clients in the health care industry need to be familiar. The course examines the role that law plays in achieving three societal goals: increasing access to health care, controlling health care costs, and assuring quality of health care. Specific topics are the structure of the health care system (including integrated health care delivery systems); regulating quality through licensing, staff privileges, and accreditation; labor and employment issues; the legal obligation to provide treatment, including Emtala; tax exemption and charitable purposes; health care reform; state and federal regulation of health insurance and managed care (including Erisa); federal initiatives to expand private insurance coverage (including HIPAA, COBRA and ADA); Medicare/Medicaid eligibility, benefits, and reform efforts; health care fraud and abuse (false claims act, anti-kickback statute, Stark); and antitrust issues in the health care industry. This course does not examine issues of professional liability, and it does not cover ethical issues in health care (covered in, which is the subject of "bioethics and law").

Academic Career: LAW

Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5398 - FAMILY LAW CLINIC

Minimum Credits: 4

Maximum Credits: 4

The Family Law Clinic is a two semester clinic. Students will receive a grade at the conclusion of each semester, however, in the event that a student does not complete the second semester the student shall receive a W for the course, thus nullifying the grade for the prior semester. Students will receive 4 credits per semester. Classroom study generally includes instruction in client interviewing, client counseling, custody, paternity and child support substantive Pennsylvania law and custody and child support litigation procedures in Allegheny County. Custody mediation techniques are also examined. In clinic, under faculty supervision: Students will interview clients with regard to Pennsylvania custody and child support law. Students will, as legal interns certified by the Supreme Court of Pennsylvania, interview, counsel and assist clients in certain proceedings in the Family Court of Allegheny County dealing with matters of child custody and support. Students may in the course of their clinic duties prepare and deliver educational lectures concerning the substance of family law to client groups as, if and when the need arises, thus providing the student the opportunity to teach. Students may prepare Briefs, Motions, Complaints, Petitions or other court documents depending upon the legal needs of the clients that the student assist. Students may prepare research memos to be presented to all the students at the Clinic Review Meetings. Second semester students will undertake to mentor incoming students in family law court procedures.

Academic Career: Law

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5402 - CRIMINAL PROCEDURE II

Minimum Credits: 3

Maximum Credits: 3

Course is designed to give students especially interested in the criminal area an opportunity to develop appellate advocacy skills while being exposed to relatively sophisticated concepts of criminal procedure. Students participate in mock-trial exercises and serve as mock appellate judges. Problems used in the course will relate to various topics among which are search and seizure, pre-trial publicity, speedy trial, and double jeopardy.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5404 - CYBERSPACE AND THE LAW

Minimum Credits: 3

Maximum Credits: 3

This course will examine legal and public policy issues that pertain specifically to the existence, operation, and governance of the network of networks that we call "the internet" and the metaphorical experience that we sometimes refer to as "cyberspace." What legal and policy problems are unique to the internet and cyberspace? When and how should "ordinary" legal problems be treated differently if they concern the internet or cyberspace in some respect? Specific topics are expected to include the construction and definition of the internet; internet governance, including domain name regulation and network neutrality; and network and information security. It is expected that the course will not consider intellectual property topics, freedom of expression topics, or jurisdictional (civil and criminal procedure) questions. The course will focus primarily on public policy questions wrapped up in legal questions, rather than on principles of law as such.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

Course Attributes: Global Studies

LAW 5405 - LEGAL PROFESSION

Minimum Credits: 2

Maximum Credits: 2

This course will consider the responsibilities and obligations of an attorney to his or her client, the court and the legal system. Emphasis will be placed on the rules of professional conduct which have been adopted by the Pennsylvania Supreme Court as the standard of conduct for all attorneys admitted to practice within the commonwealth. Classroom meetings will focus on the common ethical problems which attorneys face including the scope of the duty to zealously represent your client; responsibilities owed to the courts and to other parties that may conflict with your client's interests; what decisions are made by the client and what decisions are made by counsel; potential conflicting responsibilities of counsel to his or her insurance company and the insured; potential conflicting responsibilities of corporate counsel to the corporation and the corporate officers; disqualification of counsel; the scope of the attorney-client privilege; confidentiality requirements; fee arrangements; withdrawal from representation; competency requirements; and pretrial and trial conduct.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5407 - TRIAL ADVOCACY

Minimum Credits: 2

Maximum Credits: 2

A course devoted to the art of presentation and persuasion in the courtroom. Students will be engaged in preparation for, and performance of, all basic phases of a typical trial including jury selection, opening statements, direct examination, cross examination, techniques for introducing evidence, closing argument, etc. Emphasis will be on actual performance of mock problems in a true courtroom setting, as well as instructor's critique of those performances.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 5103; PROG: School of Law (LAWSC)

LAW 5408 - HEALTH CARE FRAUD AND ABUSE

Minimum Credits: 1

Maximum Credits: 1

A variety of federal and state laws prescribe requirements for healthcare providers who seek reimbursement under governmentally-funded healthcare programs. Violations of these requirements can give rise to civil and criminal penalties. Penalties may be imposed through administrative proceedings or through law suits brought either by the government or by private parties ('qui tam' actions). This course will examine the major federal legislation 'the Medicare and Medicaid anti-kickback statute, the false claims act, and the Stark I and Stark II legislation and regulations, as well as parallel state enactments.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 5395; PROG: School of Law (LAWSC)

LAW 5414 - ESTATE PLANNING

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5416 - GERMAN FOR LAWYERS

Minimum Credits: 2

Maximum Credits: 2

This beginners' course in the German language will present the student with a basic vocabulary, the fundamentals of German grammar, and legal

terminology through reading, writing, listening and speaking experience.

Academic Career: LAW

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

Course Attributes: West European Studies

LAW 5417 - LAWYERING PROCESS SUMMER CLINC

Minimum Credits: 2

Maximum Credits: 2

Students will be able to gain live client experience in performing an ensemble of essential lawyering skills, including: interviewing, counseling, negotiation, document/pleading drafting, and representation before the court of common pleas. Modeling, training and supervision will be provided by experienced staff attorneys at the field-based setting in Washington and the professor in a one-hour weekly group review meeting at the law school/online through Lync. Family law ' protection from abuse, custody, divorce, and child dependency ' will be the principal area of practice, with students provided preparatory substantive instruction/materials by staff attorneys and professor. Family law is not a required prerequisite. Scheduling of clinical hours will be adjusted to accommodate each student's other work commitments. Transportation costs associated with travel to/from the office will be reimbursed.

Academic Career: LAW

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5418 - IMMIGRATION LAW

Minimum Credits: 2

Maximum Credits: 2

This administrative law course will examine the constitutional, statutory and regulatory system associated with the admission and exclusion of foreign nationals into and from the United States. While not a prerequisite, completion of administrative law is an advantage in the course's procedural aspects. Taught from the practitioner's perspective, the course will address the particular challenges in the effective representation of noncitizen clients. The course will include business, employment and investment Visa categories (both temporary and permanent), asylum law and procedures as well as exclusion and deportation litigation.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

Course Attributes: Global Studies

LAW 5422 - ALTERNATIVE DISPUTE RESOLUTION

Minimum Credits: 3

Maximum Credits: 3

Legal and other disputes are increasingly resolved by dispute resolution processes other than litigation. Given this trend, it is important for law students to be familiar with these alternative processes, such as arbitration and mediation, and the benefits and risks they present. At the same time, these alternative processes require creative and interdisciplinary problem-solving perspectives and skills. This course begins with an overview of problem-solving approaches, and is followed by the study of arbitration, mediation, and hybrid processes. The course emphasizes interactive student discussion and activities, including role-plays, exercises, and presentations that simulate professional activities of lawyers, arbitrators, mediators, and clients. The classes build on each other, so that knowledge that we acquire in the earlier classes will be integrated into our materials, discussion, and activities in later classes.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

Course Attributes: Asian Studies

LAW 5424 - INTERVIEWING AND COUNSELING

Minimum Credits: 2

Maximum Credits: 2

Proficiency in interviewing and counseling is essential to both the litigator and transactional lawyer. Lawyering process I will provide the student with theoretical understanding of interviewing/counseling and intensive training designed to develop these essential skills. Through lectures, readings, demonstrative videotapes and class discussions, the "client-centered" model advocated by the instructor as well as the "traditional approach" will be introduced, examined, and collectively critiqued. Practice will involve observing/critiquing weekly in-class simulations (with students as "client," "lawyer"). Periodic quizzes and two videotaped exercises at mid-point and end of course (with students interviewing/counseling 'outside' client) will be scheduled. Consistent attendance is required in order to ensure the effectiveness of in-class simulated exercises and to acquire comprehensive knowledge of/practice in each essential skill.

Academic Career: LAW

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5425 - LOW-INCOME TAX CLINIC

Minimum Credits: 3

Maximum Credits: 3

Working under the supervision of experienced tax attorneys, students participating in this clinic will assist in all aspects of the delivery of legal services to low income taxpayers in disputes with the internal revenue service. Students may expect to engage in interviewing, counseling, research, drafting, and negotiation with the I.R.S. Calendar and the disposition of the cases taken. In addition to the client work, students will also meet for weekly case review sessions.

Academic Career: LAW

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 5105; PROG: School of Law (LAWSC)

LAW 5428 - LEGAL NEGOTIATION

Minimum Credits: 2

Maximum Credits: 2

Proficiency in negotiating is essential to both the litigator and transactional lawyer. Lawyering process II will provide the student with theoretical understanding and intensive training designed to develop this essential skill. Through lectures, readings, and class discussions the two principal models of legal negotiation 'adversary' and 'problem-solving' will be introduced, examined, compared and critiqued. Students will engage in numerous negotiation exercises, some requiring drafting pre-negotiation plans and post-negotiation critiques. Highly experienced attorneys from the private/public sector will be invited to share their approaches/successes/challenges. Negotiations will be conducted both in-class and out-of-class. Two negotiations will be videotaped 'one at mid-point and the other at end of course' for subsequent viewing/critiquing on box. Consistent attendance is required in order to ensure the effectiveness of in-class simulated exercises and to acquire comprehensive knowledge of/practice in each negotiation model.

Academic Career: Law

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5429 - LAWYERING PROCESS CLINIC

Minimum Credits: 2

Maximum Credits: 2

Students participating in this clinical course will be provided with skills training and the opportunity to engage in a wide variety of lawyering activities (interviewing, counseling, negotiation, drafting of documents and pleadings, representation of clients before court and administrative agencies) in a controlled, supervised, instructional field-based program setting. Following initial orientation at the office, students will observe and thereafter participate in direct delivery of legal services to program clients. Cases assigned will primarily involve family law issues (divorce, protection from abuse, custody, dependency, etc.). Students who take the course for one semester will focus skills development on pre-hearing elements (interviewing, counseling, negotiating, etc.) During the first several weeks; thereafter, emphasis will be placed on in-court and administrative hearing representation. Students will be closely supervised by an experienced staff attorney under the direction of the course instructor. Selected student work may be videotaped for later review and critique by supervisor and instructor. Clinical time at the field-based office will be supplemented with a weekly case review session at the law school. Scheduling of clinical hours will be adjusted to accommodate the student's

schedule. Transportation costs for travel to/from the office will be reimbursed. Students are encouraged to enroll in lawyering process I or II, since the focus of both such courses will provide skills support for the clinical experience. Course also available during the summer, with same supervisory input and course requirements as described above.

Academic Career: LAW

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5430 - INFO PRIVACY LAW AND PRACTICE

Minimum Credits: 2

Maximum Credits: 2

This introductory course will provide a comprehensive overview of the primary laws, regulations and guidelines dictating data protection safeguards in the health care industry. It will begin with an introduction to the origins and philosophical perspectives that provide the framework for current privacy laws. Students will then explore the HIPPA privacy/security rules, provisions of Hi-tech breach notification standards, technical, physical and administrative safeguards and their intersection with the various state data protection laws. This course will include an introduction to the legal challenges associated with securing electronic data along the information highway and within the cloud, while attempting to safeguard against cybersecurity threats. Students will be introduced to the implications of privacy to the health care provider, health plans, health care clearinghouses, business associates, and the enforcement activities belonging to the office for civil rights. It will also afford students an opportunity to examine privacy from the financial and international perspectives.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5447 - HEALTH LAW PRACTICUM: ADR

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Law

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROGRAM: School of Law

LAW 5453 - TRANSNATIONAL LITIGATION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5460 - REAL ESTATE TRANSACTIONS

Minimum Credits: 2

Maximum Credits: 2

This is a practical course teaching students how to represent the client in a real estate transaction and covering all appropriate issues which might occur. The class will cover residential and commercial agreements of sale, deeds, financing the real estate transaction including drafting mortgages, notes and other finance documents, real estate appraisal practice, leases, what caused the real estate crises, title examinations, title commitments, title insurance, eminent domain, condominiums, issues affecting the real estate transactions, such as easements, licenses, adjoining landowner relationships, liens and their duration and priorities, real estate brokers, mortgage bankers, foreclosure proceedings, inter alia.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5464 - BIOETHICS AND LAW

Minimum Credits: 3

Maximum Credits: 3

This is an introduction to a variety of issues in biomedical ethics brought about primarily by the innovative techniques and technologies that the biomedical sciences have developed such as artificial procreation (e.g., In vitro fertilization, surrogacy, cloning), genetic screening and engineering, and life support systems (e.g., Respirators, medications, artificial nutrition and hydration). The primary focus of our inquiry will be whether these innovations should be regulated by law and if so how.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5468 - PSYCHOLOGY AND LAW

Minimum Credits: 3

Maximum Credits: 3

An understanding of the issues at the law-psychiatry interface, focusing on topics such as the psychiatrist-patient relationship, confidentiality and privilege, civil commitment and patient rights, malpractice and other forms of liability.

Academic Career: Law

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROGRAM: School of Law

LAW 5469 - FRENCH FOR LAWYERS 1

Minimum Credits: 2

Maximum Credits: 2

This is a course designed to develop the conversational, writing and reading skills in French to permit an American lawyer to communicate effectively with French-speaking clients, and to understand references to the French legal system and to the European union likely to arise in the course of an international law practice in the United States or an American law practice conducted in France. The course will differ from that of a typical college French class in that it will be oriented towards the law in the areas of vocabulary, composition topics, readings, dictations and in-class conversation.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

Course Attributes: West European Studies

LAW 5471 - FRENCH FOR LAWYERS 2

Minimum Credits: 2

Maximum Credits: 2

This is a continuation of French for lawyers 1.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

Course Attributes: West European Studies

LAW 5473 - GERMAN FOR LAWYERS 2

Minimum Credits: 2

Maximum Credits: 2

This is a continuation of German for lawyers 1.

Academic Career: LAW

Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: West European Studies

LAW 5475 - SPANISH FOR LAWYERS 1

Minimum Credits: 2

Maximum Credits: 2

This is a Spanish language course in a legal context, designed to acquaint students with the rudiments of the Spanish language and with Spanish legal vocabulary sufficient to permit an American attorney to communicate effectively with Spanish-speaking clients. Vocabulary, readings, class discussions and written work will be in a legal context. No prior study of Spanish is required.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

Course Attributes: West European Studies

LAW 5476 - SPANISH FOR LAWYERS 2

Minimum Credits: 2

Maximum Credits: 2

This course is a continuation of Spanish for lawyers 1. Students either should have completed Spanish for lawyers 1 or have had a minimum of one semester of prior study.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

Course Attributes: West European Studies

LAW 5477 - TRANSNATIONAL LITIGATION IN PRACTICE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5478 - HIGHER EDUCATION AND THE LAW

Minimum Credits: 2

Maximum Credits: 2

Colleges and Universities occupy a unique role in American society and culture. Courts in case law vividly describe colleges and universities as "marketplaces of ideas" and consider higher education to play a critical role in our democratic society. As a result, concepts such as academic freedom and free speech shape the legal landscape in unique ways. In addition, many statutes specific to higher education govern the day-to-day actions and obligations. At the same time, many areas of the law apply to colleges and universities in the same manner as they would to any other institution. This course will provide students an overview of the legal principles that shape higher education law. Students will then learn to apply the unique legal concepts to the analysis of the myriad of issues that commonly arise on campus.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5481 - INTELLECTUAL PROPERTY LICENSING

Minimum Credits: 2

Maximum Credits: 2

This course will concentrate on contract drafting and the application of intellectual property and contract law to license agreements; licensing provisions and legal issues regarding copyrights, patents, trade secrets, trademarks and computer software will be reviewed as will related antitrust, international and tax law issues; issues related to the internet and University technology transfer will also be discussed.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5485 - CLINIC EXTENSION

Minimum Credits: 2

Maximum Credits: 2

Academic Career: LAW

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5491 - ADVANCED LEGAL RESEARCH

Minimum Credits: 3

Maximum Credits: 3

This course will build on the material presented in the foundations of legal research course, and will provide students with a broader array of strategies and skills to approach legal research projects. The course is to be broadly divided into three components. The first component focuses on strategic approaches to legal research, how to incorporate the research process into the litigation or transactional problem presented and to more effectively integrate the various legal research tools available into that strategic approach. Cost-effective research strategies, including strategies to effectively manage real-world lexis and Westlaw costs will also be covered. This component will somewhat overlap with, but significantly expand on material from the foundations course, and will give students a broader understanding of the research process. The second component of the course recognizes that not all substantive areas of the law utilize the same research resources, strategies and techniques. During this component of the course, students will self-select into one of three topical research tracks-expected to be intellectual property, environmental law, and health and disability law-and spend several weeks looking at the unique resources and research challenges presented by those areas. The third component of the course returns all students to the same material and focuses on non-legal research areas such as medical and scientific research, business and corporate research, investigative research, and financial and marketplace research.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5494 - IN-HOUSE COUNSEL & MODERN CORP

Minimum Credits: 2

Maximum Credits: 2

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5497 - HEALTH LAW PRACTICUM: ADR

Minimum Credits: 4

Maximum Credits: 4

The Health Law Practicum offers third and second year law students an opportunity to work with lawyers in hospitals, health insurance companies, and in a variety of other placements in health law. The primary emphasis of this practicum is legal representation of a non-profit enterprise in the changing health law environment. One of the changes being experienced in all health law environments is the resolution of disputes through the use of negotiation, mediation and other alternatives to adversary adjudication. The practicum comprises both a classroom component and a field

placement. Both focus on work in the health law environment; however, the focus on alternative dispute resolution is primarily in the classroom component of the course. The classroom sessions of two hours per week will be devoted to a consideration of the application of ADR techniques to health law disputes. Besides studying substantive health law issues, students will participate in ADR simulations as part of their classroom experience. In addition to the classroom component of the course, students will work in the field with supervising attorneys for a minimum of 104 hours per semester. Students will be exposed to working in a health law environment in these placements. Whether students will be afforded an opportunity to participate in alternative dispute resolution as part of their site experience will depend on the projects then being undertaken at the placement site.

Academic Career: Law

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5503 - FEDERALISM & HEALTH POLC SEM

Minimum Credits: 3

Maximum Credits: 3

The interrelationship between the constitutional structure of federal and state governments and the piecemeal development of the U.S. health care system leads to fractured methods of regulating that system. This seminar will explore points of cooperation and tension between the federal and state governments and the varying effects of disparate state laws in a variety of health policy settings. Such settings will include the development of Medicaid; Medicaid expansion under the Affordable Care Act; the legalization of medical marijuana; the legalization of aid in dying; access to health care services through insurance coverage; and the assurance of quality care through regulation of health care payer decision-making.

Academic Career: LAW

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5504 - CON LAW SEM CURRENT ISSUES

Minimum Credits: 3

Maximum Credits: 3

This seminar will examine a variety of current issues in constitutional law and the role of the supreme court in resolving them. The issues considered will range widely among those that come before the court; these will probably include questions involving the first amendment, the due process and equal protection clauses, and the powers of congress, as well as some issues of criminal law and procedure. Some consideration will be given to decision making processes within the supreme court and to the evolution of constitutional doctrines in the lower courts.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 5101; PROG: School of Law (LAWSC)

LAW 5505 - INT'L DIGITAL TRANSACTIONS SEM

Minimum Credits: 3

Maximum Credits: 3

This seminar examines attributes of good academic legal writing with a focus on issues related to transacting digitally across borders. Topics for general discussion and analysis include: Internet domain names and using trademarks online; international regulation of domain names and trademarks; website development and hosting and international issues relating to intermediary liability for website content; electronic contracting; contracting for intangible assets (digital music, software, video, text etc); sales versus licenses ; domestic and international issues; choice of law and choice of forum clauses (and comparative rules on enforcement); international arbitration versus litigation.

Academic Career: LAW

Course Component: Seminar

Grade Component: GradLG/SU3

LAW 5507 - EVIDENCE SEMINAR

Minimum Credits: 3

Maximum Credits: 3

This writing seminar will examine selected topics in evidence law and policy from a more advanced, and often more critical, theoretical, and practical perspective than is feasible in the basic Evidence course. We will examine current doctrinal controversies and explore scholarly critiques of specific rules and principles, including critical or interdisciplinary perspectives on the traditional approaches underlying evidence law. Each student will produce a substantial research paper on a related topic to be chosen in consultation with the instructor, and a significant portion of the course will be devoted to the development, writing, and editing of those papers, both during class meetings and in individual meetings with the instructor.

Academic Career: Law

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: CREQ: LAW 5103; PROG: School of Law

LAW 5511 - TAX LAW & POLICY SEMINAR

Minimum Credits: 3

Maximum Credits: 3

This course will consider the theoretical, social, and philosophical underpinnings to any tax system. In addition, this course will consider both alternative tax systems and current issues in our tax policy. Students should come away from this course with a greater understanding of the political, economic and social constraints on our tax system.

Academic Career: Law

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5527 - INTERNATIONAL IP SEMINAR

Minimum Credits: 3

Maximum Credits: 3

This seminar surveys current issues in international and comparative intellectual property law, focusing on aspects of copyright, trademark, patent, and related laws. It introduces key international IP treaties, and contrasts different countries' approaches to IP protection.

Academic Career: Law

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5537 - MEDICARE AND MEDICAID PRACTICUM

Minimum Credits: 2

Maximum Credits: 2

This course is an introduction to the Medicare and Medicaid Health Care Systems. The goal of this course is to provide a basic understanding of how these systems function and recognize how eligible individuals can utilize them to access affordable health care services. We will examine the purpose and function of Medicare and Medicaid, their program vocabulary, the eligibility criteria, the enrollment process, and the specific benefits that each program provides. The course is also designed to develop and enhance the practical counseling and advocacy skills necessary for using this information to serve program clients. By the end of the semester, students will be prepared (and should be confident) to successfully tackle the cases that they are assigned (as counselors with Pennsylvania's State Health Assistance Program - SHIP), assisting clients with in-depth counseling, and helping them access and utilize available health care benefit programs and services. The practicum is also designed to provide students with an opportunity to network and interact with local law firms, health care systems (UPMC and Highmark), government agencies (SSA, CMS and DHS) and private non-profit programs. In addition, the SHIP program sponsors several networking events during the spring semester to present the practicum students to these entities and profile their capabilities

Academic Career: Law

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5538 - MEDICARE & MEDICAID PRACTICUM

Minimum Credits: 2

Maximum Credits: 2

This course is an introduction to the Medicare and Medicaid Health Care Systems. The goal of this course is to provide a basic understanding of how these systems function and recognize how eligible individuals can utilize them to access affordable health care services. We will examine the purpose and function of Medicare and Medicaid, their program vocabulary, the eligibility criteria, the enrollment process, and the specific benefits that each program provides. The course is also designed to develop and enhance the practical counseling and advocacy skills necessary for using this information to serve program clients. By the end of the semester, students will be prepared (and should be confident) to successfully tackle the cases that they are assigned (as counselors with Pennsylvania's State Health Assistance Program - SHIP), assisting clients with in-depth counseling, and helping them access and utilize available health care benefit programs and services. The practicum is also designed to provide students with an opportunity to network and interact with local law firms, health care systems (UPMC and Highmark), government agencies (SSA, CMS and DHS) and private non-profit programs. In addition, the SHIP program sponsors several networking events during the spring semester to present the practicum students to these entities and profile their capabilities

Academic Career: Law

Course Component: Practicum

Grade Component: LG/SU3 Elective Basis

Course Requirements: PREQ: LAW 5537; PROG: School of Law

LAW 5547 - INT'L INTELLECTUAL PROPRTY LAW

Minimum Credits: 3

Maximum Credits: 3

International intellectual property law has expanded substantially over the past few decades, and today seeks broadly to regulate transnational flows of information and culture. This course analyzes the international IP regime, situating it within the dynamics of globalizing flows of information and cultural objects. It provides an overview of the law, theory, and politics of this area of law, and will use case studies to illuminate the interaction between the three. Subjects covered include copyright and related rights (moral rights, traditional cultural expression, performers rights); trademarks and geographical indications; Internet domain names; trade secrets and patents. Case studies may include considerations of access to medicines, moral rights in Europe, and piracy in China as well as copyright formalities and Berne retroactivity.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5572 - PA INNOCENCE PROJECT PRAC

Minimum Credits: 3

Maximum Credits: 3

The Pennsylvania Innocence Project is a two-semester course offered by Pitt and Duquesne law schools, and meets at Duquesne School of Law. A 2-hour weekly seminar will examine and discuss the substantive law and remedies associated with wrongful convictions. Topics include mistaken eyewitness identification, junk forensic science, forensic DNA testing, and post-conviction remedies. Students are expected to spend 10 additional hours per week on their cases. This practicum will give students exposure to post-conviction collateral litigation, ethics in criminal law, both defense and prosecution, and factual analysis training. Students may work on wrongful conviction cases and clemency cases. Students will develop lawyering skills in the context of factual analysis, and will develop creative legal arguments to aid the convicted innocent. They will explore criminal justice issues related to these fields. Students will apply their substantive knowledge to actual cases by reviewing and investigating claims of actual innocence. Students are assigned their own cases to review for factual innocence claims. They are expected to review the entire case, discovery, transcripts, motions, appeals, court opinions, to determine whether the inmate presents a colorable claim of innocence. They may be involved in factual investigation including identifying potential witnesses locating physical evidence to be subjected to forensic testing, and identifying potential expert witnesses. The Pennsylvania Innocence Project Practicum is a two semester practicum. Students will receive an S grade at the conclusion of each semester, however, in the event that a student does not complete the second semester the student shall receive a W for the course, thus nullifying the S grade for the prior semester. Students will receive 3 credits per semester.

Academic Career: Law

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5585 - EDUCATION AND JUSTICE AND CIVIL RIGHTS SEMINAR

Minimum Credits: 3

Maximum Credits: 3

This course will introduce students to education and civil rights law and policy that are the foundation for civil rights protections in K-12 public

education. Students will explore key education and civil rights issues in the following topic areas: school segregation (past and present), the criminalization of students of color, school privatization, and social movements for education justice. Students will emerge from this class with an understanding of historical and current flashpoints in education and civil rights in the United States and the role of lawyers and the law. In addition to analyzing key cases, articles, and social science research, students will explore how law students and lawyers can play a meaningful role through policy, litigation, and advocacy for social change.

Academic Career: Law

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5609 - PROFESSIONAL RESPONSIBILITY

Minimum Credits: 3

Maximum Credits: 3

This course will cover selected topics on the law governing lawyers. Major topics will include formation and termination of the attorney-client relationship and its attendant obligations, fee issues, conflicts of interest, ethics in advocacy, transactional lawyering, and entity representations, among others. The course will cover these topics from the vantage point of the model rules of professional conduct and the restatement of the law governing lawyers, as well as those aspects of constitutional law, evidence law, agency law, tort law, and procedural rules (both civil and criminal) that bear on an attorney's obligations to clients, courts, opposing parties and their attorneys, and the legal system at large. Class discussions will incorporate in-depth analysis of case law and the rules, as well as analysis of practical hypothetical scenarios in which a lawyer seeks advice about his or her legal and ethical options for moving forward in dealing with his or her clients.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5611 - ADVANCED FAMILY LAW ADVOCACY

Minimum Credits: 3

Maximum Credits: 3

Much of the modern practice of family law involves litigation. From routine contested motions to complex equitable distribution and custody trials, the field of family law has seen a dramatic increase in the time the practicing family lawyer spends in the courtroom. Very often the family lawyer is faced with complex litigation that involves the direct and cross examination of expert witnesses and trial techniques and strategies molded well in advance of trial with the assistance of a child psychologist expert. In addition, "motions practice," arguing important discovery or interim issues that affect custody and equitable distribution cases, is an important, if not critical aspect of the practice of family law. We will follow hypothetical cases of families whose contentious divorce and custody issues must be tried to conclusion in non-jury mock trials. The students, working in small teams, will interview, counsel and prepare their role playing "client" for trials, develop trial strategy, engage in pretrial preparation, meet with and prepare expert witnesses for direct and cross examination and finally, try various issues to conclusion. The expert witnesses will be actual, highly experienced experts in various areas of valuation and custody. Students will be expected to prepare written trial materials. One class will be specifically devoted to arguing a motion against opposing counsel on a discovery issue. The student will be asked to prepare a motion and a supporting brief on the subject issue to be addressed before the motion's court judge.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC); PREQ: LAW 5219 or LAW 5103

LAW 5613 - ENVIRONMENTAL LAW CLINIC

Minimum Credits: 4

Maximum Credits: 4

Academic Career: LAW

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5616 - MOCK TRIAL STRATEGY AND PRA

Minimum Credits: 2

Maximum Credits: 2

This is a performance and presentation-based course that serves as the intensive training component for the law school's mock trial team. The course covers the mechanics of trials with a focus on preparation for interscholastic trial advocacy competitions. Enrollment is by permission from the professor only. Students can qualify based on a tryout. In addition, the previous year's top two finishers in the law school's internal trial competition will qualify automatically for the course, presuming they have not graduated. This program is a two year commitment. If you are accepted as a member of the mock trial team, you will automatically be eligible to participate in the course for the following year upon successful completion of the course in the first year. Topics in the course include development of case theory, effective advocacy skills, appropriate professional conduct, and trial preparation. Students will present direct and cross examinations of lay and expert witnesses, opening statements, and closing arguments, and will introduce evidentiary exhibits with appropriate foundation. A significant portion of the course will be devoted to a review of both the federal and Pennsylvania rules of evidence, with special emphasis on trial evidence. Returning third year students will focus on preparation for both fall and spring competitions. In that respect they will learn advanced trial techniques as applicable to the competitions. This will include working with actual experts, one on one video analysis of performance and specific, case related issues.

Academic Career: LAW

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

LAW 5618 - ARABIC FOR LAWYERS 1

Minimum Credits: 2

Maximum Credits: 2

Arabic for lawyers is a two semester course comprised of both Arabic for lawyers I and Arabic for lawyers II. Arabic for lawyers is a course that helps students to familiarize themselves with Arabic legal terminology and basic Arabic grammar. This is a beginner class that assumes no prior knowledge of or exposure to the language. As such, native speakers and those with formal training over a period of years may not enroll. The course is a two semester (full year) course and students are encouraged to take both semesters in order to benefit from the course. However, students are permitted to take only the first semester if they wish. They may take only the second semester with the professor's permission if they have had some modest experience with the Arabic alphabet. The first semester of the course deals with learning the Arabic alphabet, mastering pronunciation and developing the ability to write in Arabic by hand. In the second semester, we will turn to learning basic rules of grammar and developing vocabulary in a manner that is designed to be of interest and use to lawyers and legal professionals. The class will conclude by reading simple cases, laws and other basic legal materials. To facilitate the learning experience, laptops will not be permitted in class.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5619 - ARABIC FOR LAWYERS 2

Minimum Credits: 2

Maximum Credits: 2

Arabic for lawyers is a course that helps students to familiarize themselves with Arabic legal terminology and basic Arabic grammar. This is a beginner class that assumes no prior knowledge of or exposure to the language. As such, native speakers and those with formal training over a period of years may not enroll. The course is a two semester (full year) course and students are encouraged to take both semesters in order to benefit from the course. However, students are permitted to take only the first semester if they wish. They may take only the second semester with the professor's permission if they have had some modest experience with the Arabic alphabet. The first semester of the course deals with learning the Arabic alphabet, mastering pronunciation and developing the ability to write in arabic by hand. In the second semester, we will turn to learning basic rules of grammar and developing vocabulary in a manner that is designed to be of interest and use to lawyers and legal professionals. The class will conclude by reading simple cases, laws and other basic legal materials. To facilitate the learning experience, laptops will not be permitted in class.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5620 - CYBERSECURITY & PRIVACY REGLN

Minimum Credits: 3

Maximum Credits: 3

This course examines the legal frameworks in place to protect consumer privacy and maintain necessary information security protections for

privately owned and operated infrastructure, with a strong focus on regulatory and compliance issues. Taught collaboratively with the schools of law and information sciences, students will collaborate on projects simulating the types of problems both legal and technical professionals confront in actual practice. Some individual writing will be required, and a written paper option may be available for students in lieu of group projects with the consent of the instructor.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5621 - STATE BLDG & LAW: KOSOVO EXPRN

Minimum Credits: 2

Maximum Credits: 2

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5622 - COMPARTV PROF RESPONSIBILITY

Minimum Credits: 3

Maximum Credits: 3

The course provides an exploration of the organization and the sources of regulation of the legal profession in the United States, and an overview of select countries in the Americas as well as Europe, briefly highlighting the main differences existing in lawyers' ethical standards in civil law and common law systems. It focuses on the main standards of professional legal ethics in the United States, and compares them with those of Latin American and European countries. The course will be centered on the ABA Model Rules of Professional Responsibility. The Model Rules will be compared with the rules of professional conduct proposed by international associations such as the International Bar Association and the rules proposed by bar associations in the MERCOSUR zone. The course also seeks to engage students in an exploration of the challenges posed by the increase in cross-border, transnational legal practice, and an overview of the ethical regulatory responses attempted so far in this field. This course meets the New York professional responsibility requirement. N.Y. Court Rules for Admission of Attorneys and Counselors at Law Rule 520.3(c)(1)(iii).

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5623 - CYBER LAW AND POLICY

Minimum Credits: 3

Maximum Credits: 3

Cyberspace is the critical infrastructure that runs our world. Yet, much remains ungoverned and the threats are constantly evolving. This course will explore theoretical and practical aspects of nation-state legal issues concerning cyberspace, including computer-related crime, espionage, war, and international governance. The seminar will review key legal cases, policy, and legislation. In tandem with a series of expert guest speakers from the field, the course will reflect on the roles of national and international governments, the legal and ethical dimensions of cybersecurity, the relationship between the public and private sectors, and the increasing tensions between privacy and security. The course will consist of four major components: (1) an assessment of the current cybercrime threat landscape, (2) a review of the relevant legal frameworks, (3) analysis of case studies of significant prosecutions, and (4) assessments of domestic and international policy challenges, including gaps in existing frameworks. Students who complete the course will obtain an enhanced understanding of the legal and policy frameworks at the core of these challenging issues for nation-states.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5626 - LOBBYING AND ADVOCACY

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5627 - WICKED PROBLEM INNOVATION

Minimum Credits: 3
Maximum Credits: 3

"Wicked Problem Innovation" is a new, innovative, cross-disciplinary course that brings together graduate students from Pitt Law, the Katz School of Business, and other units across the University of Pittsburgh to engage deeply in a selected acute problem that faces Pittsburgh and the broader world. "Wicked" problems are stubborn, complex societal and business challenges, like global climate change, income disparity, inclusive economic growth, and universal healthcare. These problems arise from a variety of causes and affect multiple stakeholder groups, each of which has a different idea of how the problem arises and what can be done to improve it. While it is likely not possible to "solve" these problems in a traditional sense, it is possible to make sustained progress in tackling them. Course participants will research the selected problem from legal, business, historical, and other perspectives, identify and consult with stakeholders, and ultimately design a process to improve progress on the selected problem. During the course, students will learn to work collaboratively with peers and instructors from a variety of disciplines, and will practice a host of practical skills, including interviewing witnesses and clients, negotiating outcomes, and actively problem solving across a range of subject matter areas. Additionally, students will gain substantial and deep contacts in local, state, and potentially national, government, nonprofit, and business communities. Students will come away from the course with critical skills in working collaboratively across subject matter boundaries and experience creating an innovative problem-solving process from the ground up.

Academic Career: Law
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5628 - MEDICARE & MEDICAID PRACTICUM

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5629 - MEDICARE AND MEDICAID PRACTICUM

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Law
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

LAW 5630 - FEDERAL CIVIL LITIGATION SKILLS

Minimum Credits: 2
Maximum Credits: 2
This course explores practical and procedural pretrial litigation activities encountered in federal civil litigation. The course is designed to develop practical case management, advocacy and negotiation skills while increasing awareness and familiarity with the local rules which govern litigation in the United States district court (W.D. Pa.). The course will consist of both lectures and 'hands on' exercises, both written and role-play, that track the procedural progress of a federal case.
Academic Career: LAW
Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5631 - LAW AND ENTREPRENEURSHIP

Minimum Credits: 3

Maximum Credits: 3

This hands-on, practical course is intended to expose law students to entrepreneurs, innovation companies and the legal issues they face. The course will take students through the life cycle of a technology start-up company, from concept and formation to exit (IPO or sale), through careful analysis of relevant legal documents and case studies, as well as participation in lectures, workshops and simulations. The course will cover choice of entity and formation (including tax issues at start up and early stage fundraising), employee hiring and compensation, evaluation and protection of intellectual property and the development of a comprehensive IP strategy, valuation and financing (investment opportunities), licensing and sales, multinational operations, and exit strategy. The course will provide students with the legal framework and tools necessary to launch and grow a successful technology start-up, and to advise and assist entrepreneurs interested in launching a new business.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5638 - RACE AND THE LAW

Minimum Credits: 3

Maximum Credits: 3

This course will explore the legal treatment of race in the United States. Central to this examination will be: (1) the legal and social construction of race and racism; (2) the legal history of racialized groups including African Americans, Latinos/as, native Americans, Asian Americans, Arab and middle eastern Americans, and white Americans; (3) anti-discrimination laws (governing diverse areas such as education, employment, voting, familial relations, public accommodations, and housing); and (4) the relationship between race, language, and citizenship. A pervasive theme throughout the course will be the significance of race in the post-civil rights era. This inquiry will be analyzed under various modern civil rights perspectives including: traditionalism (advocating for colorblindness and 'reverse' racism claims), reformism (supporting affirmative action); and critical race theory (recognizing continued systemic subordination).

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5648 - CIVIL RIGHTS LITIGATION: HIST

Minimum Credits: 3

Maximum Credits: 3

This seminar will be a historical consideration of civil rights litigation in the United States. Our goal will be to understand the long history of segregation as it was created by legislatures and then supported by Courts, and how these precedents were reversed through litigation and other strategies. We will read classic cases on race, from the 19th and early 20th centuries, learning how the Supreme Court developed its segregation doctrines. We will simultaneously look at litigation strategies by abolitionists before the Civil War and civil rights activists in the late nineteenth century. We will then turn to the creation of the NAACP and see how it became the leading engine of civil rights litigation. This will lead to the long struggle for an end to segregation, culminating in Brown v. Board of Education (1954). Part of our focus will be on Thurgood Marshall as a lawyer. We will look at NAACP integration strategies along with more activist civil rights strategies by Martin Luther King and others. This part of the course will also look at federal actions on civil rights after the passage of the 1964 Civil Rights Act and other civil rights laws. Readings will include some cases -- often in full text -- the classic book Simple Justice, a biography of Marshall, and writings by King and others. Our consistent focus will be on (1) what this history teaches us about attorneys litigation strategies and (2) what overarching limits there may be on attaining fundamental change through the litigation process.

Academic Career: LAW

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5653 - INTERNATIONAL HUMAN RIGHTS

Minimum Credits: 3

Maximum Credits: 3

This course will examine the history of the development of international human rights laws, the concepts behind the current status of those laws, and the mechanics present for enforcing those laws in international, regional, and domestic legal systems. The course will include a discussion of the theories behind international human rights law and the ability (or lack thereof) to enforce international human rights standards. The course will look at different examples of human rights crises throughout the world, how those crises are being addressed and how we believe they should be addressed in light of established law and morality. In light of the growing importance of the r2p ("responsibility to protect") doctrine and the related doctrine of "human rights intervention," we will examine these doctrines closely, whether they comport with international human rights law and whether they in fact accomplish what they claim to accomplish.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

Course Attributes: African Studies

LAW 5665 - PUBLIC POLICY ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: LAW

Course Component: Lecture

Grade Component: LG/SU3 Elective Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5666 - LOBBYING AND ADVOCACY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5667 - POLICY EXTERNSHIP

Minimum Credits: 4

Maximum Credits: 8

Academic Career: LAW

Course Component: Practicum

Grade Component: Grad HSU Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5668 - POLICY COLLOQUIUM

Minimum Credits: 1

Maximum Credits: 1

Academic Career: LAW

Course Component: Colloquium

Grade Component: Grad HSU Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5694 - TRADEMARK LAW

Minimum Credits: 3

Maximum Credits: 3

Trademark law deals with legal bases for obtaining and enforcing interests in commercial symbols, including logos, slogans, and the like, which play

central roles both in modern commercial transactions (selling and buying stuff) and in daily conversation. Trademarks are partly information and partly the stuff of speech. The trademark law course will teach you about the many roles that trademark law plays in positioning trademarks as part of business strategies, commercial markets and other institutions, and everyday life. For producers of goods and services, how does trademark law help them make money? For competitors, for purchasers of goods and services, and for firms and citizens generally, how does trademark law preserve the power to access and use trademarks as information about commercial things, information that shapes about the commercial sphere, and information that guides daily experience (if that's separate from the commercial sphere). The course will teach those things in the context of teaching the skills of trademark lawyering. How do practicing lawyers work with clients? How do practicing lawyers develop and exercise professional judgment? How do practicing lawyers solve trademark problems? The course will put students in the role of practicing lawyers and teach them to think, write, and act as lawyers generally and especially as trademark lawyers.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5695 - TRADEMARK LAW PRACTICE

Minimum Credits: 2

Maximum Credits: 2

A course to delve into trademark and unfair competition practice before the USPTO, trademark trial and appeal board and in state and federal courts. The course will advance practice oriented trademark issues including: the identification, protection and enforcement of trademark rights; the relief that can be acquired through enforcement of those rights; the role of lawyer as counselor in adopting trademarks as part of the branding process; avoiding infringement of others' trademarks; and the assignment and licensing of trademarks. The course will probe these same concepts in other jurisdictions, as well.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 5260 or LAW 5694; PROG: School of Law (LAWSC)

LAW 5696 - MILITARY LAW

Minimum Credits: 3

Maximum Credits: 3

The United States Military has become a unique training ground for lawyers in the modern era. Military lawyers or "JAG's" operate worldwide in almost every discipline of law in almost every country on the planet. This course will instruct upon the fundamentals and foundations of the military justice system including its origin and evolution, Special and General Courts?Martial, Administrative Separation procedures, unique evidentiary considerations, the Uniform Code of Military Justice and the Law of Armed Conflict. This course will also discuss the role and relationship between military lawyers and their commanding officers and the many ethical considerations surrounding military decision?making processes.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5701 - HEALTH CARE FRAUD AND ABUSE SEMINAR

Minimum Credits: 3

Maximum Credits: 3

United States health care spending reached \$3.2 trillion in 2015, accounting for 17.8% of the gross domestic product. Government officials have been quoted as saying that up to 10 percent of the money the United States spends on healthcare is due to fraud, waste, or abusive practices. If true, that now amounts to over \$3 billion per year. In Fiscal Year 2016, the federal government won or negotiated over \$2.5 billion in health care fraud judgments and settlements, as well as additional amounts from administrative cases. Thus, health care fraud is a major priority of both federal and state agencies and lawyers who wish to practice health law would be wise to understand the laws that govern health care fraud and abuse. This course focuses on the major civil, administrative and criminal laws that have been used to combat health care fraud and abuse, broadly defined as actions by health care providers (e.g., hospitals, physicians and physician practices, nursing homes, medical device and pharmaceutical manufacturers, home health agencies, clinical laboratories, and rehabilitation facilities) that are inconsistent with accepted business and medical practices. These laws include the federal civil False Claims Act, the federal Anti-Kickback Statute, the Stark Law, and the Civil Monetary Penalties Law. While the class focuses on federal law, health care fraud and abuse laws at the state level will also be discussed. Related compliance strategies and the practical compliance issues faced by healthcare providers will also be covered.

Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5702 - REASNBLNESS & REASNBL PRSN SEM

Minimum Credits: 3
Maximum Credits: 3
Academic Career: LAW
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5703 - POST-CONFL & TRANST JUSTC SEM

Minimum Credits: 3
Maximum Credits: 3
Academic Career: LAW
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5704 - ADV SECURITIES REGULATION SEM

Minimum Credits: 3
Maximum Credits: 3
Academic Career: LAW
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: LAW 5112 and LAW 5246; PROG: School of Law (LAWSC)

LAW 5705 - TITLE IX SEMINAR

Minimum Credits: 3
Maximum Credits: 3
Title ix of the education amendments of 1972 is often credited with explosive growth in the numbers of girls and women playing sports, which has had many secondary effects on gender relations in the broader society. Title IX's supporters argue that the law has been unusually effective in promoting gender equality. And yet, title ix remains a highly controversial law, often blamed for cutbacks to men's sports and for putting added financial burdens on schools to fund sports programs which may detract from other educational priorities. It is an area of law that invites critical inquiry into methods of statutory interpretation, competing theories of equality, and law's relationship to social change.
Academic Career: LAW
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5706 - CRIMINAL RECORDS AND EXPUNGEMENT SEMINAR

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5707 - FEMINIST LEGAL THEORY SEMINAR

Minimum Credits: 3

Maximum Credits: 3

This seminar introduces and explores feminist legal theory as a method of understanding and using the law. The course integrates theory and doctrine and explores how gender both affects and is affected by the development of the law. Areas of the law studied will include employment, education, domestic violence, family law, torts and criminal law. Students will write a major research paper using feminist legal theory to explain, critique or defend a legal doctrine and/or solve a legal problem. At the end of the semester, each student will give an oral presentation, in "workshop" format, based on their paper.

Academic Career: LAW

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5708 - RIGHT TO DIE SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Academic Career: LAW

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5709 - LAW OF SLAVERY, ABOLITION & FREEDOM SEMINAR

Minimum Credits: 3

Maximum Credits: 3

This seminar will examine how laws, cases, and the U.S. Constitution helped create and preserve slavery. Class will read statutes and cases from the 17th century; excerpts from pro-and anti-slavery treatises, 18th and 19th century statutes and cases; major supreme court decisions; a short book on the Dred Scott case and monograph on slavery, law, and the Founding of America. There will be sections on criminal law, fugitive slave laws, constitutional law, and the law of manumission. There will be two or more days devoted to the large body of material on slavery and the law from Pennsylvania.

Academic Career: Law

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5710 - CONTRACTS 2

Minimum Credits: 3

Maximum Credits: 3

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 5020; PROG: School of Law

LAW 5711 - LAW & HUMAN BEHAVIOR SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Academic Career: LAW

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5712 - LATER LIFE LEGAL PLANNING SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Every day, 13,000 Americans turn age 65. By 2040, 20 percent of the population will be age 65 or older. Older individuals face three significant issues including replacing income lost due to retirement, declines in physical and mental capacity, the need for surrogate decision making, and paying for acute and long-term care. The Seminar will focus on effective legal responses to these issues. It is a policy based seminar that will require students to appreciate, understand and formulate legal solutions about specific issues that arise due to the realities of aging. The Seminar will spend the first weeks examining the issues through a series of readings. Each student, under the guidance of the Professor, will select a topic on which to write a two-draft paper that describes a particular legal issue faced by an older adult, analyzes the challenges it presents to society and the legal system, and proposes a solution to the issue. Each student will make a presentation to the Seminar that will serve as the basis for an extended class discussion of the issue.

Academic Career: Law

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5714 - ENVIRONMENTAL POLICY AND PRACTICE

Minimum Credits: 3

Maximum Credits: 3

In many areas of law, the daily practice is not black-letter analysis and trial practice, but interdisciplinary collaboration and policy development. This is particularly true of environmental law, which combines legal issues in the common law, statutory frameworks, administrative law, international and transnational law, and constitutional law, along with scientific understanding, public communications, political persuasion, and ethics. Focusing on environmental issues, this discussion section and practicum will provide students with a chance to explore interdisciplinary policy practice through an open-ended semester-long simulation. The simulation is paired with a weekly discussion section to discuss a variety of issues in environmental law and policy. This course's practical simulation will put students into teams to address a real-world environmental policy issue. Each team will approach the issue from a different perspective (for example, one team will represent environmental interests while another will represent a regulated industry or the government). Students will prepare memos, comment letters, presentations, and public statements based on their own research, in response to the arguments of their classmates, and in consideration of their overall strategic and legal goals. In the discussion component of the course, students will dive into readings and discussions about the law, policy, ethics, and practical realities of environmental law.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5717 - TELECOMMUNICATIONS LAW

Minimum Credits: 2

Maximum Credits: 2

This course explores the regulation and evolution of electronic communications in the United States. We will survey the legal framework of telecommunications, broadband and the Internet at several significant points in its development. Following the respective regulatory paths of broadcast, wireline and wireless telephony, cable, and broadband, the analysis will include early Federal Communications Commission broadcast regulation; the Communications Act of 1934 and its progeny; the advent of long-distance and local market telephone competition; the evolution of multichannel video communications; and the changes wrought by the Telecommunications Act of 1996. Finally, we will examine technological convergence, the emergent dominance of broadband and wireless communications, and the impact of rapid technological changes. We will also look at telecommunications from a policy and practice-oriented perspective, keeping in mind that regulations and statutes have played as important (if not more so) a role as court decisions in the development of telecommunications law. Themes that will be addressed include: conflicts between federal and state/local jurisdiction; monopoly versus competitive market regulation and issues associated with transitioning from the former to the latter; universal service issues; and the impact of such concerns as intellectual property and free speech. No prior knowledge of the telecommunications industry (or associated law) is necessary. Exposure to administrative law or antitrust law might be beneficial.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5718 - TECHNOLOGY AND EMPLOYMENT LAW

Minimum Credits: 2

Maximum Credits: 2

This course explores the evolving application of employment laws with a focus on how the law responds to technological, social, and economic changes. It examines changing definitions of the employment relationship in light of evolving tech platforms and the "gig economy." It analyzes issues of employee privacy and data security as well as developments in post-employment restrictions, confidentiality, and trade secret and intellectual property protection. Throughout the course, students will be exposed to core employment doctrines such as wage and hour law and discrimination with a particular focus on how disruptive forces such as big data, social media, and virtual workplaces are reframing traditional views of these doctrines.

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5719 - APPLIED LEGAL DATA ANALYTICS AND AI

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

LAW 5720 - LEGAL ANALYSIS AND WRITING

Minimum Credits: 0

Maximum Credits: 0

Students in this first year course will begin to develop the art of analytical legal writing. In classes, students engage in discussions and practical exercises as they learn to analyze cases, statutes and other authorities. The course emphasizes student development in the following skills: organizing the analysis of legal issues logically and coherently; expressing written legal analysis clearly, concisely, and effectively; developing and defending legal arguments, both in writing and orally; performing basic legal research; drafting selected legal documents; and using proper citation form. Exercises and other assignments promote the students' awareness and appreciation of relevant ethical standards.

Academic Career: LAW

Course Component: Clinical

Grade Component: No Grade Required

Course Requirements: PROG: School of Law (LAWSC)

LAW 5721 - FDA LAW & POLICY

Minimum Credits: 3

Maximum Credits: 3

The Food & Drug Administration is charged with enforcing the laws and regulations surrounding the development, sale, and marketing of medical products, like drugs, devices, biologics, and supplements. These laws and regulations dramatically impact medical innovation, access to medical technologies, and consumer safety. The goals of this course are twofold: (1) to provide students with a doctrinal understanding of selected topics in FDA law; and (2) to critically examine these laws and regulations to see whether they strike the right balance between competing values.

Academic Career: Law

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5724 - SPRAWL AND THE LAW SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Academic Career: LAW

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5725 - LAW AND INTERPRETATION SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Academic Career: LAW

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5727 - NATURAL RESOURCES LAW

Minimum Credits: 3

Maximum Credits: 3

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5730 - CURRENT ISSUES IN HEALTH LAW 2

Minimum Credits: 0

Maximum Credits: 0

The purpose of this course is the same as current issues in health law 1. This course is open only to third-year students in the health law certificate program, and all third-year students in the program must take this course both fall and spring semesters. Students are required to create a file of at least 40 newspaper articles on health law and policy and to use these articles to write a paper (maximum length: 10 pages) based on the evolution of a theme in health law or policy that they identify from the articles (for example, patients' rights legislation; Medicare prescription drug benefit).

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 5831; PLAN: Health Law

LAW 5731 - CURRENT ISSUES IN HEALTH LAW

Minimum Credits: 1

Maximum Credits: 1

The purpose of this course is to increase the awareness of students in the health law certificate program to the rapidly changing health care industry and the equally rapidly changing field of health law. It is difficult, if not impossible, to understand the law regulating the health care industry without understanding the industry itself. Another purpose of the course is to expose students to a more in-depth treatment of selected topics than they can obtain in the basic survey course in health law and policy. The course also exposes students to topics that are not covered in the basic course, providing a broader view of the field of health law, which helps in the selection of other course offerings and of a topic for the faculty supervised writing requirement. In addition, the course introduces students to the variety of settings in which lawyers are involved in health law and the range of kinds of clients they represent. Classes will be taught by leading experts in the fields of health management and health law practicing in Pittsburgh and elsewhere.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Health Law

LAW 5733 - MB CONSTITUTIONAL LITERACY SEM

Minimum Credits: 3

Maximum Credits: 3

This seminar relates to the Marshall-Brennan constitutional literacy component of the law school's pipeline diversity program. The Marshall-Brennan
2019

constitutional literacy project prepares students to teach a constitutional literacy seminar in Pittsburgh area high schools. Students selected for the Marshall-Brennan constitutional literacy project are required to participate in the Marshall-Brennan Constitutional Literacy seminar concurrent with their teaching assignment at a Pittsburgh area high school. The seminar will focus on teaching methodology and review of constitutional doctrine in the areas to be covered in the high school course. Areas of focus will include the first, fourth, fifth, sixth and eighth amendments to the United State constitution, with particular emphasis on the constitutional rights of high school students and young people generally. Students will develop detailed lesson plans relating to topics to be covered in the high school course. In addition, students will be required to produce a substantial paper relating to one of the topics covered in the curriculum.

Academic Career: LAW

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5749 - SORBONNE EXCHANGE

Minimum Credits: 9

Maximum Credits: 18

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5750 - STUDY ABROAD

Minimum Credits: 1

Maximum Credits: 18

Academic Career: LAW

Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

Course Attributes: Non-Pitt Class

LAW 5753 - VETERAN'S PRACTICUM 2

Minimum Credits: 3

Maximum Credits: 3

Academic Career: LAW

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5799 - RACE AND THE LAW SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Academic Career: LAW

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5801 - RAISING THE BAR

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis
Course Requirements: PROGRAM: School of Law

LAW 5805 - PERSUASIVE NARRATIVE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: LAW
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5806 - JUVENILE LAW AND POLICY SEMINAR

Minimum Credits: 3
Maximum Credits: 3
For over a century this country has wrestled with how to treat youth in the juvenile justice system. This struggle centers on the tension between recognizing youth as developmentally distinct from adults, thus deserving of second chances and rehabilitative services, and historically and culturally driven notions of accountability, justice, and safety. This course will explore this tension and examine how that internal struggle has shaped the building of the juvenile justice system as a separate legal institution governed by unique criminal law, procedure, and policy. Students will gain an in-depth understanding of juvenile justice from both policy and legal perspectives through analyzing case decisions, social science research, legal theory, and empirical studies. During this course the class will probe questions such as: What does juvenile justice look like? How does the social construction of adolescence impact legal definitions? What role do the advances in science on brain development play in the administration of juvenile justice? How has race, gender, and class impacted juvenile courts' jurisprudence? What factors have influenced the court's ever shifting understanding of culpability by age? Where are the overlaps and intersections between the juvenile justice and adult criminal justice systems?
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5807 - ENVIRONMENTAL JUSTICE LAW SEMINAR

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Law
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROGRAM: School of Law

LAW 5811 - HLTH CARE BUS TRANSACTIONS

Minimum Credits: 3
Maximum Credits: 3
This course will expose students to a variety of commercial transactions prevalent in the health care industry. The course will focus initially on health care as a regulated commercial enterprise. After studying the case law, statutes and regulations applicable to health care providers, students will begin an in-depth study of negotiated health care transactions. This study will begin with an examination of the fundamental elements of the acquisition process and an analysis of the tax, antitrust, regulatory and successor liability considerations generally addressed in health care combinations. Students will then be exposed to the various stages of the negotiated acquisition process: due diligence; preliminary negotiations and agreements; transaction structure; final negotiations; definitive agreements; and post-closing relationships. We will also explore the financing mechanisms required to support healthcare entities. The course will examine sources of funding, enterprise valuation, healthcare cost controls, capital structure, traditional debt financing, tax exempt bond financing, securities filings, and insolvency. By the end of the course, the students will have acquired an understanding of the complexities of health care financing and will be familiar with the health care acquisition process from its inception to conclusion.
Academic Career: LAW
Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5813 - U.S. LEGAL ANALYSIS & WRITING

Minimum Credits: 2

Maximum Credits: 2

This course emphasizes the legal reasoning and writing skills used by U.S.-Trained lawyers: common law legal reasoning, working with precedent, case analysis, and rule synthesis.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5817 - CORPORATE TAXATION

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the specific rules of subchapter C related to the taxation of corporations and shareholders. Using a "cradle to grave" approach, the course proceeds through a study of the tax consequences upon formation (birth of the corporation, including incorporation of going concerns), operation (life of the corporation, including distributions of cash or property, stock dividends, and redemption's), mergers and acquisitions (marriage and corporate offspring), and complete liquidation (death, including liquidation of a controlled subsidiary).

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 5105; PROG: School of Law (LAWSC)

LAW 5820 - LL.M COLLOQUIUM

Minimum Credits: 1

Maximum Credits: 1

This is a required course for all students in the LL.M. Program for foreign law graduates. The course will include guidance in the development and writing of projects for seminars or independent study projects. Students will be assisted with topic selection, developing an analytical focus, and writing the paper. Students doing independent studies will present their papers in the class for feedback. The course will also provide an opportunity to address specific issues of interest to students as well as opportunities to observe settings involving practical legal skills.

Academic Career: LAW

Course Component: Colloquium

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5830 - CURRENT ISSUES IN HEALTH LAW 2

Minimum Credits: 0

Maximum Credits: 0

The purpose of this course is the same as current issues in Health Law 1.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 5395 and LAW 5730; PLAN: Health Law

LAW 5831 - CURRENT ISSUES IN HEALTH LAW 1

Minimum Credits: 0

Maximum Credits: 0

The purpose of this course is to increase the awareness of students in the health law certificate program to the rapidly changing health care industry and the equally rapidly changing field of health law. It is difficult, if not impossible, to understand the law regulating the health care industry without

understanding the industry itself. Another purpose of the course is to expose students to a more in-depth treatment of selected topics than they can obtain in the basic survey course in health law and policy. The course also exposes students to topics that are not covered in the basic course, providing a broader view of the field of health law, which helps in the selection of other course offerings and of a topic for the faculty supervised writing requirement. In addition, the course introduces students to the variety of settings in which lawyers are involved in health law and the range of kinds of clients they represent. Classes will be taught by leading experts in the fields of health management and health law practicing in Pittsburgh and elsewhere.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 5731; COREQ: LAW 5395; PLAN: Health Law

LAW 5839 - LAW ENTERTAINMNT SCL ENTRP PRAC

Minimum Credits: 2

Maximum Credits: 2

Law, entertainment and social enterprise ("lese") will expose students to the legal knowledge, skills and roles entailed in the representation of a social entertainment enterprise. Students will gain a broad understanding of the operations of the entertainment industry and the intellectual, corporate and securities matters that permeate the industry. We will specifically use a case study of the steel town entertainment project ("steel town"), a local social entertainment enterprise that is dedicated to building a socially and commercially significant entertainment sector in southwestern Pennsylvania. The course will involve cross-disciplinary and experiential learning and immersion opportunities. In lese, students will acquire substantive knowledge, practical skills and role models needed by lawyers representing a social entertainment enterprise ("see"). Students will learn about social enterprise, entertainment, intellectual property, corporate and securities law. Students will learn to research and draft a private placement memorandum based on a business plan for a strategic entertainment investment fund see will launch in the spring of 2010. Students will work closely with practicing lawyers who represent or volunteer for the steel town entertainment works and other social entertainment enterprises in southwestern Pennsylvania such as WQED, family communications and Pittsburgh Filmmakers. Students will gain a broad understanding of the business operations and legal needs of various social enterprise entertainment clients in the industry, including but not limited to incorporation, strategic alliances, licensing and venture capital.

Academic Career: LAW

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5841 - INTERNATIONAL TAX

Minimum Credits: 3

Maximum Credits: 3

This course will serve as an introduction to the U.S. Federal tax aspects of the cross-border flow of capital and labor. At the most basic level, we will explore the distinction, both for income and for estate and gift tax purposes, between a U.S. And a foreign person. We will then compare and contrast the manner in which U.S. And foreign persons (including tax expatriates) are subject to income tax. We will also cover the special tax regimes applicable to investments made by U.S. Persons in foreign corporations (i.e., The controlled foreign corporation and passive foreign investment company regimes) as well as an introduction to the foreign tax credit rules. Throughout the course of the semester we will consider the potential impact of tax treaties on the rules in the internal revenue code. The grade for the course will be based on a series of drafting projects.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5843 - LITERATURE AND THE LAW SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Law both affects and reflects cultural values and norms. In this seminar we will investigate the degree to which the law represents and interprets fundamental societal values and norms as expressed in selected literary works. We shall read an eclectic sample of American 19th and 20th century novels in a search for the expression of fundamental cultural values, norms, and prohibitions to determine how they find expression or rejection in the law. Particular attention will be paid to whether the principles of property, contract, tort and criminal law promote or contradict the values found in the literary sources. By so doing, we should gain a richer understanding of how law embodies fundamental human needs and desires.

Academic Career: LAW

Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5847 - GENDER AND LAW SEMINAR

Minimum Credits: 3

Maximum Credits: 3

This course will examine how gender influences legal doctrine and how legal doctrine in a number of specific areas of law affects women and shapes societal understandings of gender. The objectives of the course are twofold: (1) to explore how an understanding of gender and feminist legal theory can enrich the study of law; and (2) to learn specific areas of legal doctrine that are particularly relevant to women and societal understandings of gender. The course will cover a number of areas related to issues of gender equality, such as employment, education, family and domestic responsibilities, sexual harassment, and domestic violence. Various feminist legal theories will provide a framework for studying these areas of law.

Academic Career: Law

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5854 - LAW AND ECONOMICS SEMINAR

Minimum Credits: 3

Maximum Credits: 3

This seminar introduces principles of positive and normative microeconomics to explore the extent to which they can explain the workings of the legal system and to examine the effect of legal rules on behavior. Covered topics include the Coase theorem; the choice between property, liability, and inalienability rules; comparative liability rules (e.g., Negligence versus strict liability); contractual damages; criminal liability; family law; game theory; and legal decision theory (e.g., Risk, uncertainty).

Academic Career: LAW

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5857 - DIVERSITY COPR GVRNC SEMINAR

Minimum Credits: 3

Maximum Credits: 3

The seminar will discuss reasons for, and the potential contribution of, women and minorities in senior management ranks and boards of directors in publicly held corporations.

Academic Career: LAW

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 5112; PROG: School of Law (LAWSC)

LAW 5858 - INTERNATIONAL SALES SEMINAR

Minimum Credits: 3

Maximum Credits: 3

The seminar will consider the international law applicable to cross-border sales transactions involving a U.S. Party. We will focus primarily on the United Nations Convention on Contracts for the International Sale of Goods ("CISG"), supplemented by study of the principles of international commercial contracts of the International Institute for the Unification of Private Law (UNIDROIT). The course emphasizes approaching these texts from an international perspective and employing new research resources that have developed in the area of international commercial law. No background beyond familiarity with general contract law is required, although the course on commercial transactions in goods and/or the course on international business transactions would be useful preparation. In the first part of the course we will explore the substantive provisions of the CISG and UNIDROIT principles, including discussion of applicability, contract formation, obligations of quality, avoidance of contract, risk of loss; exemption for failure to perform; and remedies for breach. The remainder of the course will be devoted to presentations by students on their paper topics.

Academic Career: LAW

Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)
Course Attributes: African Studies

LAW 5860 - ANCIENT LAW SEMINAR

Minimum Credits: 3

Maximum Credits: 3

This seminar will introduce students to the very beginnings of Western legal history. Through a comparative examination of the legal systems and practices of ancient Mesopotamia (including Hammurabi's Babylon, c. 1700 B.C.), Ancient Egypt, ancient Israel, ancient Anatolia (the Hittite empire, c. 1500 B.C.), Ancient Greece and ancient Rome, we will investigate the historical origins of "law" as an idea. We will see how each of these societies created law in the image of its own beliefs and needs. We will look at what differentiated the resulting legal systems, and what united them. We will examine not merely the ancient "law in the books" (the formal written codes that have received so much historical and philological attention over the years) but also the ancient "law in action" (the performances, rituals and ceremonies that created legal rights and duties in all these proto-literate societies). We will look at some of the earliest surviving trial records. Throughout the seminar, emphasis will be placed on developing a broad interdisciplinary perspective on the ancient legal cultures examined; readings will be drawn not only from the fields of law and history, but also from religion, anthropology, archaeology, literature and communication studies.

Academic Career: LAW

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

Course Attributes: West European Studies

LAW 5862 - FDS INTELCL PROPERTY LAW SEM

Minimum Credits: 3

Maximum Credits: 3

This seminar deals with the theoretical and policy foundations of patent, copyright, and trademark law. The readings consist of both contemporary and "classic" law review articles and other primary and secondary sources that explore connections between intellectual property law and a variety of possible justifications for the law and its leading cases, statutes, and treaties, including history, liberal political theory, economics and other social sciences, literary theory, and cultural theory. The bulk of the work of the seminar consists of supervision and discussion of original research by students (that is, research in print collections and other collections of analog sources, and digital archives of print collections) on historical intellectual property topics of their choosing, and the production and classroom presentation of a significant piece of original writing by each student.

Academic Career: LAW

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 5209 or LAW 5260 or LAW 5276 or LAW 5328 or LAW 5694; PROG: School of Law (LAWSC)

LAW 5864 - JURISPRUDENCE SEMINAR

Minimum Credits: 3

Maximum Credits: 3

I devote this seminar to the refinement of the fundamental lawyering skill of reading and using cases. We will read together a set of cases drawn from various legal domains. In each instance we will discern the court's choice and its rationale for that choice. We will subject that rationale to rigorous scrutiny, seeing more clearly its weaknesses and its strengths. We will also develop and explore the range of plausible future meanings for each text, i.e., The so-called "holdings." In addition to the group seminar sessions, each student will write a paper that analyzes one or more cases in this thorough and critical manner. The English historian, s.F.C. Milsom, addressed the conundrum of the common law system thus: "how can a system of law, a system of ideas whose hypothesis it is that rules are constant, adapt itself to a changing world? It has not been the ordered development of the jurist or the legislator ' it has been the rough free enterprise in argument of practitioners ' and the strength of the system has been in the doggedness, always insensitive and often unscrupulous, with which ideas have been used as weapons ' the life of the common law has been in the unceasing abuse of its elementary ideas." In this sense the seminar offers the opportunity for each student to become more proficient in rendering such abuse.

Academic Career: LAW

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5866 - ISLAMIC LAW & JURISPRDNC SEM

Minimum Credits: 3

Maximum Credits: 3

This course will focus primarily on Islamic law, and Islamic jurisprudence, in the modern era, using the classical period only as the backdrop against which modern notions and understandings of Islamic law may be tested. We will begin with a brief introduction into the creation and development of Islamic law from its earliest formative period through its golden, classical era in an effort to explore the principles of Islamic jurisprudence. We will then move quickly to address central questions concerning how that law has evolved given that the empires that gave rise to law in the classical era have evaporated and been replaced with nation states that have adopted by and large transplanted political and legal ideas, among them constitutionalism and reliance on secular legal codes to resolve legal questions. In this context, our primary focus will be on the judicial application of Islamic law in Muslim and non-Muslim countries, surveying court practice in states as varied as Egypt, Iraq, Indonesia and Malaysia. We will also address the increased pan-national use of concepts that purport to be based on Islamic law, from Islamic finance to jihad.

Academic Career: LAW

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

Course Attributes: African Studies

LAW 5872 - CRIME,LAW &SOCTY IN "THE WIRE"

Minimum Credits: 3

Maximum Credits: 3

Academic Career: LAW

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 5047; PROG: School of Law (LAWSC)

LAW 5874 - SECURITIES ARBITRATION CLINIC

Minimum Credits: 4

Maximum Credits: 4

The securities arbitration clinic is a two-semester clinic; however, students may enroll in either the spring or the fall semesters, but must complete 2 semesters in order to receive credit. Total credits hours for the two semesters are 8 credits. The securities arbitration clinic offers a practical and educational opportunity in the securities arbitration process. In this course, the students will represent individual small investors with controversies of up to \$75,000.00 Before a securities panel under the supervision of practicing attorneys. The securities arbitration clinic is designed to impart negotiation, advocacy and trial litigation skills to the students, as well as provide a service to investors that might otherwise be unrepresented. Each student will handle all aspects of assigned a particular client's case, including: ' review case file ' meeting with the client to review facts, request supporting documents, and determine relevant issues ' research of applicable securities laws ' meeting with supervising attorney to determine course of action ' if case is accepted, file power of attorney or entry of appearance with the Pennsylvania supreme court or securities and exchange commission, preparing and filing a statement of claim with FINRA and following through with all aspects of case preparation. 'Contact sec attorneys, opposing counsel and the SRO to discuss recourse and schedule the arbitration panel if necessary. ' For arbitrations: prepare case to be presented to the arbitration panel, including obtaining all necessary documents and witnesses, as well as completion of all research on the law; represent the client in arbitration; complete post arbitration work, including review of stipulated decision, if case is settled before arbitration.

Academic Career: LAW

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 5112; PROG: School of Law (LAWSC)

LAW 5875 - SOCIAL SECURITY DISABILITY PRACTICUM

Minimum Credits: 4

Maximum Credits: 4

Academic Career: Law

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5877 - LAW MAKING SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Academic Career: LAW

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law; PREQ: LAW 5032 or LAW 5201 or LAW 5237

LAW 5879 - RIGHTS IN AMERICAN LAW SEMINAR

Minimum Credits: 3

Maximum Credits: 3

In this class we will delve into the whole idea of rights -- in contemporary American culture, in comparative context, and in their historic development in Anglo-American political theory and legal discourse. Then we will inquire how (whether) those ideas play out in current civil rights advocacy in our legal system. The course is not intended to be a doctrinal survey of civil rights law in the U.S. Or a doctrinal study of the law of any one particular area of civil rights. Instead, we will look at (1) the concept -- and history of the concept -- of rights, (2) some particular issues in civil rights doctrine today that run across substantive areas, e.g., Intent, and (3) see how those ideas play out in an interactive practical situation, through a simulated case study, in which students will play the part of lawyers mediating a civil rights issue. A secondary focus of the course is the combination of theory and practice. Does critical theory inform down to earth civil rights practice? If so, how? Sexual harassment or race discrimination are possible contexts for the interactive mediation part of the course (one will be chosen after the course begins). The reduced formality of mediation (as opposed to adjudication) should allow for a better simulation in a seminar setting and better accommodate some of the less doctrinal materials.

Academic Career: LAW

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5880 - IMMIGRATION LAW CLINIC

Minimum Credits: 4

Maximum Credits: 4

The immigration law clinic is a two semester clinic. Students may enroll in either the spring or the fall semesters. Students will receive a grade at the conclusion of each semester, however, in the event that a student does not complete the second semester the student shall receive a w for the course (for both semesters), thus nullifying the grade for the prior semester. Students will receive 3 credits per semester. In the immigration clinic students represent immigrants requesting asylum, facing removal from the United States, and seeking special protection under the violence against women act. In representing clients under the supervision of the clinical professor, students perform all aspects of case preparation including interviewing clients, writing pleadings, appearing in immigration court, appearing before administrative agencies and managing post-relief issues. Clinic students also assist their clients in overcoming linguistic and cultural barriers that could impede their clients' success in the U.S. Legal system. Clients may include refugees, immigrant women and children survivors of domestic violence applying to change their status, persons with criminal convictions who seek relief from removal from the United States and other immigrant populations. Students are also expected to collaborate with community based organizations that serve the foreign born population in the city.

Academic Career: LAW

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 5103; PROG: School of Law (LAWSC)

LAW 5883 - ENVIRONMENTAL LAW CLINIC

Minimum Credits: 6

Maximum Credits: 6

The environmental law clinic provides a forum for students to acquire practical expertise in environmental and administrative law by developing and integrating knowledge and skills with practical judgment in the assumption of responsibility for clients. The clinic will represent groups and individuals who otherwise could not afford legal and technical services for their environmental and community health needs. Focusing on, among other areas, water quality and land use issues in Western Pennsylvania, students may be assigned to handle matters involving the following activities: drafting court pleadings and briefs; representing clients at administrative hearings; engaging in collaborative legal and technical work; supporting pro

bono environmental litigation filed by non-clinic counsel; conducting discovery; drafting proposed legislation and rules; commenting on proposed permits, regulations, and environmental impact statements and assessments; evaluating matters for potential future action; meeting with clients, other attorneys, and governmental officials; developing case strategy; factual investigation; community outreach and development; policy work; and similar tasks. In some instances, students will have primary responsibility for their assigned matters, and the supervising attorney will maintain a secondary role.

Academic Career: LAW

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5887 - US REPRODUCTIVE RIGHTS SEMINAR

Minimum Credits: 3

Maximum Credits: 3

This seminar will involve a 'litigation history' consideration of the U.S. Supreme court's post-1960 constitutional decisions that opened a new era of federal 'substantive due process' liberty protection for reproductive rights. It will also more briefly survey the doctrinally-related rulings addressing gay rights/ gay equality and 'assisted suicide' that have emerged in the post-roe (and post-Casey) eras. The final week (or two) will address and analyze post-Gonzales v. Carhart (2007) developments in the lower federal and state courts.

Academic Career: LAW

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROGRAM: School of Law

LAW 5889 - LEGAL ANALYSIS AND WRITING 2

Minimum Credits: 3

Maximum Credits: 3

This course is designed for those students who need additional practical experience in developing the skills they began to acquire in the first-year legal analysis and writing course. Students will engage in a series of challenging writing projects, focusing primarily on issues arising in the area of commercial law. Assignments will include the drafting of commercial documents, with supporting memoranda to explain and discuss the students' work product.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5890 - ELECTRONIC DISCOVERY SEMINAR

Minimum Credits: 3

Maximum Credits: 3

The discovery process has undergone a revolutionary change in the last quarter-century. Today, the vast majority of documents are created, stored and retrieved electronically, and the sheer volume of electronically-stored information ("ESI") has multiplied exponentially. This explosion in the volume of ESI has raised a host of legal, ethical and technological challenges for litigators and courts alike. This seminar will address many of the pressing legal issues that electronic discovery raises, including the creation, preservation and production of ESI; the distribution of the costs of e-discovery; the risk of spoliation; and the ethical and privilege issues that arise in connection with e-discovery.

Academic Career: LAW

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5891 - LITIGATION AND SOCIAL CHANGE SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Law

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5895 - ARTIFICIAL INTEL & LGL RES SEM

Minimum Credits: 3

Maximum Credits: 3

Researchers in Artificial Intelligence (AI) and law attempt to design computer programs that can perform legal reasoning or that can solve, or assist attorneys to solve, legal problems. The researchers ask tough, philosophical questions, such as, can one state precisely what a legal rule means and decide whether it applies to a situation? How can one separate "hard" from "easy" legal issues? What roles do cases play in interpreting a legal rule? Their answers, however, are not philosophical but scientific; they design computer programs that model the task and conduct experiments to evaluate how well the program performs. The seminar will involve law students and graduate students from other disciplines. The seminar goals are to introduce the fundamentals of AI to law students and of legal reasoning to graduate students and jointly to grapple with the work of researchers who have built AI programs for the legal domain. Law students will more fully appreciate the techniques and assumptions employed by attorneys, and by AI and law researchers, to deal with the uncertainties inherent in legal reasoning.

Academic Career: LAW

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5901 - LEGAL WRITING INDEPNENT STUDY

Minimum Credits: 1

Maximum Credits: 1

All students in order to graduate must successfully fulfill a faculty supervised writing requirement, defined as a paper evidencing significant legal or empirical research and thoughtful writing. This supervised writing requires at least two drafts.

Academic Career: LAW

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5902 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 1

Completion of a paper of publishable quality under the direction and supervision of a full-time faculty member.

Academic Career: LAW

Course Component: Directed Studies

Grade Component: Grad HSU Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5903 - INDEPENDENT STUDY

Minimum Credits: 2

Maximum Credits: 2

Completion of a paper of publishable quality under the direction and supervision of a full-time faculty member.

Academic Career: LAW

Course Component: Independent Study

Grade Component: Grad HSU Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5904 - INTERNAL SKILLS COMPETITION

Minimum Credits: 1

Maximum Credits: 1

This intra-school moot court competition is open to all second and third year students. During the initial fall round, students write a brief and orally

argue it. The winning participants go on to an intermediate level "round robin". Participants advance through the round-robin based upon the relative quality of their oral advocacy. The final rounds, usually occurring after the winter break, consist of the successful participants from the previous semester's round-robin. Participants completing the first round receive one credit awarded in second semester.

Academic Career: Law

Course Component: Colloquium

Grade Component: Grad HSU Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5906 - INTERSCHOLASTIC SKILLS COMPETITION

Minimum Credits: 1

Maximum Credits: 1

This is a national moot court competition that features international law. It is open to second and third year students. Students are selected to represent the school based on proficiency in international law and appellate court advocacy as demonstrated in an interschool competition.

Academic Career: Law

Course Component: Colloquium

Grade Component: Grad HSU Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5907 - CLIENT COUNSELING COMPETITION

Minimum Credits: 1

Maximum Credits: 1

This national labor competition takes place each spring. Open to second and third year students and to first year students at the discretion of the faculty advisor. School representatives will be selected through an interschool competition.

Academic Career: LAW

Course Component: Colloquium

Grade Component: Grad HSU Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5908 - INTERSCHOLASTIC MOCK TRIAL

Minimum Credits: 1

Maximum Credits: 1

The national moot court team is open to third year students. The final team, which competes in the national competition, is selected on a competitive basis. Participation in appellate moot course is helpful. The national moot court team members receive one hour of credit in the second semester.

Academic Career: Law

Course Component: Colloquium

Grade Component: Grad HSU Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5910 - LAW REVIEW

Minimum Credits: 1

Maximum Credits: 1

The law review is a quarterly legal journal published by second and third year students. Members not only write scholarly commentaries on recent developments in legislative and court decisions, but also analyze and edit student and non-student works, preparing those selected for publication. Students with high academic averages are invited to become members following completion of their first year, and, to a limited extent their second year. All first year students may enter a writing competition held over the summer from which additional members are chosen.

Academic Career: LAW

Course Component: Workshop

Grade Component: Grad HSU Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5911 - JOURNAL OF LAW AND COMMERCE

Minimum Credits: 1

Maximum Credits: 1

The journal of law and commerce is a semi-annual legal periodical published by second and third year students. Focusing on material of a commercial nature, the journal attempts to provide scholarly yet practical articles and book reviews written by professionals and students. Journal members must have exhibited superior abilities either through academic performance or through submission of a research paper in the annual writing competition.

Academic Career: LAW

Course Component: Workshop

Grade Component: Grad HSU Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5915 - WM C. VIS INT'L ARBIT MOOT CRT

Minimum Credits: 1

Maximum Credits: 1

Academic Career: LAW

Course Component: Colloquium

Grade Component: Grad HSU Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5916 - G.S. RICH MOOT COURT COMPETITN

Minimum Credits: 1

Maximum Credits: 1

Academic Career: LAW

Course Component: Colloquium

Grade Component: Grad HSU Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5919 - PGH JOURNAL TECH LAW & POLICY

Minimum Credits: 1

Maximum Credits: 1

Academic Career: LAW

Course Component: Workshop

Grade Component: Grad HSU Basis

LAW 5921 - LEGAL WRITING INDEPNDNT STUDY

Minimum Credits: 2

Maximum Credits: 2

All students in order to graduate must successfully fulfill a faculty supervised writing requirement, defined as a paper evidencing significant legal or empirical research and thoughtful writing. This supervised writing requires at least two drafts.

Academic Career: LAW

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5924 - PGH JOURN ENV & PBLC HLTH LAW

Minimum Credits: 1

Maximum Credits: 1

Academic Career: LAW

Course Component: Workshop

Grade Component: Grad HSU Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5926 - MURRAY S. LOVE TRIAL MOOT CRT

Minimum Credits: 1

Maximum Credits: 1

Academic Career: LAW

Course Component: Colloquium

Grade Component: Grad HSU Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5929 - PA PRACTICE PRACTICUM

Minimum Credits: 4

Maximum Credits: 4

This course offers students a great opportunity to help indigent clients and to learn important lawyering skills under the close supervision of an experienced attorney at neighborhood legal services association or laurel legal services. Students will work on cases involving poverty law issues such as eviction, custody, protection from abuse, public benefits, and debt collection. The classroom component will focus on various substantive and procedural poverty law issues, on ethical considerations, and on lawyering skills - such as interviewing, counseling, fact-gathering, legal analysis, negotiation, research, drafting, and litigation - critical to many types of legal practice. Classroom assignments will include simulation exercises and preparing a monthly journal. The field component will focus on advising and representing indigent clients. Field assignments will be available in Pittsburgh, Bridgeville, new castle, and butler. This is an excellent opportunity for students to gain experience in the county where they live or hope to practice. Most field assignments will include courtroom experience, and most students will be able to complete the field component before final exams. Every attempt will be made to schedule the field assignment at times convenient to the student.

Academic Career: Law

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5930 - GIBBONS CRIML PROCDR MOOT CRT

Minimum Credits: 1

Maximum Credits: 1

Academic Career: LAW

Course Component: Colloquium

Grade Component: Grad HSU Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5931 - PITTSBURGH TAX REVIEW

Minimum Credits: 1

Maximum Credits: 1

Academic Career: LAW

Course Component: Workshop

Grade Component: Grad HSU Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5932 - MOOT COURT BOARD

Minimum Credits: 1

Maximum Credits: 1

Academic Career: LAW

Course Component: Colloquium

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5933 - ADVANCED LEGAL WRITING

Minimum Credits: 3

Maximum Credits: 3

The course will focus on drafting various legal documents, which may include pleadings, objective memoranda, motions and supporting briefs, and bench memoranda or judicial opinions. Students will work closely with the professor to improve their writing and analytical skills, and will be expected to complete multiple drafts of some assignments. This is an advanced-level course; however, the professor welcomes students who feel they need additional assistance to improve their basic legal writing skills.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5935 - NATIONAL HEALTH LAW MOOT COURT

Minimum Credits: 1

Maximum Credits: 1

Academic Career: LAW

Course Component: Colloquium

Grade Component: Grad HSU Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5936 - ABA EMPLOYMENT LAW MOCK TRIAL

Minimum Credits: 1

Maximum Credits: 1

Aba employment law mock trial

Academic Career: LAW

Course Component: Colloquium

Grade Component: Grad HSU Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5939 - CRIMINAL DEFENSE PRACTICUM

Minimum Credits: 3

Maximum Credits: 3

This Practicum will teach law students about the practice of criminal public defense. The class will consist of lecture and class discussions, courtroom observation, and direct in-court participation. Students will be required to become Certified Legal Interns and will work under the direct supervision of licensed attorneys in the Pretrial and Trial Division of the Public Defender's Office. By the end of the semester, the following learning objectives are expected: 1. Students should have a comprehensive knowledge of the process by which criminal cases move through the system and be able to articulate the separate stages of a criminal case. Students should be able to explain this process in an understandable and relatable way to clients. 2. Students should have knowledge of the bail and detainer process and understand how these concepts relate to incarcerated clients pre-trial, including the process of writing bond motions. 3. Students should understand the law and ethics around representing individuals in criminal matters, and the importance of zealous, client-centered representation through hands-on experience. 4. Students should be able to conduct a preliminary hearing from beginning to end, including cross-examination of witnesses. 5. Students should be able to formulate compelling arguments based on the elements of the charged offenses. 6. Students should have refined their interview skills and be able to interview clients and extract relevant and pertinent information in preparation for preliminary hearings. Students will be expected to formulate a weekly schedule for the semester and adhere to that schedule. The schedule will include both courtroom and office hours.

Academic Career: Law

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5943 - EXTERNAL MOOT CRT COMPETITION

Minimum Credits: 1

Maximum Credits: 1

Academic Career: LAW

Course Component: Colloquium
Grade Component: Grad HSU Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5946 - CARDOZO MOOT COURT

Minimum Credits: 1

Maximum Credits: 1

This interscholastic appellate moot court competition is sponsored by Cardozo school of law in New York City, and focuses on current issues in the entertainment and communications fields. The national competition is held in New York City in late march each year.

Academic Career: LAW

Course Component: Colloquium

Grade Component: Grad HSU Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5950 - UNEMPLOYMENT COMPENSATION PRAC

Minimum Credits: 2

Maximum Credits: 2

This course provides a clinical option that combines components of a traditional law school clinic and an externship at a legal services or public interest law firm. Representing claimants in unemployment compensation (UC) cases can provide law students with a meaningful trial advocacy experience. For the first three weeks, classes will meet twice a week so students can get up to speed on the substantive law and trial practice skills. Subsequent classes will include bringing in Referee to conduct mock hearings and a Commonwealth Court judge to discuss appeals. By week three, students will meet with and begin interviewing clients at the Pitt Clinic Offices, research applicable law, gather evidence, and conduct hearings before a Referee. The Practicum Supervisors will meet with students at additional times to assist them in preparation for hearings. The Supervisors will accompany each student to their first and perhaps a second hearing. For subsequent hearings, other students in the practicum will accompany the student attorney to observe his or her performance and provide feedback. In addition to representing claimants at hearings, students will file and draft briefs to the UC Board of Review and to Commonwealth Court. Students will submit a weekly journal which contains their analysis of their case preparation, the hearings themselves and their progress. Also, students will help update the Unemployment Compensation Manual, which John Stember has edited for a number of years and which has been published by the Pennsylvania Bar Institute (PBI).

Academic Career: Law

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5952 - CRIMINAL PROSECUTION PRACTICUM

Minimum Credits: 0

Maximum Credits: 0

The office of the district attorney of Allegheny county administers the criminal prosecution practicum under the auspices of former prosecutor, judge Edward J. Borkowski. The practicum runs the full school year, so those interested must devote both semesters to the program. The practicum combines classroom instruction with actual courtroom prosecution experience in order to prepare students for the practice of criminal law. The classroom portion of the course requires students to attend a two hour class once a week in the courtroom of judge Borkowski in the Allegheny county courthouse. Students will be instructed on and be required to conduct opening statements, closing arguments, and direct and cross examination of lay and expert witnesses. Students are provided with a vehicle that includes police reports, lab reports, and transcripts of taped statements based on the class model (a homicide case) from which the exercises are performed in class by the students in a live courtroom setting with a judge and defense attorney present and participating as such. The practical portion of the course requires students to extern ten (10) hours per week in Stephen A. Zappala's Allegheny county district attorney's office. Certified students are permitted to litigate guilty pleas, suppression motions, and nonjury trials in the Allegheny county court of common pleas. The goal of the practicum is to give students a broad overview of the inner workings of a prosecution office while providing hands-on experience in prosecuting cases.

Academic Career: LAW

Course Component: Practicum

Grade Component: No Grade Required

Course Requirements: PROG: School of Law (LAWSC)

LAW 5953 - CRIMINAL PROSECUTION PRACTICUM

Minimum Credits: 8

Maximum Credits: 8

The office of the district attorney of Allegheny county administers the criminal prosecution practicum under the auspices of former prosecutor, judge Edward J. Borkowski. The practicum runs the full school year, so those interested must devote both semesters to the program. The practicum combines classroom instruction with actual courtroom prosecution experience in order to prepare students for the practice of criminal law. The classroom portion of the course requires students to attend a two hour class once a week in the courtroom of judge Borkowski in the Allegheny county courthouse. Students will be instructed on and be required to conduct opening statements, closing arguments, and direct and cross examination of lay and expert witnesses. Students are provided with a vehicle that includes police reports, lab reports, and transcripts of taped statements based on the class model (a homicide case) from which the exercises are performed in class by the students in a live courtroom setting with a judge and defense attorney present and participating as such. The practical portion of the course requires students to extern ten (10) hours per week in Stephen a. Zappala's Allegheny county district attorney's office. Certified students are permitted to litigate guilty pleas, suppression motions, and nonjury trials in the Allegheny county court of common pleas. The goal of the practicum is to give students a broad overview of the inner workings of a prosecution office while providing hands-on experience in prosecuting cases.

Academic Career: LAW

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5954 - D.C. SEMINAR

Minimum Credits: 3

Maximum Credits: 3

The D.C. Seminar is one component of the semester in D.C. Program. The other component of the semester in D.C. Program is the D.C. Externship, which is described separately. Students must enroll in both the D.C. Externship and the D.C. Seminar in order to participate in the semester in D.C. Program. The D.C. Seminar will provide intensive skills training, meetings with alumni and practitioners, and opportunities to reflect on and analyze students' externship experiences. The seminar will meet in the law school's D.C. Classroom. The three seminar credits will be graded. Grades will be based on class participation, a weekly journal, and a significant paper regarding a legal issue or set of issues relating to the externship. The paper can be used to satisfy the upper level writing requirement. Students interested in participating in the semester in D.C. Program should: (a) contact prof. Deasy and/or prof. Baylis directly to discuss the program requirements and externship application process and (b) sign the semester in D.C. Program statement of interest form included with the registration materials and return it to the registrar's office when they submit their registration materials. Students who sign the statement of interest for the semester in D.C. Program should also register for classes as they normally would, in order to keep open the option of taking a regular course load until they have obtained an externship position. Upon securing an externship position, students can drop their other classes and add the D.C. Externship and D.C. Seminar.

Academic Career: Law

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5955 - D.C. EXTERNSHIP

Minimum Credits: 8

Maximum Credits: 10

The D.C. Externship is one component of the Semester in D.C. Program. The D.C. Externship grants credit for an unpaid externship in Washington, D.C. with a government office or non-profit organization. The 8 - 10 externship credits will be awarded on a satisfactory/unsatisfactory basis. Students enrolling in the D.C. Externship must also enroll in the D.C. Seminar

Academic Career: Law

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5958 - LGL RESEARCH FELLOWS PRACTICUM

Minimum Credits: 1

Maximum Credits: 1

Participants in this one credit, graded course will sharpen and refine basic research skills learned during previous legal research courses. With supervision from the faculty services librarian and other Barco law librarian librarians, students will learn to develop legal research strategies, conduct efficient and comprehensive legal research and to effectively communicate the results of their research to faculty members. Fellows may

draft memos, generate spreadsheets or develop bibliographies as finished work products for assignments. The research fellow will encounter a diversity of research requests just as an associate would receive a variety of assignments in a law firm setting. Fellows will have an opportunity to directly interact with faculty members.

Academic Career: LAW

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: (LAW 5076 and LAW 5720) and (LAW 5275 or LAW 5386 or CREQ: LAW 5491); PROG: School of Law (LAWSC)

LAW 5960 - NIAGARA MOOT COURT

Minimum Credits: 1

Maximum Credits: 1

This competition requires the briefing and argument of a hypothetical case between the United States and Canada before the international court of justice, and is sponsored by the U.S. - Canada international law institute.

Academic Career: LAW

Course Component: Colloquium

Grade Component: Grad HSU Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5961 - TEACHING ASSISTANT TRAINING

Minimum Credits: 1

Maximum Credits: 1

Teaching assistant training

Academic Career: LAW

Course Component: Workshop

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5962 - TAX COMPETITION

Minimum Credits: 1

Maximum Credits: 1

Tax competition

Academic Career: LAW

Course Component: Colloquium

Grade Component: Grad HSU Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5966 - PRISON LAW & LITIGATION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: LAW

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5967 - EXTERNSHIP

Minimum Credits: 2

Maximum Credits: 2

This second- and third-year elective introduces students to the working skills of an attorney or judicial clerk. Students are assigned to public legal agencies with a high volume of legal work or as clerks for federal, state and county judges. Type of work varies with each assignment but may include legal research, drafting memoranda and legal documents, investigating cases, interviewing clients and witnesses, and negotiating on behalf of

clients. Third-year students, if certified, may appear on behalf of clients in court.

Academic Career: LAW

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5968 - SUMMER EXTERNSHIP

Minimum Credits: 2

Maximum Credits: 2

This second and third-year elective is intended to introduce students to the working skills of an attorney or judicial clerk. Students are assigned to public legal agencies with a high volume of legal work or as clerks for federal, state, and county judges. Work required of interns varies according to the assignment, but responsibilities may include legal research, drafting memoranda and legal documents, investigating cases, interviewing clients and witnesses, and negotiating on behalf of clients.

Academic Career: LAW

Course Component: Practicum

Grade Component: Grad HSU Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5969 - SUMMER EXTERNSHIP

Minimum Credits: 4

Maximum Credits: 4

This second and third-year elective is intended to introduce students to the working skills of an attorney or judicial clerk. Students are assigned to public legal agencies with a high volume of legal work or as clerks for federal, state, and county judges. The work required of interns varies according to the assignment, but responsibilities may include legal research, drafting memoranda and legal documents, investigating cases, interviewing clients and witnesses, and negotiating on behalf of clients.

Academic Career: LAW

Course Component: Practicum

Grade Component: Grad HSU Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5970 - SUMMER EXTERNSHIP

Minimum Credits: 3

Maximum Credits: 3

Academic Career: LAW

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5972 - EXTERNSHIP

Minimum Credits: 4

Maximum Credits: 4

This second- and third-year elective introduces students to the working skills of an attorney or judicial clerk. Students are assigned to public legal agencies with a high volume of legal work or as clerks for federal, state and county judges. Type of work varies with each assignment but may include legal research, drafting memoranda and legal documents, investigating cases, interviewing clients and witnesses, and negotiating on behalf of clients. Third-year students, if certified, may appear on behalf of clients in court.

Academic Career: LAW

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5973 - VETERAN'S PRACTICUM

Minimum Credits: 3

Maximum Credits: 3

This course will explore the structure of the Department of Veterans Affairs, the role of the regional office, the structure and rules of the board of veterans appeal and the rules of appellate procedure for the United States court of appeals for veterans' claims. The student will analyze case law and apply it to real world situations to help those who have served our country obtain the benefits they deserve. This class will consist of class meetings 2 hours per week plus 52 hours working with veterans in the clinic. The course will cover veterans' affairs law as it affects compensation for service connected injuries.

Academic Career: LAW

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5976 - EXTERNSHIP

Minimum Credits: 1

Maximum Credits: 1

Academic Career: LAW

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5977 - INTRODUCTION TO AMERICAN LAW

Minimum Credits: 3

Maximum Credits: 3

This is a required course for all students in the LL.M. Program for foreign law graduates. It provides a basic overview of the U.S. Legal system. An effort is made to provide both broad coverage of important areas of American law as well as a detailed look at specific issues. Students will be introduced to some of the most important cases in U.S. Legal history.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5978 - COMP CORPR GOVERNANCE SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Following the Enron and WorldCom debacles in 2001-02, the US Congress passed the Sarbanes-Oxley Act (2002)(SOX). Following the near complete economic meltdown of 2008, Congress passed the Dodd-Frank Act (2010). The seminar will review and discuss the governance provisions of the two acts. Students will then each write a paper concerning recent corporate governance developments in a foreign nation, such as China, Indonesia or Japan on the Pacific Rim, or the European Union, the United Kingdom, or France on the Atlantic, noting both the similarities and the differences between governance regimes. Both a substantial paper and a class presentation will be required.

Academic Career: Law

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 5112; PROG: School of Law

LAW 5980 - ETHICAL ISSUES IN CLINICAL CARE

Minimum Credits: 3

Maximum Credits: 3

In this intensive seminar students observe and analyze ethical and health law issues as they arise in two clinical settings: an intensive care unit (ICU) and a medical unit in University hospitals. Students spend ~20 hours/week, allocated across two mornings and one full day per week, observing in the clinical setting. They accompany physicians and other healthcare professionals on clinical rounds, observe family meetings or ethics consultations, and attend one or more ethics committee meetings. Students are expected to complete a self-paced medical terminology text; must attend an orientation session (time and location to be determined); and must participate in the weekly meeting (typically in the late afternoon or early

evening) that synthesizes their observational experience. This affords students the opportunity to analyze their experience and the issues they observe, in light of assigned readings. Relatively light reading is assigned for each week. Readings bring social science perspectives to bear on medicine and healthcare and illuminate clinical ethics issues. Students also make a case presentation, write a case analysis, maintain a journal or field notes of the clinical experience, and submit those field notes for review and comment.

Academic Career: Law

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5984 - TRADE SECRETS LAW

Minimum Credits: 2

Maximum Credits: 2

This course will cover various aspects of trade secret law with an emphasis on practical considerations relevant to the business environment. Students will examine public policy considerations of trade secret law, compare the uniform trade secrets act (UTSA) to the restatement approach and to the Pennsylvania UTSA, and compare trade secret protection with other forms of intellectual property. We will review the elements of a trade secret and compare the types of information and the circumstances under which courts have recognized or denied trade secret protection. The rights of a trade secret owner relative to its employees and third parties will be examined in detail, including use of confidentiality agreements and non-competition agreements. Enforcement of trade secret rights will be surveyed and include civil and criminal proceedings including the economic espionage act (EEA). Practical issues from the business world are strongly emphasized in this course including drafting and negotiating confidentiality agreements, establishment of business policies and procedures for trade secret protection, practical considerations surrounding the bringing and settling of trade secret cases, and drafting and enforcing non-competition agreements.

Academic Career: LAW

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5986 - INTERNATIONAL ARBITRATION SEM

Minimum Credits: 3

Maximum Credits: 3

Academic Career: LAW

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5988 - NATIONL ENVIRONMENTAL MOOT CRT

Minimum Credits: 1

Maximum Credits: 1

A national moot court competition that features environmental law. Open to second and third year students, only students who are members of the inter-school team will be awarded one credit.

Academic Career: LAW

Course Component: Colloquium

Grade Component: Grad HSU Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 5990 - WRITING FOR RESULTS

Minimum Credits: 2

Maximum Credits: 2

This course will introduce students to the written components of the bar exam in all states, essay questions and performance tests, which together are worth between one-half and two-thirds of the overall score depending on the state. Students will learn effective techniques for reading, outlining, and writing answers and will practice these techniques by taking multiple practice questions under timed, exam-taking conditions during class. Students will receive feedback on their answers through a variety of methods, including at one or more required individual meetings with the professor.

Academic Career: LAW

Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5991 - SUMMER EXTERNSHIP

Minimum Credits: 1
Maximum Credits: 1
Academic Career: LAW
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 5992 - EXTERNSHIP

Minimum Credits: 3
Maximum Credits: 3
Academic Career: LAW
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

Law - MSL (graduate program) course offerings

LAW 2020 - CONTRACTS

Minimum Credits: 4
Maximum Credits: 4
What promises are legally enforceable? Why does the law enforce those promises? What does it mean to enforce a promise? This course explores those questions, using the basic concepts, principles, and doctrines of contract law, sometimes called "the law of broken promises." Specific topics include the requirements for formation of a contract (such as offer and acceptance), justifications for enforcing promises (such as consideration or detrimental reliance), justifications for denying or limiting enforcement (such as unconscionability or mistake), interpretation of contract terms, and remedies for breach of contract.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2024 - PROPERTY

Minimum Credits: 4
Maximum Credits: 4
Property law, broadly defined, governs relationships among people with respect to "things." These "things" include land ("real property"), tangible objects such as a casebook ("personal property"), and intangibles such as a publisher's right to prevent others from reproducing the original content in a book ("intellectual property"). The property course examines how property rights may be limited, in situations where more than one person has rights to the same piece of property, and in situations where one owner's rights must be balanced against the rights of the owner of a separate piece of property. Topics covered in the property course may include: modes of acquisition of property (e.g., Capture, find, creation), present possessory estates and future interests, co-ownership of property, marital property, landlord-tenant law, land sales, title recording systems, easements, restrictive covenants, nuisance, public land use regulation (including zoning, eminent domain, and the issue of regulatory takings), and global property issues.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2028 - TORTS

Minimum Credits: 4

Maximum Credits: 4

This course explores the methods and policies for allocating losses from harm to one's person, property, relations, and economic and other interests. The course covers the substantive principles of tort claims and their defenses. The course examines the three main theories of tort liability: intent, negligence, and strict liability and analyzes the theoretical and practical aspects of tort liability.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2032 - LEGISLATION AND REGULATION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2033 - CIVIL PROCEDURE

Minimum Credits: 4

Maximum Credits: 4

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (PLAW)

LAW 2038 - ENERGY LAW AND REGULATION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (PLAW)

LAW 2039 - MEDIA LAW

Minimum Credits: 2

Maximum Credits: 2

The last two years have seen the revelation of "deep throat", the most famous confidential source of all time, juxtaposed with the spectacle of reporters going to jail for refusing to divulge confidential sources. Representing a media client today requires an understanding of the constitutional and statutory issues surrounding the gathering of news and protection of confidential sources. Although the confidential source issue is the hottest issue today, representing a media client involves much more. This course is designed to provide an overview of both the legal framework and the 'real world' considerations related to libel, invasion of privacy, access to courtrooms and judicial records, access to public records, protection of confidential sources, pre-publication review, and responding to subpoenas.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2041 - LAWYERING: A HISTORY

Minimum Credits: 3

Maximum Credits: 3

This course will survey the history of lawyering from ancient times to the present day. Students will be invited to meet Cicero and the Roman jurists, look inside medieval courtrooms to see English common lawyers and European civilians at work, experience the rhetoric of John Adams and Daniel Webster while considering the daunting challenges faced by the emerging bar in early America, and assess the economic, industrial and organizational conditions that contributed to the cultural ascendancy of lawyers in the twentieth century United States. We will investigate both the historical successes of the legal profession and its failures, its championing of great causes and its complicity in great injustices. We will look at lawyering in its changing social, ethical and technological contexts, examining how lawyers over time and in various national settings have constructed their identities, established their power, viewed their duty, and articulated their collective mission. We will investigate how lawyers have been trained, and how different methods of legal education have shaped them. We will learn about legal lives lived far away and right here in Pittsburgh. We will look at today's American bar, assessing its recent history as a business dominated by the rise of the billable hour, and at the end of the course we will peer into some of the possible futures awaiting attorneys working in a digital age.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2043 - INTERNATIONAL COMMERCIAL ARBITRATION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

LAW 2046 - CRIMINAL LAW

Minimum Credits: 3

Maximum Credits: 3

Traditional and contemporary doctrines of substantive criminal law are analyzed, with focus on such issues as: theories of punishment, the formal elements of criminal culpability, the theory and degrees of homicide, criminal causation, inchoate crimes, accessorial and vicarious liability, conspiracy, and defenses of excuse and justification.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2047 - CRIMINAL PROCEDURE

Minimum Credits: 3

Maximum Credits: 3

The subject matter is supreme court decisional law and policy issues relating to the application and scope of the fourth, fifth, sixth, and fourteenth amendments to the United States constitution. Topics typically covered include: incorporation theory, right to counsel and related entitlements, the exclusionary rule, pretrial identification procedures, search and seizure law, and interrogation law. Students should gain both knowledge relating to constitutional law, which governs the permissible parameters of police conduct and defendants' rights, and an informal sense of how the criminal justice system actually operates.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2061 - LEGAL ASPECTS OF HEALTHCARE COMPLIANCE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Health Care Compliance
Course Attributes: World Wide Web

LAW 2062 - INTRODUCTION TO LEGAL SYSTEM FOR HEALTHCARE AND COMPLIANCE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Health Care Compliance
Course Attributes: World Wide Web

LAW 2076 - LEGAL ANALYSIS AND WRITING

Minimum Credits: 4
Maximum Credits: 4
Students in this first year course will begin to develop the art of analytical legal writing. In classes, students engage in discussions and practical exercises as they learn to analyze cases, statutes and other authorities. The course emphasizes student development in the following skills: organizing the analysis of legal issues logically and coherently; expressing written legal analysis clearly, concisely, and effectively; developing and defending legal arguments, both in writing and orally; performing basic legal research; drafting selected legal documents; and using proper citation form. Exercises and other assignments promote the students' awareness and appreciation of relevant ethical standards.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2082 - CLIMATE CHANGE AND THE LAW

Minimum Credits: 2
Maximum Credits: 2
This course examines the problems of climate change and how law and policy and corporate America are responding to them. The course begins by describing what is encompassed under the current "climate change" debate; considering what science can tell us about the climate change issue, including the uncertainties in that science and the significance and role of descent from the mainstream view of the science. It then considers, given the current state of the science, how we should assess the actions that should be taken to respond to this problem. That assessment should take account mitigation vs. Adaptation. The course also considers the legal responses to the issue of climate change. This course will discuss the united nations framework convention on climate change (UNFCCC), the KYOTO protocol, and the likely future of both. This course will discuss the domestic federal legislation with regard to GHGS as well as certain regional initiatives and voluntary commercial GHG reduction schemes. This part of the course will be examining the "boomlet" in global warming litigation in federal and state courts looking at the administrative and tort actions pending in U.S. Courts. Finally, the course will address sustainability issues for business, including green building, carbon neutral strategies, certain esoteric accounting issues, some carbon trading issues. Lectures will include voluntary and NGO-driven business initiatives (proactive approaches) as well as certain secondary effects caused by climate change that affect businesses.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2089 - PUBLIC HEALTH LAW

Minimum Credits: 3
Maximum Credits: 3
Public health law touches the lives and livelihoods of every person. Understanding the intent, basic structure, and methods for employing the local, state, and federal laws governing public health activities will facilitate legal practice in a variety of disciplines, including: municipal, healthcare, environmental, and judicial practice. This is a survey course, intended to introduce students to the most commonly encountered national and world public health law issues. Specific topics include: an overview of the epidemiologic principles underlying public health law; police powers; balancing public and private interests at stake; privacy and confidentiality of public health information, emergency preparedness; search, inspection, embargo

and condemnation of private property; abatement of nuisances and dangerous conditions; and the major federal statutes affecting public health. In addition, material concerning world public health issues will be presented to help students understand the community health benefit from comprehensive public health legislation. Finally, ongoing local public health law interventions will be analyzed using the basic principles introduced early in the course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2090 - CONSTITUTIONAL LAW: FREEDOM OF RELIGION

Minimum Credits: 2

Maximum Credits: 2

This course will examine the first amendment's establishment and free exercise clauses, including the history and purpose of each, the applicable doctrinal tests, and how the supreme court's theory regarding the clauses has changed over time. Classroom discussion will focus on the specific application of these tests, the limitations of each, and whether the tests fulfill the purposes of the religion clauses. Finally, the course will explore how the requirements of the establishment and free exercise clauses can be reconciled and whether any of the current tests or theories can provide a workable solution and balance.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2093 - THE LAW OF PROFESSIONAL SPORTS

Minimum Credits: 2

Maximum Credits: 2

Focusing on the 4 major professional sports leagues, this course will examine how the common law, state and federal statutes, and even certain constitutional doctrines have been applied to professional sports franchises, its players and agents, and its fans. The topics for discussion will include: the role and power of the commissioner; the importance of collective bargaining agreements, including uniform player contracts, in the development of a body of law governing the relationship between a player and his club; the current state of antitrust law in pro sports; the agent-player relationship; contract negotiations, including the salary arbitration process; the variety of intellectual property issues applicable to leagues, its teams and its players; the rights (or lack thereof) of pro sports fans, including the application of tort law principles to fan injuries; the attempts by pro-sports leagues and teams to control the off-field behavior of its players, and the approaches by the various leagues to regulate performance enhancing drugs.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2094 - INTERNATIONAL TRADE LAW

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2099 - OIL AND GAS LAW

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2101 - CONSTITUTIONAL LAW

Minimum Credits: 4

Maximum Credits: 4

An introduction to American constitutional law, with an emphasis on U.S. Supreme court decisions. The course will explore various methodologies of constitutional interpretation and modes of constitutional analysis. Topics covered include the role of the judiciary in reviewing acts of the political branches of government; the separation of powers and relations among the three branches of the federal government; the powers of the national government and federalism-based limits on congress and the states; and individual constitutional rights.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2103 - EVIDENCE

Minimum Credits: 3

Maximum Credits: 3

This course is an introductory course on the rules of evidence and will focus on the federal rules of evidence. We will cover hearsay and its exceptions, relevance, the use of character evidence, cross-examination and impeachment, among other subjects.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2105 - FEDERAL INCOME TAX

Minimum Credits: 4

Maximum Credits: 4

This course will introduce the basic concepts found in the internal revenue code, as interpreted by the internal revenue service and the courts. We will explore the concept of "income," and specifically consider the difference between ordinary income and capital gain, the timing of income inclusion, and the determination of a taxpayer's basis in property (which relates to the calculation of income). We will also explore exclusions and deductions that may reduce a taxpayer's income. This course has two primary goals: first, to give the students a basic familiarity with the internal revenue code so that they will be aware of tax issues that may arise in their practice, and second, to prepare students who have (or acquire) a deeper interest in tax for more advanced courses in taxation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2110 - ESTATES AND TRUSTS

Minimum Credits: 3

Maximum Credits: 3

This course provides a survey of the gratuitous, post-mortem transfer of wealth, including the substantive law of wills and trusts. Topics in estate law include probate and non-probate property; intestacy; bars to succession; constructive trusts; mental capacity; disclaimers; will formalities; holographic wills; revocation; integration; republication; revival; incorporation by reference; acts of independent significance; payable on death provisions; and predeceased beneficiaries. Topics in trust law include formation; parties; beneficiaries; resulting trusts; constructive trusts; discretionary trusts; trust protectors; self-settled asset protection trusts; and powers of appointment.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2112 - BUSINESS ORGANIZATIONS

Minimum Credits: 3

Maximum Credits: 3

This elective course surveys the law of modern business organizations, including corporations, limited liability companies, and partnerships. The course covers topics such as business planning, corporate governance, fiduciary duties, shareholder liability and rights, as well as transactions in shares. The course also provides exposure to a variety of subjects, including agency, corporate finance, corporate taxation, mergers and acquisitions, and federal securities laws. No exposure to accounting, economics, or finance is necessary or presumed. Due to overlapping subjects, students are not permitted to take this course if they already have taken agency & partnership.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2116 - COMPARATIVE LEGAL CULTURES

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2126 - CORPORATE FINANCE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 2112; PROG: School of Law (PLAW)

LAW 2132 - LAW AND HUMAN BEHAVIOR

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

LAW 2139 - TRANSIT LAW

Minimum Credits: 2

Maximum Credits: 2

Transit law

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (PLAW)

LAW 2142 - LEGAL WRITING FOR THE TRANSACTIONAL LAWYER

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

LAW 2143 - WATER & SHALE GAS DEVELOPMENT

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2192 - FOOD AND DRUG LAW

Minimum Credits: 2

Maximum Credits: 2

This course will consider the many ways in which society attempts to manage the production, packaging and distribution of food and the production and application of medical technologies. This course will trace the research and development process of cosmetics, food supplements, drugs and devices from laboratory to ultimate use. The major areas to be covered include the government regulation of cosmetics, food, food supplements, drugs, devices and biotechnologies, tort liability in connection with the production/manufacture, prescription, distribution and sale of these products and the bioethical challenges posed by biotechnologies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2200 - INTRODUCTION TO ACCOUNTING FOR LAWYERS

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2201 - ADMINISTRATIVE LAW

Minimum Credits: 3

Maximum Credits: 3

It is next to impossible to practice law today without dealing with administrative agencies, federal or state, or the law they create. Indeed, more cases are adjudicated in administrative bodies than in the courts. The substantive law that is created and implemented by agencies is the subject matter of individual courses such as environmental law, securities regulation, taxation, and banking. It is the procedural/structural law that governs the creation and implementation of substantive law by agencies that is the focus of administrative law. We will discuss the different types of functions undertaken by agencies, for example, rulemaking and adjudication in all its forms and how those disparate functions determine the appropriate structure of decision-making. At the federal level, where we will focus our attention, the procedures that apply originate in a variety of sources, including the United States constitution, the administrative procedure act and other statutes, and agency rules. There is often a complex interplay among these sources of law, which will be one of the topics we will explore. Another is the relationship of agencies to the chief executive and the legislature, an area that implicates important constitutional doctrines, statutes, and executive orders. Finally, we will spend considerable time on the availability, timing, and scope of judicial review of agency action, including the doctrines of standing, ripeness, exhaustion of administrative remedies, and judicial deference to agency findings of fact, interpretations of law, and exercises of discretionary power.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2207 - ANTITRUST

Minimum Credits: 3

Maximum Credits: 3

This survey course will focus on federal antitrust law, including the Sherman and Clayton acts and cases construing those statutes. We will examine the legal and economic analyses of three major categories of anticompetitive conduct: agreements among competitors, monopolization, and horizontal mergers.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2210 - PATENT LAW

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2212 - BUSINESS PLANNING, ENTREPRENEURSHIP AND TECHNOLOGY

Minimum Credits: 2

Maximum Credits: 2

This course will address key legal and business issues faced by entrepreneurs when establishing a commercial enterprise. Specifically it will address the protection and development of ideas, the commercialization of technology, and the legal and business aspects involved in forming, funding, operating, and managing the emerging business enterprise. The course will be taught from a business planning perspective. Through participation in the course students will be exposed to advanced business law concepts applicable to emerging companies in the business, technology, and medical fields.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2213 - CONFLICT OF LAWS

Minimum Credits: 3

Maximum Credits: 3

Disputes between parties from different states or countries and disputes having contacts with multiple jurisdictions raise a host of challenging legal questions, including: (1) which jurisdiction's law will govern the dispute; (2) whether and in what circumstances a judgment rendered in one state or country will be recognized and enforced in other jurisdictions; and (3) how courts should make these determinations. State laws, the federal constitution, and international and foreign law all play a role in deciding these issues, which can have a profound impact on the ultimate resolution of the controversy.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2216 - EMPLOYMENT DISCRIMINATION

Minimum Credits: 3

Maximum Credits: 3

This course will examine federal statutory law as it applies to employment discrimination, with an emphasis on discrimination based on race, sex, color, ethnicity, national origin, religion and age. The most prominent statutes in this area are title VII of the civil rights act of 1964, the age discrimination in employment act, and an older civil rights statute from the reconstruction era, 42 U.S.C. 1981. The course will explore the substantive meanings of "discrimination" under these acts, the models of proof for establishing a claim, the theoretical underpinnings of the statutes, and some of the procedural and remedial issues relevant to employment discrimination law.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (PLAW)

LAW 2218 - WHITE COLLAR CRIME

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

LAW 2219 - FAMILY LAW

Minimum Credits: 3

Maximum Credits: 3

A study of the relationship of the law to the family. Topics include: the legal definition of marriage, of family; the rights, powers, duties and obligations among family members; the extent and means of state involvement in the family's conduct of its own affairs; dissolution of the family, and the continuing obligations among family members thereafter; problems of jurisdiction and choice of law.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (PLAW)

LAW 2221 - JURISPRUDENCE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 2224 - INSURANCE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (PLAW)

LAW 2225 - INTERNATIONAL BUSINESS TRANSACTION

Minimum Credits: 3

Maximum Credits: 3

This course analyzes basic international business transactions and the effects of U.S. Law, specific foreign law, and treaties on the conduct of the parties involved. The course covers issues of commercial law, regulation of cross-border transactions, dispute resolution, tax considerations, and antitrust law. Although a basic understanding of each of the areas of the law in the domestic context is helpful, there are no course prerequisites. Students are expected to develop an understanding of the U.S. Laws applicable to private international transactions and an awareness of the risks inherent in doing business in or with other countries and their nationals.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

Course Attributes: Russian & East European Studies, West European Studies

LAW 2226 - INTERNATIONAL LAW

Minimum Credits: 3

Maximum Credits: 3

This course explores how international law regulates, or attempts to regulate, relations between states, and between states and individuals. It therefore examines both classical and contemporary topics such as the sources of international law, rights and responsibilities of states, jurisdiction, the incorporation of international law into domestic law, individuals as bearers of rights and obligations at the international level (in particular human rights law and humanitarian law), the law of treaties, the law on the use of force and the role of the United Nations and the International Court of Justice in the peaceful settlement of international disputes. Several specific topics will be examined to illustrate the increasing impact of international law on domestic legal practice, and the influence of the United States on the development of modern international law.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

Course Attributes: West European Studies

LAW 2240 - PENNSYLVANIA PRACTICE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2242 - PATENT LAW PRACTICE

Minimum Credits: 2

Maximum Credits: 2

A course designed for students with a special interest in patent law, and for those students preparing to take the patent bar examination. Students are taught claim drafting, rules of practice and procedure followed by the United States patent and trademark office, how to draft patent documents and how to write a patentability search report.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2246 - SECURITIES REGULATION

Minimum Credits: 3

Maximum Credits: 3

A course designed for students with a special interest in patent law, and for those students preparing to take the patent bar examination. Students are taught claim drafting, rules of practice and procedure followed by the United States patent and trademark office, how to draft patent documents and how to write a patentability search report.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 2112; PROG: School of Law (PLAW)

LAW 2251 - BIOTECHNOLOGY LAW

Minimum Credits: 2

Maximum Credits: 2

Virtually every aspect of our lives is touched by biotechnology, so this class is designed as an introduction to many of the critical issues related to biotech and society. Specific topics include genetically modified organisms (Franken foods), patenting life, vaccination laws, human and animal testing, bioterrorism, biological weapons laws, bio-prospecting, pharmaceutical pricing, FDA laws, as well as scientific (and investor) fraud in

biotech. The class also focuses on the policy relationships between law and public health, as well as related underlying economic incentives that can create tension in the life sciences. The class includes a number of guest speakers from industry including biotech licensing professionals and an FDA practice attorney. This class will be useful for anyone planning to practice law related to the life sciences including patent law. The issues are presented in a non-technical manner so the class is accessible to anyone interested in the field. It may be helpful to have exposure to patent law in general but it is not required.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2253 - TRANSNATIONAL LITIGATION IN COURTS AROUND THE WORLD

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2258 - CAPITAL PUNISHMENT: THEORY AND PRACTICE

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2259 - ESTATE AND GIFT TAX

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

LAW 2260 - INTELLECTUAL PROPERTY

Minimum Credits: 3

Maximum Credits: 3

In the information age, intellectual property (IP) law has taken on even greater significance. IP law is designed to encourage the production of certain forms of information by granting property rights to the producers, enabling them to appropriate the value of the information they produce. In this course, we survey state intellectual property law (e.g., Unfair competition and trade secrets) as well as federal intellectual property law including trademark, patent and copyright. We examine some of the ramifications of recent technological developments on intellectual property law and some of the problems of international protection of intellectual property.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2265 - LABOR LAW: PRIVATE SECTOR

Minimum Credits: 2

Maximum Credits: 2

This course, after a short review of American labor history, will focus almost exclusively on the national labor relations act, the nation's premier statute dealing with labor management relations in the private sector, and the model for many public sector state laws covering the field. The course

deals with the rights of individual employees, employers, and unions with respect to concerted activity, unionization, the establishment of collective bargaining units, elections conducted by the national labor relations board, and the collective bargaining process. The course will also cover strikes, picketing and hand-billing by unions, the current restrictions or limitations on such conduct, and the administration of collective bargaining agreements, grievance processing, and the arbitration of disputes. We will study and critically examine procedural and substantive case law developed by the national labor relations board, and its impact upon labor-management relations in both unionized and non-union environments. The course concludes with a discussion of the future of labor relations. We will discuss more recent tactics employed by unions and management and engage in a debate as to whether and how the current labor laws should be amended. Classes will be a combination of both lecture and dialogue. We also will discuss critical issues with representatives from Pittsburgh's union and business communities.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2272 - BANKRUPTCY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

LAW 2273 - STATE AND LOCAL TAX

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ or CREQ: LAW 2105

LAW 2275 - INTERNATIONAL AND FOREIGN LEGAL RESEARCH

Minimum Credits: 1

Maximum Credits: 1

Finding the law of foreign places, knowing the resources produced by international entities, and searching within the variety of documents that govern our world can qualify you for some of the best jobs in the legal market. In this one credit course you will acquire those skills while completing five short research projects and compiling your own vade mecum for future reference.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2282 - NATIONAL SECURITY LAW

Minimum Credits: 2

Maximum Credits: 2

The Preamble to the U.S. Constitution, which famously begins "We the People," makes clear the high value our founders placed on national security and the role of law. The Preamble describes the Constitution's very purpose as including "establish[ing] Justice, insur[ing] domestic Tranquility, provid[ing] for the common defence,... and secur[ing]... Liberty." Today, national security remains a priority responsibility for our federal leaders. Our nation continues to strive for the right balance between security and liberty, mixed with a healthy dose of Justice, all in the name of "form[ing] a more perfect Union." The Constitution has continued to provide a framework for our government's exercise of national security powers. At the same time, the field of national security law has witnessed rapid growth and significant change, particularly over the past fifteen years. The coming years will be no less dynamic. This course examines national security law through a study of essential legal sources, historical precedents, and current and emerging national security issues. Topics include: each branch's role (and limitations) in national security decision-making, war powers and military force, crime and counterterrorism, and the role of information in national security. Together, we will aim to better understand the role of law in keeping our homeland safe, and the relationship (and necessary balance) between security, liberty, and justice.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 2283 - MENTAL HEALTH LAW

Minimum Credits: 2

Maximum Credits: 2

This course will focus on the impact of the legal system on persons with mental health disabilities. Civil proceedings, such as guardianships, commitments and treatment rights will be covered. Civil law areas covered will include mental illness, substance abuse, confidentiality, consent, substitute decision making and the rights of parents and of children in juvenile proceedings, custody determinations and divorces. While the primary focus will be civil law, criminal law topics will include capacity, right to refuse treatment, and insanity as a defense. The role of mental health professionals and mental health courts will be a prominent issue in the course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2284 - HEALTH CARE COMPLIANCE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 2290 - EMPLOYMENT LAW

Minimum Credits: 3

Maximum Credits: 3

Focuses on the law governing nonunionized workers and work sites, whether in private or public sector, and whether skilled labor or managerial/professional. Topics include: doctrine of employment at-will; wrongful discharge; title vii; equal pay act; pregnancy discrimination act; executive order 11246; hiring; promotion; harassment; comparable worth and discharge; OSHA; and erisa.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2291 - MERGERS AND ACQUISITIONS TRANSACTION PRACTICE

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 2112

LAW 2295 - EXPERT WITNESS

Minimum Credits: 2

Maximum Credits: 2

In recent years, the use of expert witnesses has proliferated as both civil and criminal litigation have become more complex and technical. In this course, students will learn when expert testimony is needed; where to find appropriate experts; how to work with the expert to develop a theory of the case; and many more issues leading up to the actual trial of the case. Once the case reaches the courtroom, students will learn how to organize and present their own expert's testimony in a clear and concise fashion, and how to pursue the challenging task of "doing battle" with the opposing expert.

In the end, students will achieve a greater appreciation for the subtleties of expert testimony, while at the same time acquiring the tools to deal with witnesses who speak in technical and unfamiliar language.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2296 - CORPORATE GOVERNANCE

Minimum Credits: 2

Maximum Credits: 2

This course will examine the internal structures, processes and standards of behavior that are required by law in the governance of corporate organizations, utilizing a series of hypothetical problems. Particular attention will be given to the corporate director's duties of oversight, care and loyalty, to the shareholders' ability to enforce those duties, and to the concept of fiduciary "independence." Some features of the Sarbanes-Oxley act of July 2002 and related rules will also be considered.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2297 - WORKERS' COMPENSATION

Minimum Credits: 2

Maximum Credits: 2

This course deals with the law, theory and practice of workers' compensation under state and federal administrative programs, including the Pennsylvania and other state acts; longshore and harbor workers' compensation act (LHWCA); federal employees' compensation act (FECA); and the federal employers' liability act (FELA). The student will study the essential aspects of such laws, including their development and purpose, coverages, the various levels and varieties of benefits provided and how claims are established and enforced. Special emphasis is placed on how such laws affect the rights of individuals to other remedies such as the ability to sue in tort or assert discrimination claims; how compensation programs are implicated in contemporary efforts to reform healthcare coverage and delivery; and the role workers' compensation plays in occupational safety and health. The student will become familiar with the uniform policy of insurance for compensation coverage and how compensation coverage and other regulatory requirements are policed by governmental authorities. A pervasive theme of the course is the status of workers' compensation as a unique hybrid of administrative law and tort, with the consequent effects of such status on the law, theory and practice of the field.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2298 - LAND, RACE & PROPERTY RIGHTS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law

LAW 2300 - FOOD AND DRUG LAW

Minimum Credits: 1

Maximum Credits: 1

The U.S. Food and drug administration has the regulatory mandate to protect the American food supply, and to ensure that drugs are safe and effective for the purposes for which they are prescribed. This course will survey selected topics in food and drug law, including the new drug approval process, regulation of food additives and carcinogens, food labeling and nutrition, prescription vs. OTC drug status, and restrictions on pharmaceutical marketing. Related legal standards affect all of us as consumers in everyday life, and have even greater impact in circumstances like end-of-life decision making. In examining food and drug law issues, we will focus on the tension between information gathering, risk regulation, and

paternalism as themes in FDA policy making.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2301 - FIRST AMENDMENT: FREEDOM OF EXPRESSION

Minimum Credits: 3

Maximum Credits: 3

This course will address the history, theory, case law, and practice of the First Amendment's protection of freedom of expression. We will cover the history and origin of the First Amendment's Speech Clause and the various freedom of expression doctrines developed in the case law, including (but not limited to) prior restraints, vagueness and overbreadth, political speech, symbolic speech, "time, place, and manner" restrictions on speech, the distinction between content-based and content-neutral restrictions on speech, and categories of unprotected or 'less-protected' speech. We will not be covering the First Amendment's Religion Clauses because they are covered in other courses. Given time constraints, we also will not be covering the First Amendment's Press, Assembly, or Petitions Clauses in any detail (although we will likely reference them in connection with other freedom of expression doctrines).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2303 - COMMERCIAL PAPER AND BANKING

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (PLAW)

LAW 2304 - COMMERCIAL TRANSACTIONS

Minimum Credits: 3

Maximum Credits: 3

This course explores statutes and treaties governing agreements to transfer an interest in goods. The primary area of focus is article 2 of the uniform commercial code, and aspects thereof not covered in the first year contracts course; subjects covered include applicability of article 2, selected contract formation rules; warranties; acceptance, rejection and revocation of acceptance of goods; risk of loss; excuse for failure to perform; and remedies for breach. To a lesser, but significant extent, the course also covers the united nations convention on the international sale of goods (CISG), in force in the United States since 1988.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2311 - LAW AND ETHICS OF LAWYERING

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

LAW 2313 - REPRODUCTIVE LAW AND POLICY

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 2320 - LITIGATION STRATEGY AND PLANNING

Minimum Credits: 2
Maximum Credits: 2

This course will focus on the planning that a litigator must do throughout the life of a case in developing strategies for the conduct of the litigation. It covers in part taking a case, anticipating pretrial procedures, preservation of evidence, deciding on causes of actions, obtaining expert witnesses, discovery strategy, motions practice, development of trial themes, demonstrative evidence, jury selection, order of witnesses, and settlement considerations.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2324 - INSURANCE LAW

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2325 - FEDERAL TAX PRACTICE AND PROCEDURE

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: LAW 2105

LAW 2328 - COPYRIGHT LAW

Minimum Credits: 3
Maximum Credits: 3

Copyright law deals with legal protection for certain kinds of human "creativity," including creativity expressed in books, music, and computer code. The copyright law course will describe the role that copyright law plays - together with other intellectual property law, other non-IP law, and other non-legal institutions - in positioning that creativity as part of a knowledge ecology and the knowledge economy. For authors and publishers, how does copyright law help them make money based on their creative output? For readers and consumers (and next-generation authors), how does copyright law preserve the power to access and use knowledge? And for law students, how do lawyers participate in doing both things, by representing and counseling clients? The course will describe the constitutional and statutory attributes of copyright law; the rights and remedies that copyright law provides for authors and publishers; constitutional and statutory protection that copyright law provides for the public; and the intersection of American copyright law with other intellectual property law, with state law, and with international law. Students are expected to master the substantive law of copyright, but that mastery is only a preliminary step. The major goal of the course is to teach students how to use the law to advance their clients' interests in creative products. The course does that by requiring students repeatedly to use their professional judgment in a counseling context.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2330 - EMPLOYEE BENEFITS

Minimum Credits: 3

Maximum Credits: 3

An examination of the federal regulation of private pension plans and other employment-related benefit plans. We will examine the origins of private pension plans, the reasons for their popularity, the various kinds of pension plans, and the federal regulation of such plans under the federal Erisa statute and the leading case law. We will examine the special tax treatment of pension plans and plan beneficiaries, and the rights of beneficiaries under such plans. We will also review the law of health and welfare benefit plans, and examine the fiduciary roles of plan trustees including investment obligations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2339 - LAW OF DISABILITY DISCRIMINATION

Minimum Credits: 2

Maximum Credits: 2

This course will provide in-depth analysis and discussion of the major federal disability discrimination statutes, including the Americans with disabilities act, the individuals with disabilities education act, and section 504 of the rehabilitation act. Readings and class discussions will focus on the application of these laws to issues such as employment, public accommodations, education, architectural barriers, transportation and insurance. The course will explore how disability discrimination statutes interact with other statutes, such as the social security act and the family and medical leave act.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2340 - ENVIRONMENTAL LAW

Minimum Credits: 3

Maximum Credits: 3

This course focuses on domestic environmental law and, in particular, on federal law rather than state law. The diverse and technical nature of modern environmental law is such that, in practice, lawyers often specialize in very narrow areas. Nevertheless, the same or similar moral, scientific, and policy arguments familiar to one area of the law are found in many of the others and similar regulatory approaches have been adopted or proposed for adoption to deal with very different types of environmental hazards. This course will focus its attention on the clean air and water acts, the national environmental policy act, the resource conservation and recovery act, the comprehensive environmental response, compensation, and liability act, and wetland protection, with passing coverage of various federal public land management statutes. We will explore the basic regulatory and non-regulatory approaches currently in place, including market-based systems to achieve better environmental quality, as well as proposals for changes to those approaches. A significant portion of the course will also be devoted to exploring issues presented by government and citizen suit enforcement of environmental laws. While administrative law is obviously relevant to much of environmental law given the fact that it is agencies which make and administer the law involved, the course will offer students an overview of administrative law principles which will be sufficient background for the purposes of this course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2347 - ELDER LAW

Minimum Credits: 3

Maximum Credits: 3

With over 35 million Americans age 65 or older, society and the law have grown very attentive to the needs of the elderly. In this course we will examine the aspects of aging that have particularly impacted on law and public policy. Law both protects the elderly and grants those rights and privileges. We will examine the interplay of law and public policy in the context of social security, private pensions, Medicare, Medicaid, long-term care financing, guardianship and mental capacity, health care decision making, housing and the abuse and neglect of the elderly.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2351 - EUROPEAN UNION LAW

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (PLAW)

LAW 2355 - NON-PROFIT ORGANIZATIONS

Minimum Credits: 2
Maximum Credits: 2
This class will survey the state and federal laws governing nonprofit tax exempt organizations. The course will examine the formation of nonprofit corporations under Pennsylvania law, principles of corporate management, and options for fundamental organizational change. In addition, the course will analyze the process of qualifying for tax exemption under the Internal Revenue Code and under the laws of Pennsylvania. Issues of private inurement, unrelated business income, charitable giving and fundraising regulations will be discussed. The course will include statutory and regulatory analysis, selected caselaw and case studies based on actual NPO's.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2359 - WORKERS COMPENSATION PRACTICUM

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2360 - SECURED TRANSACTIONS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2365 - INTRODUCTION TO RUSSIAN AND UZBEK LEGAL SYSTEMS

Minimum Credits: 2
Maximum Credits: 2
This course is designed to introduce students to the legal systems of the Russian federation and Uzbekistan. The foundation of the legal systems of these countries is almost identical, and by comparing one country's system to another, students will become more familiar with civil law systems. Special attention will be given to constitutions, court systems, the role of judges, state prosecutors, courtroom advocates and lawyers, as well as to the important commercial laws and treaties. I will use examples from my professional experience to give my students a realistic view of the legal systems of these countries. The class is intended to enhance student awareness of the legal environment and issues that often result from a decision to engage in relations or do business across national boundaries. Students must be prepared to actively discuss the assigned reading or other material in class

each week.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2370 - EMPLOYMENT LAW

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (PLAW)

LAW 2371 - PARTNERSHIP TAX

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 2105

LAW 2378 - JUVENILE JUSTICE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

LAW 2380 - CYBERCRIME

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

LAW 2386 - FOUNDATIONS OF LEGAL RESEARCH

Minimum Credits: 1

Maximum Credits: 1

Foundations of legal research is a one-credit concentrated course that will provide students with foundational legal research skills in case law, statutes and legislative history, administrative materials, use of secondary sources, shepardizing, and will integrate traditional print resources with online, CD-ROMs and internet resources. This course will meet once a week for the semester. The course is offered in three sections and is required for second-year students.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2391 - ELDER LAW

Minimum Credits: 2

Maximum Credits: 2

This class is only available to MSL students. JD students are not eligible to enroll. MSL students will attend 10-12 Elder Law Clinic seminar classes selected by the faculty member and complete written assignments associated with those classes. Additionally, the student will select an elder law issue as a topic for a short seminar paper and create a community presentation on that topic. The MSL student will be responsible for identifying a community group interested in the presentation, or, if that is not feasible, will present the topic to the Clinic seminar.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2395 - HEALTH LAW AND POLICY

Minimum Credits: 3

Maximum Credits: 3

This is a survey course of fundamental issues, covering a broad range of topics, in health law and policy intended both for students who merely wish to become acquainted with the field, and for those who plan on concentrating in the field. For those planning on concentrating, this course provides a foundation for in-depth courses such as health care business transactions, health care fraud and abuse, health care antitrust, and financing in the healthcare industry. For students not concentrating in health law, it provides an introduction to the multitude of issues with which lawyers working with clients in the health care industry need to be familiar. The course examines the role that law plays in achieving three societal goals: increasing access to health care, controlling health care costs, and assuring quality of health care. Specific topics are the structure of the health care system(including integrated health care delivery systems); regulating quality through licensing, staff privileges, and accreditation; labor and employment issues; the legal obligation to provide treatment, including Emtala); tax exemption and charitable purposes; health care reform; state and federal regulation of health insurance and managed care (including Erisa); federal initiatives to expand private insurance coverage(including HIPAA, cobra and ADA); Medicare/Medicaid eligibility, benefits, and reform efforts; health care fraud and abuse (false claims act, ant kickback statute, stark); and antitrust issues in the health care industry. This course does not examine issues of professional liability, and it does not cover ethical issues in health care (covered in, which is the subject of "bioethics and law").

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2404 - CYBERSPACE AND THE LAW

Minimum Credits: 3

Maximum Credits: 3

As the internet and the world wide web (www) become more central to the world's commercial, social and cultural life, it makes sense to speak of a new dimension in the ways people communicate and express themselves, conduct business, and organize themselves in pursuit of mutual interests via the global information infrastructure: cyberspace. This course will examine the legal and policy issues arising in connection with cyberspace, including: protecting privacy expectations in internet communications, protecting intellectual property in and fair use of materials published in cyberspace, information torts and jurisdictional issues occasioned by worldwide computer networks, issues of protected speech, defamatory speech, and the treatment of pornography, commercial transactions in cyberspace.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2405 - LEGAL PROFESSION

Minimum Credits: 2

Maximum Credits: 2

This course will consider the responsibilities and obligations of an attorney to his or her client, the court and the legal system. Emphasis will be placed on the rules of professional conduct which have been adopted by the Pennsylvania supreme court as the standard of conduct for all attorneys admitted to practice within the commonwealth. Classroom meetings will focus on the common ethical problems which attorneys face including the scope of the duty to zealously represent your client; responsibilities owed to the courts and to other parties that may conflict with your client's interests; what decisions are made by the client and what decisions are made by counsel; potential conflicting responsibilities of counsel to his or her insurance company and the insured; potential conflicting responsibilities of corporate counsel to the corporation and the corporate officers;

disqualification of counsel; the scope of the attorney-client privilege; confidentiality requirements; fee arrangements; withdrawal from representation; competency requirements; and pretrial and trial conduct.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2408 - HEALTH CARE FRAUD AND ABUSE

Minimum Credits: 1

Maximum Credits: 1

This course will consider the responsibilities and obligations of an attorney to his or her client, the court and the legal system. Emphasis will be placed on the rules of professional conduct which have been adopted by the Pennsylvania supreme court as the standard of conduct for all attorneys admitted to practice within the commonwealth. Classroom meetings will focus on the common ethical problems which attorneys face including the scope of the duty to zealously represent your client; responsibilities owed to the courts and to other parties that may conflict with your client's interests; what decisions are made by the client and what decisions are made by counsel; potential conflicting responsibilities of counsel to his or her insurance company and the insured; potential conflicting responsibilities of corporate counsel to the corporation and the corporate officers; disqualification of counsel; the scope of the attorney-client privilege; confidentiality requirements; fee arrangements; withdrawal from representation; competency requirements; and pretrial and trial conduct.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 2395; PROG: School of Law (PLAW)

LAW 2418 - IMMIGRATION LAW

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2422 - ALTERNATIVE DISPUTE RESOLUTION

Minimum Credits: 3

Maximum Credits: 3

Legal and other disputes are increasingly resolved by dispute resolution processes other than litigation. Given this trend, it is important for law students to be familiar with these alternative processes, such as arbitration and mediation, and the benefits and risks they present. At the same time, these alternative processes require creative and interdisciplinary problem-solving perspectives and skills. This course begins with an overview of problem-solving approaches, and is followed by the study of arbitration, mediation, and hybrid processes. The course emphasizes interactive student discussion and activities, including role-plays, exercises, and presentations that simulate professional activities of lawyers, arbitrators, mediators, and clients. The classes build on each other, so that knowledge that we acquire in the earlier classes will be integrated into our materials, discussion, and activities in later classes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

Course Attributes: Asian Studies

LAW 2425 - LOW INCOME TAX CLINIC

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Clinical
Grade Component: Grad LG/SU3 Basis

LAW 2430 - INFORMATION PRIVACY: LAW AND PRACTICE

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 2447 - HEALTH LAW PRACTICUM: ADR

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 2453 - TRANSNATIONAL LITIGATION

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 2460 - REAL ESTATE TRANSACTIONS

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2464 - BIOETHICS AND LAW

Minimum Credits: 3
Maximum Credits: 3
This is an introduction to a variety of issues in biomedical ethics brought about primarily by the innovative techniques and technologies that the biomedical sciences have developed such as artificial reproductive technologies, genetic screening and engineering, and life support systems. The primary focus of our inquiry will be whether these innovations should be regulated by law and if so how. Topics covered include right to refuse medical treatment (including life-sustaining medical treatment), informed consent, physician-assisted suicide; sterilization, abortion, artificial reproduction, surrogacy; genetic counseling, screening, and testing; stem cell research and cloning; organ transplantation; and confidentiality and privacy in health care.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2468 - PSYCHOLOGY AND LAW

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2469 - FRENCH FOR LAWYERS 1

Minimum Credits: 2
Maximum Credits: 2

This is a course designed to develop the conversational, writing and reading skills in French to permit an American lawyer to communicate effectively with French-speaking clients, and to understand references to the French legal system and to the European union likely to arise in the course of an international law practice in the United States or an American law practice conducted in France. The course will differ from that of a typical college French class in that it will be oriented towards the law in the areas of vocabulary, composition topics, readings, dictations and in-class conversation.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)
Course Attributes: West European Studies

LAW 2471 - FRENCH FOR LAWYERS 2

Minimum Credits: 2
Maximum Credits: 2

This is a continuation of French for lawyers 1.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)
Course Attributes: West European Studies

LAW 2475 - SPANISH FOR LAWYERS

Minimum Credits: 2
Maximum Credits: 2

This is a Spanish language course in a legal context, designed to acquaint students with the rudiments of the Spanish language and with Spanish legal vocabulary sufficient to permit an American attorney to communicate effectively with Spanish-speaking clients. Vocabulary, readings, class discussions and written work will be in a legal context. No prior study of Spanish is required.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)
Course Attributes: West European Studies

LAW 2476 - SPANISH FOR LAWYERS 2

Minimum Credits: 2
Maximum Credits: 2

This course is a continuation of Spanish for lawyers 1. Students either should have completed Spanish for lawyers 1 or have had a minimum of one semester of prior study.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

Course Attributes: West European Studies

LAW 2478 - HIGHER EDUCATION AND THE LAW

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 2481 - INTELLECTUAL PROPERTY LICENSING

Minimum Credits: 2

Maximum Credits: 2

This course will concentrate on contract drafting and the application of intellectual property and contract law to license agreements; licensing provisions and legal issues regarding copyrights, patents, trade secrets, trademarks and computer software will be reviewed as will related antitrust, international and tax law issues; issues related to the internet and university technology transfer will also be discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2491 - ADVANCED LEGAL RESEARCH

Minimum Credits: 3

Maximum Credits: 3

This course will build on the material presented in the Foundations of Legal Research course, and will provide students with a broader array of strategies and skills to approach legal research projects. The course is to be broadly divided into three components. The first component focuses on strategic approaches to legal research, how to incorporate the research process into the litigation or transactional problem presented and to more effectively integrate the various legal research tools available into that strategic approach. Cost-effective research strategies, including strategies to effectively manage real-world Lexis and Westlaw costs will also be covered. This component will somewhat overlap with, but significantly expand on material from the Foundations course, and will give students a broader understanding of the research process. The second component of the course recognizes that not all substantive areas of the law utilize the same research resources, strategies and techniques. During this component of the course, students will be exposed to specific topical research areas and spend several weeks looking at the unique resources and research challenges presented by those areas. The third component of the course returns all students to the same material and focuses on non-legal research areas such as medical and scientific research, business and corporate research, investigative research, and financial and marketplace research. The use of experts in these areas as guest lecturers is anticipated.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2497 - HEALTH LAW PRACTICUM: ADR

Minimum Credits: 4

Maximum Credits: 4

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

LAW 2537 - MEDICARE AND MEDICAID PRACTICUM

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis

LAW 2585 - EDUCATION JUSTICE AND CIVIL RIGHTS SEMINAR

Minimum Credits: 3

Maximum Credits: 3

This course will introduce students to education and civil rights law and policy that are the foundation for civil rights protections in K-12 public education. Students will explore key education and civil rights issues in the following topic areas: school segregation (past and present), the criminalization of students of color, school privatization, and social movements for education justice. Students will emerge from this class with an understanding of historical and current flashpoints in education and civil rights in the United States and the role of lawyers and the law. In addition to analyzing key cases, articles, and social science research, students will explore how law students and lawyers can play a meaningful role through policy, litigation, and advocacy for social change.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2589 - CRIMINAL DEFENSE AND PROSECUTIONAL ETHICS SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2609 - PROFESSIONAL RESPONSIBILITY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

LAW 2611 - ADVANCED FAMILY LAW ADVOCACY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 2619 - ARABIC FOR LAWYERS 2

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

LAW 2620 - CYBERSECURITY & PRIVACY REGULATION

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 2621 - STATE BUILDING AND THE LAW: THE KOSOVO EXPERIENCE

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 2624 - UNINCORPORATED BUSINESS ORGANIZATIONS

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (PLAW)

LAW 2626 - LOBBYING AND ADVOCACY

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 2631 - LAW AND ENTREPRENEURSHIP

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PROG: School of Law (PLAW)

LAW 2638 - RACE AND THE LAW

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LAW 2648 - CIVIL RIGHTS LITIGATION SEM

Minimum Credits: 3
Maximum Credits: 3
This seminar will be a historical consideration of civil rights litigation in the United States. Our goal will be to understand the long history of segregation as it was created by legislatures and then supported by Courts, and how these precedents were reversed through litigation and other strategies. We will read classic cases on race, from the 19th and early 20th centuries, learning how the Supreme Court developed its segregation

doctrines. We will simultaneously look at litigation strategies by abolitionists before the Civil War and civil rights activists in the late nineteenth century. We will then turn to the creation of the NAACP and see how it became the leading engine of civil rights litigation. This will lead to the long struggle for an end to segregation, culminating in *Brown v. Board of Education* (1954). Part of our focus will be on Thurgood Marshall as a lawyer. We will look at NAACP integration strategies along with more activist civil rights strategies by Martin Luther King and others. This part of the course will also look at federal actions on civil rights after the passage of the 1964 Civil Rights Act and other civil rights laws. Readings will include some cases -- often in full text -- the classic book *Simple Justice*, a biography of Marshall, and writings by King and others. Our consistent focus will be on (1) what this history teaches us about attorneys' litigation strategies and (2) what overarching limits there may be on attaining fundamental change through the litigation process.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

LAW 2653 - INTERNATIONAL HUMAN RIGHTS

Minimum Credits: 3

Maximum Credits: 3

This course will examine the history of the development of international human rights laws, the concepts behind the current status of those laws, and the mechanics present for enforcing those laws in international, regional, and domestic legal systems. The course will include a discussion of the theories behind international human rights law, the different hierarchies of human rights and the differing approaches to applying those hierarchies, and the ability (or lack thereof) to enforce international human rights standards. Students are required to either have already taken international law or to take it in conjunction with international human rights law.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 5226; PROG: School of Law (LAWSC)

LAW 2666 - LOBBYING AND ADVOCACY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: PLAW

LAW 2694 - TRADEMARK LAW

Minimum Credits: 3

Maximum Credits: 3

Trademark law concerns common law and statutory bases for obtaining and enforcing legal protection for commercial symbols, including logos, slogans, and other potentially distinctive product and service identifiers. The trademark law course will describe the role that trademark law plays - together with other intellectual property law, other non-IP law, and other non-legal institutions - in positioning that commercial "speech" as part of commercial markets generally. For producers of goods and services, how does trademark law help them make money? For competitors, for purchasers of goods and services, and for citizens generally, how does trademark law preserve the power to access and use information about the commercial sphere - and to extend that information into other "free speech" contexts? And for law students, how do lawyers participate in doing both things, by representing and counseling clients? The course will cover the constitutional, statutory, and common law attributes of trademark law; the rights and remedies that trademark law provides for producers; the protection that trademark law provides for competitors and consumers; and the intersection of American trademark law with other forms of intellectual property protection, with the first amendment, and with international law. Students are expected to master the substantive law of trademark, but that mastery is only a preliminary step. The major goal of the course is to teach students how to use the law to advance their clients' interests in commercial symbols. The course does that by requiring students repeatedly to use their professional judgment in a counseling context.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2695 - TRADEMARK LAW PRACTICE

Minimum Credits: 2

Maximum Credits: 2

A course to delve into trademark and unfair competition practice before the USPTO, trademark trial and appeal board and in state and federal courts. The course will advance practice oriented trademark issues including: the identification, protection and enforcement of trademark rights; the relief that can be acquired through enforcement of those rights; the role of lawyer as counselor in adopting trademarks as part of the branding process; avoiding infringement of others' trademarks; and the assignment and licensing of trademarks. The course will probe these same concepts in other jurisdictions, as well.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2703 - POST-CONFLICT & TRANSITIONAL JUSTICE SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

LAW 2706 - CRIMINAL RECORDS AND EXPUNGEMENT SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

LAW 2710 - CONTRACTS 2

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 2020

LAW 2712 - LATER LIFE LEGAL PLANNING SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

LAW 2717 - TELECOMMUNICATIONS LAW

Minimum Credits: 2

Maximum Credits: 2

This course explores the regulation and evolution of electronic communications in the United States. We will survey the legal framework of telecommunications, broadband and the Internet at several significant points in its development. Following the respective regulatory paths of broadcast, wireline and wireless telephony, cable, and broadband, the analysis will include early Federal Communications Commission broadcast regulation; the Communications Act of 1934 and its progeny; the advent of long-distance and local market telephone competition; the evolution of

multichannel video communications; and the changes wrought by the Telecommunications Act of 1996. Finally, we will examine technological convergence, the emergent dominance of broadband and wireless communications, and the impact of rapid technological changes. We will also look at telecommunications from a policy and practice-oriented perspective, keeping in mind that regulations and statutes have played as important (if not more so) a role as court decisions in the development of telecommunications law. Themes that will be addressed include: conflicts between federal and state/local jurisdiction; monopoly versus competitive market regulation and issues associated with transitioning from the former to the latter; universal service issues; and the impact of such concerns as intellectual property and free speech. No prior knowledge of the telecommunications industry (or associated law) is necessary. Exposure to administrative law or antitrust law might be beneficial.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2718 - TECHNOLOGY AND EMPLOYMENT LAW

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 2720 - LEGAL ANALYSIS AND WRITING

Minimum Credits: 0

Maximum Credits: 0

Students in this first year course will begin to develop the art of analytical legal writing. In classes, students engage in discussions and practical exercises as they learn to analyze cases, statutes and other authorities. The course emphasizes student development in the following skills: organizing the analysis of legal issues logically and coherently; expressing written legal analysis clearly, concisely, and effectively; developing and defending legal arguments, both in writing and orally; performing basic legal research; drafting selected legal documents; and using proper citation form. Exercises and other assignments promote the students' awareness and appreciation of relevant ethical standards.

Academic Career: Graduate

Course Component: Clinical

Grade Component: No Grade Required

Course Requirements: School of Law (PLAW)

LAW 2730 - CURRENT ISSUES IN HEALTH LAW 2

Minimum Credits: 0

Maximum Credits: 0

The purpose of this course is the same as current issues in health law 1. This course is open only to third-year students in the health law certificate program, and all third-year students in the program must take this course both fall and spring semesters. Students are required to create a file of at least 40 newspaper articles on health law and policy and to use these articles to write a paper (maximum length: 10 pages) based on the evolution of a theme in health law or policy that they identify from the articles (for example, patients' rights legislation; Medicare prescription drug benefit).

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2731 - CURRENT ISSUES IN HEALTH LAW

Minimum Credits: 1

Maximum Credits: 1

The purpose of this course is to increase the awareness of students in the health law certificate program to the rapidly changing health care industry and the equally rapidly changing field of health law. It is difficult, if not impossible, to understand the law regulating the health care industry without understanding the industry itself. Another purpose of the course is to expose students to a more in-depth treatment of selected topics than they can obtain in the basic survey course in health law and policy. The course also exposes students to topics that are not covered in the basic

course, providing a broader view of the field of health law, which helps in the selection of other course offerings and of a topic for the faculty supervised writing requirement. In addition, the course introduces students to the variety of settings in which lawyers are involved in health law and the range of kinds of clients they represent. Classes will be taught by leading experts in the fields of health management and health law practicing in Pittsburgh and elsewhere.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2805 - PERSUASIVE NARRATIVE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

LAW 2806 - JUVENILE LAW AND POLICY SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (LAWSC)

LAW 2807 - ENVIRONMENTAL JUSTICE LAW SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2811 - HEALTH CARE BUSINESS TRANSACTIONS

Minimum Credits: 3

Maximum Credits: 3

This course will expose students to a variety of commercial transactions prevalent in the health care industry. The course will focus initially on health care as a regulated commercial enterprise. After studying the case law, statutes and regulations applicable to health care providers, students will begin an in-depth study of negotiated health care transactions. This study will begin with an examination of the fundamental elements of the acquisition process and an analysis of the tax, antitrust, regulatory and successor liability considerations generally addressed in health care combinations. Students will then be exposed to the various stages of the negotiated acquisition process: due diligence; preliminary negotiations and agreements; transaction structure; final negotiations; definitive agreements; and post-closing relationships. We will also explore the financing mechanisms required to support healthcare entities. The course will examine sources of funding, enterprise valuation, healthcare cost controls, capital structure, traditional debt financing, tax exempt bond financing, securities filings, and insolvency. By the end of the course, the students will have acquired an understanding of the complexities of health care financing and will be familiar with the health care acquisition process from its inception to conclusion.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2814 - INTRODUCTION LAW AND LEGAL REASONING

Minimum Credits: 3

Maximum Credits: 3

This course will begin to help MSL students to "think like lawyers." Students will gain experience in reading and analyzing cases and statutes in order to begin to understand how to use the law to predict answers to legal questions. The course will also include a sampling of legal readings and guest lectures in the various areas of substantive law.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2817 - CORPORATE TAXATION

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the specific rules of subchapter c related to the taxation of corporations and shareholders. Using a "cradle to grave" approach, the course proceeds through a study of the tax consequences upon formation (birth of the corporation, including incorporation of going concerns), operation (life of the corporation, including distributions of cash or property, stock dividends, and redemption's), mergers and acquisitions (marriage and corporate offspring), and complete liquidation (death, including liquidation of a controlled subsidiary).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2820 - LLM COLLOQUIUM

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Colloquium

Grade Component: Grad LG/SU3 Basis

LAW 2830 - CURRENT ISSUES IN HEALTH LAW 2

Minimum Credits: 0

Maximum Credits: 0

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (PLAW)

LAW 2831 - CURRENT ISSUES IN HEALTH LAW 1

Minimum Credits: 0

Maximum Credits: 0

The purpose of this course is to increase the awareness of students in the health law certificate program to the rapidly changing health care industry and the equally rapidly changing field of health law. It is difficult, if not impossible, to understand the law regulating the health care industry without understanding the industry itself. Another purpose of the course is to expose students to a more in-depth treatment of selected topics than they can obtain in the basic survey course in health law and policy. The course also exposes students to topics that are not covered in the basic course, providing a broader view of the field of health law, which helps in the selection of other course offerings and of a topic for the faculty supervised writing requirement. In addition, the course introduces students to the variety of settings in which lawyers are involved in health law and the range of kinds of clients they represent. Classes will be taught by leading experts in the fields of health management and health law practicing in Pittsburgh and elsewhere.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2839 - LAW, ENTERTAINMENT AND SOCIAL ENTERPRISE PRACTICUM

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law

LAW 2841 - INTERNATIONAL TAX

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 2105

LAW 2847 - GENDER AND LAW SEMINAR

Minimum Credits: 3

Maximum Credits: 3

This course will examine how gender influences legal doctrine and how legal doctrine in a number of specific areas of law affects women and shapes societal understandings of gender. The objectives of the course are twofold: (1) to explore how an understanding of gender and feminist legal theory can enrich the study of law; and (2) to learn specific areas of legal doctrine that are particularly relevant to women and societal understandings of gender. The course will cover a number of areas related to issues of gender equality, such as employment, education, family and domestic responsibilities, sexual harassment, and domestic violence. Various feminist legal theories will provide a framework for studying these areas of law.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2848 - HEALTH CARE AND CIVIL RIGHTS SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2854 - LAW AND ECONOMICS SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: School of Law (PLAW)

LAW 2858 - INTERNATIONAL SALES SEMINAR

Minimum Credits: 3

Maximum Credits: 3

The seminar will consider the international law applicable to cross-border sales transactions involving a U.S. Party. We will focus primarily on the

united nations convention on contracts for the international sale of goods ("CISG"), supplemented by study of the principles of international commercial contracts of the international institute for the unification of private law (UNIDROIT). The course emphasizes approaching these texts from an international perspective and employing new research resources that have developed in the area of international commercial law. No background beyond familiarity with general contract law is required, although the course on commercial transactions in goods and/or the course on international business transactions would be useful preparation. In the first part of the course we will explore the substantive provisions of the CISG and UNIDROIT principles, including discussion of applicability, contract formation, obligations of quality, avoidance of contract, risk of loss; exemption for failure to perform; and remedies for breach. The remainder of the course will be devoted to presentations by students on their paper topics.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2862 - FOUNDATIONS OF INTELLECTUAL PROPERTY SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 2209 or LAW 2260 or LAW 2328 or LAW 2694

LAW 2882 - ENVIRONMENTAL LITIGATION

Minimum Credits: 2

Maximum Credits: 2

This two-credit course explores substantive and procedural issues raised in environmental litigation and is designed to develop practical environmental litigation and negotiation skills. The course focuses on litigation-related aspects of selected major environmental regulatory programs, such as the clean water act, RCRA and CERCLA, and on the elements and strategies of environmental litigation. Practical work sessions where students can gain "hands on" experience supplement the academic presentation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2887 - US REPRODUCTIVE RIGHTS SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

LAW 2889 - LEGAL ANALYSIS & WRITING II

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2902 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 1

Completion of a paper of publishable quality under the direction and supervision of a full-time faculty member.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2903 - INDEPENDENT STUDY

Minimum Credits: 2

Maximum Credits: 2

Completion of a paper of publishable quality under the direction and supervision of a full-time faculty member.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Law (PLAW)

LAW 2910 - HOW LAW BEGAN

Minimum Credits: 3

Maximum Credits: 3

How did law develop in early societies? Why did it develop? As an embodiment of human values and a fundamental form of human expression, how did early law reflect and shape custom, religion, government and the very concept of civilization itself? We'll explore these questions and more through an examination of law's rise in a wide range of ancient cultures broadly clustered around the Mediterranean basin, beginning with Mesopotamia a thousand years before Babylon and extending three millennia to the eastern Roman Empire in the 6th century CE. In between, we'll encounter Egyptian viziers presiding in pharaonic courts, Hittite kings making international treaties with their neighbors, Hebrew law-givers leading their people to justice in the promised land, Greek logographers writing speeches for delivery to Athenian juries, and Roman advocates arguing cases before judges sitting in the city forum. We'll meet Hammurabi, Ramesses, Moses, Demosthenes, Cicero and Justinian. We'll find early law written on clay and set in stone; we'll read it in text, touch it in ancient coins displaying legal symbols and look at it literally in the round as its monuments stand in modern museums. We'll search for law in early Assyria, Phoenicia and Persia, and following in the footsteps of Alexander the Great we'll even reach towards the ancient legal cultures of India and China to gain a comparative perspective on law's earliest meanings and manifestations in civilized society. At the end of our journey, we may discover that far from being somehow primitive or undeveloped, early law and the people who made it have much to teach us today, not just about what they were, but about what we could be. This class will be held in the Law School.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

LAW 2911 - FIRST AMENDMENT

Minimum Credits: 3

Maximum Credits: 3

The First Amendment guarantees the right to engage in five activities deemed essential to a free society: religion, speech, press, assembly and the right to petition the government to redress grievances. Courts have established various tests over time for defining protected versus unprotected activity and for determining the degree of permissible government regulation. Questions concerning proper interpretation of First Amendment rights have resulted in some of the most well known and contentious Supreme Court decisions. This course will entail a rigorous study and discussion of First Amendment case law, as well as methods of legal analysis and historical/societal concerns that have driven the development of First Amendment law. Assigned readings will largely consist of court decisions. Class discussions are expected to be interactive. Students will be encouraged to question and critique court decisions and discuss their own views of how cases should have been decided using the analytical tools taught in class. A number of class exercises will be introduced to encourage free thinking and debate regarding fundamental First Amendment rights.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Attributes: University Honors Course

LAW 2921 - LEGAL ANALYSIS AND WRITING

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Law (LAWSC)

LAW 2939 - CRIMINAL DEFENSE PRACTICUM

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2967 - EXTERNSHIP

Minimum Credits: 2
Maximum Credits: 2
This second- and third-year elective introduces students to the working skills of an attorney or judicial clerk. Students are assigned to public legal agencies with a high volume of legal work or as clerks for federal, state and county judges. Type of work varies with each assignment but may include legal research, drafting memoranda and legal documents, investigating cases, interviewing clients and witnesses, and negotiating on behalf of clients. Third-year students, if certified, may appear on behalf of clients in court.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2968 - EFFECTIVE COMPLIANCE PROGRAM DEVELOPMENT AND SKILLS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Health Care Compliance
Course Attributes: World Wide Web

LAW 2969 - PROFESSIONAL JUDGEMENT AND ETHICS, THE CANVAS OF COMPLIANCE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Health Care Compliance
Course Attributes: World Wide Web

LAW 2970 - SELECT APPLICATIONS IN COMPLIANCE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Health Care Compliance
Course Attributes: World Wide Web

LAW 2976 - EXTERNSHIP

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2980 - CLINICAL BIOETHICS AND LAW

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2984 - TRADE SECRET LAW

Minimum Credits: 2
Maximum Credits: 2
This course will cover various aspects of trade secret law with an emphasis on practical considerations relevant to the business environment. Students will examine public policy considerations of trade secret law, compare the uniform trade secrets act (UTSA) to the restatement approach and to the Pennsylvania UTSA, and compare trade secret protection with other forms of intellectual property. We will review the elements of a trade secret and compare the types of information and the circumstances under which courts have recognized or denied trade secret protection. The rights of a trade secret owner relative to its employees and third parties will be examined in detail, including use of confidentiality agreements and non-competition agreements. Enforcement of trade secret rights will be surveyed and include civil and criminal proceedings including the economic espionage act (EEA). Practical issues from the business world are strongly emphasized in this course including drafting and negotiating confidentiality agreements, establishment of business policies and procedures for trade secret protection, practical considerations surrounding the bringing and settling of trade secret cases, and drafting and enforcing non-competition agreements.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2986 - INTERNATIONAL ARBITRATION SEMINAR

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 2990 - LEGAL ANALYSIS AND WRITING

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Law (PLAW)

LAW 5301 - FIRST AMENDMENT: FREEDOM OF EXPRESSION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Law

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: LAW 5101; PROG: School of Law (LAWSC)

Learning Science and Policy

LSAP 3000 - ADVANCED APPLIED STATISTICAL ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

This course will focus on approaches to the analysis of qualitative data. It is designed for students who have some experience with qualitative field research methods (introductory coursework or project experience) and have a set of qualitative data they are interested in analyzing for their own research. The principal aims of the course are to: (1) enable you to make informed and well-documented choices regarding the analysis of qualitative data that is to "establish a transparent path of inference" in your analysis and writing; and (2) explore a range of analysis strategies, techniques and tools. The course has two primary strands. The reading strand will introduce readings about qualitative analysis that delve into methodological issues, technical aspects of various approaches to qualitative analysis, validity and reliability, and issues related to writing and presentation of qualitative research. We will also examine examples of published qualitative analysis for their methodological and presentation choices. The second strand will be a practicum segment included in each course session that will provide time for consultation on your own work in small groups.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

LSAP 3002 - ADVANCED APPLIED QUALITATIVE ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

LSAP 3003 - INFORMAL LEARNING

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

LSAP 3004 - LEARNING SCIENCES AND EDUCATIONAL CHANGE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

LSAP 3005 - ADVANCED APPLIED STATISTICAL ANALYSIS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

LSAP 3006 - FUTURE OF OUT OF SCHOOL LEARNING

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

LSAP 3007 - ORGANIZATIONS, NETWORKS, AND POLICY IN INFORMAL LEARNING

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

LSAP 3008 - EDUCATIONAL POLICY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

LSAP 3009 - LEARNING SCIENCES AND POLICY WRITING SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

LSAP 3011 - YOUTH DEVELOPMENT IN OUT-OF-SCHOOL SETTINGS

Minimum Credits: 3
Maximum Credits: 3
Organized activities for children and youth that occur outside of school are a big deal. A bigger deal than they used to be. Participation rates are soaring, innovative programs are thriving, and research shows that, in many cases, attendance can benefit young people. In this course, we'll apply a developmental lens to the vibrant and growing out-of-school learning field. We'll explore the current realities and future promise of organized activities as important settings for child and youth development.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

LSAP 3015 - INFORMAL LEARNING: THEORY AND FOUNDATION

Minimum Credits: 3
Maximum Credits: 3
This course is an overview of how we have thought about and address learning in and out-of-school learning settings. How do we define it? How do

we know when it happens? What's the time scale? How do we support it? The course will highlight contemporary trends as well as trace the historical foundations of the field, paying particular attention to how the field connects with research on learning.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

LSAP 3095 - ORGANIZATIONAL PERSPECTIVES ON EDUCATIONAL IMPROVEMENT

Minimum Credits: 3

Maximum Credits: 3

One way to see the act of education is that it is essentially about what occurs between teachers and learner. In other words the key unit of analysis is the classroom or activity structure. The classroom is important, but teaching and learning are also shaped by their context. Individuals are situated in organizations, which are situated in broader social, cultural, and political environments. Consequently, reform and improvement efforts must not only take seriously individual factors, they must understand the ways in which individual action is enabled and constrained by organizational and environmental contexts. This seminar will focus on schools as organizations drawing on theoretical and empirical work grounded in organizational theory. We will interrogate the institutional, organizational, and day-to-day contexts of work in schools. We also explore how reform efforts targeting organizational features can intervene and perhaps, improve teaching and learning. In order to grapple with the concepts from the literature, students will analyze several cases or organizational improvement efforts and conduct a small study examining an improvement effort in a local educational organization.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

LSAP 3096 - CURRICULUM ISSUES IN MATHEMATICS AND SCIENCE EDUCATION

Minimum Credits: 3

Maximum Credits: 3

This course examines ideas that lie at the intersection of research in mathematics and science education, curriculum research, and education policy. Specifically, the course will focus on research that is or will become relevant for the new policy climate created by the common core state standards (CCSS) and the next generation science standards (NGSS). We will begin by examining the CCSS and NGSS, analyzing their similarities and differences from past standards, and chronicling the assessment and curricular activities that have followed in their wake. We will then identify ways in which research conducted during past standards-based eras (e.g., the first and second cycles of NCTM standards; state standards in the NCLB era) can inform the direction of state and district policies surrounding curriculum and assessments.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

LSAP 3097 - SUPERVISED RESEARCH

Minimum Credits: 1

Maximum Credits: 6

Student demonstrates ability to apply research skills by planning and completing a research project under the direction of an appropriate faculty member.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

LSAP 3098 - DIRECTED STUDIES - LSAP

Minimum Credits: 1

Maximum Credits: 6

Student pursues study of various topics under direction of faculty.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

LSAP 3099 - DOCTORAL DISSERTATION RESEARCH IN LSAP

Minimum Credits: 1

Maximum Credits: 18

Student plans and completes a doctoral dissertation under the guidance of the dissertation advisor.

Academic Career: Graduate

Course Component: Full Time Dissertation

Grade Component: Grad SN Basis

LSAP 3540 - DESIGN OF EDUCATIONAL SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

To develop successful educational innovations, a systems view must be taken, analyzing instructional goals, constraints and resources, considering alternative approaches to conveying ideas, motivating students, and guiding students to instructional objectives. Students will work in teams to enact an innovative educational design process with real projects and real clients. In the past, educational systems being (re)designed included museum exhibits, high school robotics units, afterschool digital literacy workshops, college lab courses, processes for selecting student assessments tools, and a professional development sequence for mathematics teachers. Throughout the process we will be learning about and addressing constraints from (1) organizational and policy contexts; (2) learning sciences; and (3) disciplinary content. The course will be interdisciplinary in that it will draw students with diverse backgrounds to form the design teams.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

LSAP 3595 - SPECIAL TOPICS

Minimum Credits: 3

Maximum Credits: 3

Students will address selected topics for study.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Library & Information Science

LIS 2000 - INFORMATION, DATA, AND SOCIETY

Minimum Credits: 3

Maximum Credits: 3

Introduction to major ideas and concerns of the information professions and examination of formal communication of relevant ideas, information, and knowledge. Exploration of nature and role of organizations in which archivists, librarians, and other information professionals work.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2005 - KNOWLEDGE ORGANIZATION

Minimum Credits: 3

Maximum Credits: 3

Introduces key concepts in information organization and information retrieval, including: terminology and models of organizing information; classification schemes (e.g. Dewey decimal); aspects and examples of controlled vocabularies, thesauri, taxonomies, and ontologies; standards for data content (e.g., Aacr2, rda), data structure (e.g., Marc21, ead), and data value (e.g., Lcsh, sears, tgm); the nature of user information needs and implications for information organization and information retrieval; identifying appropriate resources from the range of types and formats; formulating retrieval strategies; and identifying information appropriate to the user. Required for all MLIS students except those admitted to the

archives and information science specialization.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information; SBPLAN: Archives and Information Sci (MLISAIS-SP/MLIAIS-SP)

LIS 2020 - LIFECYCLES OF DATA AND INFORMATION

Minimum Credits: 3

Maximum Credits: 3

Using lifecycles of data and information as a grounding device for exploring the stages of data / information creation, description, storage, processing, management, preservation, sharing and reuse. Different lifecycle conceptualizations and a range of broad types of data and information from contexts including government data, corporate data, research data, social media data, archival records and citizen / personal data.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

LIS 2021 - IDENTIFYING INFORMATION NEEDS OF KNOWLEDGE ORGANIZATIONS

Minimum Credits: 3

Maximum Credits: 3

Student teams focus on inquiry, through experiential learning, by identifying the information needs of the knowledge organization with which the team has been matched. Students are immersed in observing organizational behavior, collaborating in teams, and practicing soft skills necessary for communication and presentation. Team members gather information about the mission and culture of the organization by observing and listening to understand the context of the needs and challenges of the organization.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

LIS 2022 - IMPLEMENTING SOLUTIONS FOR KNOWLEDGE ORGANIZATIONS

Minimum Credits: 3

Maximum Credits: 3

Building on skills students have developed in the pre-requisite course, student teams propose, develop, and implement prototypes of solutions to the information challenges of their knowledge organizations, focusing on implementing a viable product via rapid prototyping, tight feedback loops, and iterative development.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: LIS 2021

LIS 2023 - INTEGRATING SOLUTIONS FOR KNOWLEDGE ORGANIZATIONS

Minimum Credits: 3

Maximum Credits: 3

Student teams work closely with their knowledge organizations to integrate their proposed solutions into the organization and assess the sustainability of these solutions through observation, measurement, and feedback.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: LIS 2022

LIS 2030 - DATA AND INFORMATION IN SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

Introduction to the concepts and technologies around data, code, metadata, and databases. Basic data types and file formats, code to manipulate data, the generation of metadata about data, and modeling databases to persistently store and structure data.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

LIS 2040 - THE INFORMATION PROFESSIONAL IN THE COMMUNITY

Minimum Credits: 3

Maximum Credits: 3

This course will provide the context as well as a forum for students to discuss, understand and critique value systems, ethical frameworks and power structures embedded in information technologies, policies, systems and institutions. Emphasizing the importance of design, evaluation and engagement with communities through institutions and technologies ranging from public library systems to start ups, this course foregrounds the role of information professionals as active community members as well as the impact of the information professions on society.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

LIS 2110 - RESEARCH METHODS IN LIBRARY AND INFORMATION SCIENCE

Minimum Credits: 3

Maximum Credits: 3

Introduction to quantitative and qualitative methodologies and techniques used to conduct scholarly inquiry and service evaluation in library and information science. The design, planning and execution of research studies, from conceptualization and proposal writing to reporting and dissemination of the findings. Topics covered include research problems and questions; critical appraisal of research literature; data sources and sampling; research ethics and integrity; and data collection, analysis and interpretation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2120 - INFORMETRICS

Minimum Credits: 3

Maximum Credits: 3

The course is an introduction to the study of quantitative aspects of information, including the production, dissemination, and use of all forms of information, and encompassing the following fields: bibliometric, which studies quantitative aspects of recorded information; altmetrics, which is concerned with non-traditional metrics that have been proposed as an alternatives to more traditional citation impact metrics; scientometrics, which studies quantitative aspects of science; and webometrics, which studies quantitative aspects of the world wide web.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

LIS 2184 - INTELLECTUAL PROPERTY AND "OPEN" MOVEMENTS

Minimum Credits: 3

Maximum Credits: 3

Concepts, legislation, and case law about censorship, freedom of access to information, privacy, copyright, professional liability, and other issues. Legal implications and safeguards. Origins, development, evolution, and pivotal role of copyright, fair use, and related issues within 21st century information, legal, policy, and economic framework. Key and emerging issues such as public domain, orphan works, section 108 exceptions for libraries and archives, licensing, recent statutory legislation and case law, and international copyright. Alternative protection schema, such as open access and creative commons.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LIS 2186 - INFORMATION POLICY

Minimum Credits: 3

Maximum Credits: 3

Introduction to information policy with a focus on U.S. Federal policies. Issues and challenges faced in developing and implementing policies within organizations and companies, including the protection and use of intellectual property, first amendment concerns, access to public information, security and the protection of privacy of personally identifiable information.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2194 - INFORMATION ETHICS

Minimum Credits: 3

Maximum Credits: 3

Digital-age intersection of information and ethics with emphasis on key areas of intellectual property, privacy, confidentiality, authenticity, plagiarism, diversity/inclusion and special populations, accessibility, intellectual freedom, censorship, social networking, cyberbullying, security, preservation, transparency, accountability, policy making, and professionalism. Ethical theories and application of ethical decision-making models to real-world library and information center scenarios. Analysis of codes of ethics. Issues and resources related to creation, implementation, enforcement, and assessment of institutional ethical codes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Global Studies

LIS 2214 - LIBRARY AND ARCHIVAL PRESERVATION

Minimum Credits: 3

Maximum Credits: 3

Introduces the preservation and conservation of library and archival collections. Basic foundation in theoretical, managerial, analytical, and practical applications of preservation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2215 - PRESERVATION MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

Methods of integrating and implementing preservation activities and programs in library and archival settings, based on a knowledge of preservation history, operations, and current issues. Understanding the complexities of practical applications; combining management ideals with less-than-ideal institutional environments.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: SBPLAN: Archives and Information Sci (MLISAIS-SP/MLIAIS-SP)

LIS 2220 - ARCHIVES AND RECORDS MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

Introduction to the essentials of records management in diverse organizational settings and in society. Organizational theory and how this relates to the history and development of record-keeping systems, electronic-records management and the advent of new technologies, and the place of records management in the information professions. Theoretical principles, methodologies, and practical administration of archives, records, and other information sources from print to oral contributing to the management of evidence and information necessary for organizations and society.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2222 - ARCHIVAL APPRAISAL

Minimum Credits: 3

Maximum Credits: 3

Advanced analysis of the basic theories, principles, techniques, and methods that archivists and records managers use for identifying and selecting (appraising) records with continuing or enduring value to records creators, researchers, and society. Comparison and contrast to related activities in other fields, such as library collection management and development, museum artifact selection, and the analysis of documentary evidence by historians and other researchers.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: LIS 2220; SBPLAN: Archives and Information Sci (MLISAIS-SP/MLIAIS-SP)

LIS 2223 - ARCHIVAL ADVOCACY AND ETHICS

Minimum Credits: 3

Maximum Credits: 3

Orientation to the ways in which archivists and other records professionals advocate for access to their holdings, their programs and societal mission, and the ethical and other challenges they face in carrying out such functions. Provides historical, theoretical and practical orientation to advocacy, and ethical matters.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: LIS 2220; SBPLAN: Archives and Information Sci (MLISAIS-SP/MLIAIS-SP)

LIS 2224 - ACCESS, SYSTEMS AND TOOLS FOR ARCHIVAL COLLECTIONS

Minimum Credits: 3

Maximum Credits: 3

Introduction to the theoretical foundations, history, principles, and research surrounding the access to and representation of archival materials. Examination and analysis of issues of effectiveness, economics, and audience surrounding different types of surrogates for archival collections including guides, calendars, finding aids, (in paper form and on-line), bibliographic records themselves, issues of context, appropriate levels of control, selection, and interpretation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Sciences or Sch Computing and Information

LIS 2225 - MUSEUM ARCHIVES

Minimum Credits: 3

Maximum Credits: 3

Overview of the evolution of the purposes of museums; history and development of museum record keeping systems, with particular emphasis on changes in those systems in transition from paper-based to electronic records. Use of functional analysis to identify principle functions of museums and to guide the appraisal of records that document those functions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2226 - MOVING IMAGE ARCHIVES

Minimum Credits: 3

Maximum Credits: 3

This course will introduce you to the various contexts moving image media occupies in collecting institutions as well as the basic procedures to preserve these works. Motion picture film will be of primary focus, but other moving image media types will also be explored. Throughout the semester archival functions will be approached using cross-disciplinary frameworks as a way to interrogate the histories, technologies, preservation processes and accessibility of moving image media.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: LIS 2220; PROGRAM: School of Information Sciences or Sch Computing and Information

LIS 2227 - PHOTOGRAPHIC ARCHIVES

Minimum Credits: 3

Maximum Credits: 3

Explore issues surrounding all aspects of managing photographic collections including storage, access, preservation, reference, cataloging, processing, and, digitization. Students completing this course will be able to: evaluate, identify, and inspect photographic collections for their preservation needs including determining and carrying out treatment and storage options. Develop processing plans for photographic collections. Create policies and guidelines for reference and access to photographic collections with attention paid to copyright issues. Use photographic collections as primary documents in reference situations. Be familiar with issues surrounding copyright and digitization of photographic collections.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROGRAM: School of Information Sciences or Sch Computing and Information

LIS 2228 - INTERNATIONAL PERSPECTIVES ON ARCHIVES

Minimum Credits: 3

Maximum Credits: 3

Archival issues analyzed from an international perspective: archival history in the 20th century, archival standards and practices, and relation between archives, collective memory and accountability.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: LIS 2220; PROGRAM: School of Information Sciences or Sch Computing and Information

LIS 2230 - RECORDS AND INFORMATION MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

Contemporary approaches to records and information management (rim). Concepts, tools and best practices that help information professionals create useful and sustainable recordkeeping systems. Physical and digital recordkeeping. Metadata classifications and filing systems. Records retention. Role of standards, policy, law, ethics and tradition.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: LIS 2220; PROG: School of Information Science or Sch Computing and Information

LIS 2280 - HISTORY OF BOOKS, PRINTING, PUBLISHING

Minimum Credits: 3

Maximum Credits: 3

The development of the book in its many forms in relation to contemporary society, education, and culture. Manuscript origins, the nature and development of the printing process, the reading public, the book trade, binding, and book illustration.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2322 - RESOURCES FOR CHILDREN

Minimum Credits: 3

Maximum Credits: 3

Survey of literature, film, video, and other formats for children from infancy to adolescence with an emphasis on contemporary sources. Critical evaluation of materials for use in a multicultural society and strategies to encourage the use of those materials by children and those who work with children.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Sciences or Sch Computing and Information

LIS 2323 - RESOURCES FOR YOUNG ADULTS

Minimum Credits: 3

Maximum Credits: 3

Survey of literature, periodicals, video, and other formats of interest to and importance for young adults with an emphasis on contemporary sources. Critical evaluation of materials for use in a multicultural society and strategies to encourage the use of those materials by young adults and those who work with young adults.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2324 - HISTORY OF CHILDREN'S LITERATURE

Minimum Credits: 3

Maximum Credits: 3

Introduction to literature for children from the Anglo-Saxon period in England through the 19th century in England and America. Emphasis on social and cultural history as reflected by literature for young people.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2325 - CURRICULUM RESOURCE AND SERVICE/SCHOOL LIBRARY

Minimum Credits: 3

Maximum Credits: 3

Integration of library media center collections and services into the curriculum. The teaching roles of the school library media specialist.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

LIS 2326 - STORYTELLING

Minimum Credits: 3

Maximum Credits: 3

The historical role of the storyteller as preserver of culture and the contemporary role as performer in the context of traditional and contemporary sources of stories and techniques of presentation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2327 - MULTICULTURAL RESOURCES AND SERVICES IN SCHOOL AND LIBRARY MEDIA CENTERS

Minimum Credits: 3

Maximum Credits: 3

Survey of multicultural resources in a variety of formats; utilization of multicultural resources with students and teachers in k-12 schools.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Sciences or Sch Computing and Information

LIS 2328 - INFORMATION LITERACY RESOURCES AND SERVICES

Minimum Credits: 3

Maximum Credits: 3

Overview of information seeking behaviors of students and teachers in the k-12 school library environment; services and resources that directly support information literacy skills instruction; policies that guide the use of information by students and teachers.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

LIS 2332 - RESOURCES AND SERVICES FOR ADULTS

Minimum Credits: 3

Maximum Credits: 3

Survey of materials in a variety of formats of interest to and importance for adults, with an emphasis on popular resources, utilization of resources and program development.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2334 - INFORMATION RESOURCES, SERVICES & TECHNOLOGY IN AN AGING WORLD

Minimum Credits: 3

Maximum Credits: 3

This course will focus on collection development, reference, and education services for older adults, and their professional and family caregivers. The course will cover the critical evaluation of materials in print, non-print, and electronic formats, and a discussion of information services provided by healthcare organizations, community agencies, medical center and hospital libraries, public libraries which serve an aging population, and academic libraries serving students in the helping professions. This course is especially appropriate for those interested in working in medical and public libraries, healthcare organizations, community agencies, and academic libraries with students and faculty interested in the helping or service professions, especially in fields that focus on older people.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROGRAM: School of Information Sciences or Sch Computing and Information

LIS 2335 - LIBRARY SERVICES FOR EARLY CHILDHOOD

Minimum Credits: 3

Maximum Credits: 3

Knowledge and skills needed to provide developmentally appropriate services for children, ages 0 to 5 years, and their families and caregivers. Design, implementation, and evaluation of library programming for young children. Role of family and caregivers in language and literacy development. Current trends, issues, and problems in the area of library services for young children.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2405 - CATALOGING AND CLASSIFICATION

Minimum Credits: 3

Maximum Credits: 3

Theory, principles, and standards of descriptive and subject cataloging as currently practiced and conceptualized; emphasis on the changing information landscape. Focuses on analyzing systems and practices that respond to user needs, practically and ethically. Provides beginning level experience with bibliographic utilities, description, metadata and encoding schemes, choice of entry, construction of headings, authority control, Dewey and library of congress classification schemes, and library of congress subject headings.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: LIS 2005 or (2001 and 2002); PROG: School of Information Science or Sch Computing and Information

LIS 2407 - METADATA

Minimum Credits: 3

Maximum Credits: 3

Principles and application of metadata for networked information resource organization, representation, retrieval, and interoperability using a variety of schemes and tools.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2500 - REFERENCE SOURCES AND SERVICES

Minimum Credits: 3

Maximum Credits: 3

Survey and application of tools (paper and electronic) needed to respond to questions in the changing reference environment. Discussion of philosophies and theories underlying the practice of general reference. Introduction to subject reference tools and services.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: LIS 2005 or (2001 and 2002); PROG: School of Information Science or Sch Computing and Information

LIS 2520 - COLLECTION DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

This course examines the principles and practices involved in the development and management of library collections in all types of libraries with emphasis on processes for identifying user needs and methods of selecting, acquiring, and evaluating materials in all formats. This course is designed to provide students with an overview and understanding of the key functions of collection development and how these functions are integrated into the library workplace.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

LIS 2537 - GOVERNMENT INFORMATION RESOURCES AND SERVICES

Minimum Credits: 3

Maximum Credits: 3

The American political environment and its impact on the availability and control of information emanating from the federal government. Consideration and analysis of federal government materials in many formats.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2585 - HEALTH CONSUMER RESOURCES AND SERVICES

Minimum Credits: 3

Maximum Credits: 3

Collection development, reference, and educational services in the domain of consumer health resources in print, non-print, and electronic formats. Identification of appropriate and accurate resources for consumer health and family education; policy issues in providing consumer and family health information in different settings; role of public media; and information and referral services to and from healthcare organizations, community agencies, and public libraries.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2586 - HEALTH SCIENCES RESOURCE AND SERVICES

Minimum Credits: 3

Maximum Credits: 3

Survey and evaluation of current sources, services, and trends related to information transfer in the health sciences, including medicine, nursing, pharmacy, dentistry, allied health, and veterinary science. Materials and services appropriate to hospital, academic, and special libraries and information centers.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2587 - APPLICATIONS IN MEDICAL INFORMATICS

Minimum Credits: 3

Maximum Credits: 3

Survey of concepts and activities in medical informatics, including an introduction to the applications of information technology in knowledge-based information and library informatics; integrated hospital information systems and patient-specific information; nursing, radiology, pathology and pharmacy services; clinical decision support; telehealth; and medical education. Concepts related to information in healthcare financing; legal ethical and philosophical issues in medical informatics; consumer informatics. Intended for masters-level graduate students in the helping and service professions without clinical experience.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2600 - INTRODUCTION TO INFORMATION TECHNOLOGIES

Minimum Credits: 3

Maximum Credits: 3

Introduction to computing and networking, with an emphasis on how computing and networking technologies are used to create, manipulate, and disseminate information related to library and archival services. Focus on a series of underlying themes, including standardization, interoperability, and hypertext presentation, with an emphasis on core technologies of digital libraries; namely, databases and digital documents. Web design, layout, and publishing incorporate a set of competencies essential for librarians and information professionals. "Hands-on" experiences with relevant technologies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2610 - LIBRARY AND ARCHIVAL COMPUTING

Minimum Credits: 3

Maximum Credits: 3

Development and roles of computational systems that form the basis of computing for libraries and archives, with particular emphasis on the role that digital libraries and repositories play in support of contemporary scholarship. "Hands-on" experiences with key applications and systems that have been developed, mainly in the open-source environment 'lamp' architecture--for use in digital libraries and related settings, with an emphasis on collection building.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Sciences or Sch Computing and Information

LIS 2630 - HUMAN INFORMATION INTERACTION

Minimum Credits: 3

Maximum Credits: 3

Theory, principles, techniques, and tools for design of information systems and services, with emphasis on understanding user-centered design. Analysis of design elements of information infrastructure to respond to user needs. Models for user-centered design. Approaches to design of specific information systems and services.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2633 - TECHNOLOGY IN THE LIVES OF CHILDREN AND YOUTH

Minimum Credits: 3

Maximum Credits: 3

Effects of media on young people, ages birth to 18 years; technology in everyday life--from toys to television; gaming and libraries; filtering; privacy and child safety; social networking/cyber-bullying; information/media literacy instruction in children's libraries (public); digital libraries for children; evaluation of digital resources for children; children's information behavior; interaction/interface design for young people; digital divide and social equity issues; global perspectives--technology in young people's lives around the world; future trends.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2635 - INFORMATION ARCHITECTURE

Minimum Credits: 3

Maximum Credits: 3

Practical and theoretical issues associated with information architecture in organizations. User and organizational information needs and uses provide the basis for the conceptual design of web-based information systems and methods for analysis of stakeholder needs. Designed for students wishing

to enhance knowledge and skills related to web development, networks, and related concepts.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: LIS 2600 or LIS 2610; PROG: School of Information Science or Sch Computing and Information

LIS 2670 - DIGITAL LIBRARIES IN THEIR COMMUNITIES

Minimum Credits: 3

Maximum Credits: 3

This course gives participants a comprehensive, multilayered yet integrated framework for understanding and contributing to digital libraries'from their collections to their emergent online communities; from their technological to their social and economic aspects; and from their origins within libraries, archives, museums, and other information service settings to their prospects on the social web. Students will analyze and evaluate a working digital library, and also develop a community-centered strategy for building or enhancing an open access repository. The course covers technological issues, but is non-technical in nature, with a focus on community engagement and the social roles of digital libraries. It will equip practitioners to design and implement digital library initiatives in their own organizations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2671 - DIGITAL HUMANITIES

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Sciences or Sch Computing and Information

LIS 2672 - TECHNOLOGIES AND SERVICES FOR DIGITAL DATA

Minimum Credits: 3

Maximum Credits: 3

The goal of this course is to prepare students to work creatively and productively in digital environment. With the focus on the technologies and services around digital data in web information context, this course includes the development of theoretical knowledge and a practical understanding of digital data. Taking a social-technical perspective, this course will help students to develop a broad understanding of digital data rather than solely view digital data as technical achievements. The course consists of three broad modules: overview of digital data, technologies supporting the life cycle of digital data, and services built around digital data in current networked participatory daily and professional environments.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

LIS 2674 - PRESERVING DIGITAL CULTURE

Minimum Credits: 3

Maximum Credits: 3

Explores the history of digital media. Provides a theoretical framework for understanding the preservation of digital culture, including both digitized and born-digital materials. Introduces students to the latest research on the preservation problems surrounding digital culture. Tackles the ongoing debates focused on the related but distinct concepts of preservation, curation, maintenance, and stewardship.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: LIS 2600 or LIS 2610; PROG: School of Information Science or Sch Computing and Information

LIS 2676 - RESEARCH DATA MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

This topical course is designed to introduce students to the conceptual and practical challenges of research data management and takes a highly innovative approach by "immersing" the participants in disciplinary research settings in subject domains beyond LIS, as part of the learning process. The seminar will explore disciplinary data diversity, but will also examine how universities and other organizations are developing policy, roadmaps, plans and tools to facilitate good research data management practice. The seminar will investigate roles, responsibilities, and relationships of key stakeholders engaging with legal and ethical data issues, advocacy and training methods, and the costs of providing such research data management services in institutions. A pragmatic approach will be supported by reference to case studies and exemplars, which show how researchers, librarians, technologists, administrators, and others are responding positively to the data challenge.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

LIS 2677 - RESEARCH DATA INFRASTRUCTURE

Minimum Credits: 3

Maximum Credits: 3

This course will build on LIS 2676 Research Data Management course, and will focus on the elements of research data infrastructure which facilitate and enable effective data management. The course will examine approaches to data storage, data repositories and preservation practice, selected standards, schema, protocols and formats for describing datasets, data registries and catalogs enabling data discovery and the data publication process. We will explore developments in data citation and metrics to track data provenance and attribution. In each of the listed areas, there will be case studies and exemplars to illustrate the challenges and experiences of pilot implementations and fully operational services. Finally we will also consider public engagement with data, including the landscape of citizen science initiatives and the emergence of data science concepts and practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

LIS 2678 - DATA SCIENCE FOR LIBRARY AND INFORMATION PROFESSIONALS

Minimum Credits: 3

Maximum Credits: 3

This course provides an introduction to data science for library and information professionals so they can participate in the emerging ecosystem around data science. This course will survey the landscape of data science and explore the role library and information professionals play in the evolving ecosystem of academic and industrial data science. In the course, students will learn the concepts, practices, and technologies of data science, both within academia and industry. It will provide students with hand-on experiences as well as critically exploring how librarians and information professionals can work and provide value in data-adjacent roles. Topics include data collection, cleaning, analysis, and visualization. There are no technical requirements for this course, but students should be prepared learn about and use various technical tools and ideas related to data science.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

LIS 2679 - TECHNOLOGIES FOR DATA PRESERVATION AND DATA FORENSICS

Minimum Credits: 3

Maximum Credits: 3

The course is concerned with key aspects of digital forensics, digital curation, and digital preservation, focusing on the skills and technologies essential to each of these functions. Students are required to work in virtual machine and Linux environments.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

LIS 2680 - DATABASE DESIGN AND APPLICATIONS

Minimum Credits: 3

Maximum Credits: 3

Characteristics and concepts of database systems; database development process, including entity-relationship model, relational database models, normalization, structured query language (SQL), basics of transaction management and physical database design; current database technologies; and database applications in libraries and archives.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: LIS 2600 or LIS 2610; PROG: School of Information Science or Sch Computing and Information

LIS 2690 - INFORMATION VISUALIZATION

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the visual design, structure, and organization of information as applied to library and information environments and web site design. Topics include visualization literacy, usability research, theories of visual perception and cognition, visualization models, visual analytics, and data graphics. The emphasis is on user and task-centered design for developing and evaluating visualization-based tools for various types of data. Practical work with visualization technologies will be included.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: LIS 2600 or LIS 2610; PROG: School of Information Science or Sch Computing and Information

LIS 2695 - GEOGRAPHIC INFORMATION SYSTEMS FOR LIBRARIANS

Minimum Credits: 3

Maximum Credits: 3

Concepts, techniques and technology of GIS: geospatial data sources, metadata, and databases; techniques for creating maps; using GIS applications and software.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: LIS 2600 or 2610; PROG: School of Information Sciences or Sch Computing and Information

LIS 2700 - MANAGING AND LEADING INFORMATION SERVICES

Minimum Credits: 3

Maximum Credits: 3

Managing and leading libraries and information services, one of the required core courses for the MLIS degree, focuses on key management theories and practice-based competencies in preparing students to be successful, service-oriented managers and leaders at all levels of diverse organizations. Students in this diversity and inclusion infused course will develop understanding of important skill sets and management and leadership domain areas, such as communication; strategic planning; core values and organizational culture; leading productive meetings; managing people, money, facilities, conflict, and change; legal and ethical issues; collaboration and partnerships; marketing and public relations; and professional development. Guest speakers representing different types of libraries, as well as other institutional settings, will provide students with exposure to varied management and leadership styles and perspectives. Individual and group assignments, course content and case studies from non-profit and for-profit sectors, readings, podcasts, and in-class and online discussions will examine emerging trends, challenges, and opportunities for 21st century information center managers and leaders.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or ; EXCLUDING SBPLAN: Archives and Information Sci (MLISAIS-SP); School Library Cert Program (MLISLCP-TR); MLIS Fast Track School Lib Cer (MLISFTL-TR)

LIS 2771 - ACADEMIC LIBRARIES

Minimum Credits: 3

Maximum Credits: 3

The environment of academic libraries has changed radically since the 1990s with rapid advances in technology, developments in higher education

and innovations in scholarly communication. The fundamental purpose of academic libraries has not changed, but traditional jobs have given way to self-service and professional roles have evolved into complex specialties. This course explores the challenges and problems facing academic libraries today, examining their resources, services, facilities and staffing, with reference to historical contexts and future directions. It will cover traditional and emerging practices in areas such as academic liaison, information literacy, research support, scholarly publishing, library assessment and career management.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2773 - FOUNDATIONS OF KNOWLEDGE MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

This course explores corporate culture, with a focus on how organizations in the private sector create and use information, seek and store information, and utilize information systems and technologies to carry out their activities. Topics to be addressed include infrastructure, expertise, compliance, planning, staffing, managing, budgeting, assessment, personnel concerns, marketing, technology, capitalism, bureaucracy, and group dynamics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2774 - SCHOOL LIBRARY MEDIA CENTER MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

Planning, organizing, staffing, budgeting, implementing, and evaluating library media programs in elementary and secondary schools. The functions and roles of library media specialists in instruction and library media centers as information centers in schools.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

LIS 2830 - COMMUNITY ENGAGEMENT AND ADVOCACY FOR INFORMATION SERVICES

Minimum Credits: 3

Maximum Credits: 3

This course focuses on community engagement through communication and advocacy for information services. This includes building relationships with the community, seeking funding, and communicating the library's value. Students will learn how to best implement outreach and marketing strategies - branding, merchandising, displays, social media, and programming - to reach an intended audience. Ultimately, this course emphasizes communication and outreach to engage the community in the life of the library/museum/archive/etc. to create a mutually-beneficial relationship.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2850 - INFORMATION PROFESSIONALS ROLE IN TEACHING AND LEARNING

Minimum Credits: 3

Maximum Credits: 3

This course prepares participants for formal and informal educational roles as teachers, trainers, and facilitators of learning for all age groups found in school, public and academic libraries, as well as those found in archives, museums, and other information service organizations. Topics covered include: teaching and training fundamentals; information literacies; learning styles; instructional strategies; managing large and small instruction programs; and delivering online instruction.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2880 - COMMUNITY KNOWLEDGE PRACTICES

Minimum Credits: 3

Maximum Credits: 3

Focuses on information needs and challenges in the nonprofit sector. Explores how nonprofits use information systems and services. Students will learn how to support nonprofits in a variety of activities, including entity registration, fundraising, technology acquisition and adoption, knowledge management, marketing, messaging, and reporting. Designed for students interested in working as information professionals in NGOs, community organizations, foundations, social service agencies, and government.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

LIS 2901 - INDIVIDUAL RESEARCH 1

Minimum Credits: 1

Maximum Credits: 3

Research on a topic selected by the student and carried out with scheduled reports to a faculty member. Reports of the research may take various forms as determined in advance by the student and faculty member. Faculty member's agreement to sponsor required.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad Letter Grade

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2902 - INDIVIDUAL RESEARCH 2

Minimum Credits: 1

Maximum Credits: 3

Research on a topic selected by the student and carried out with scheduled reports to a faculty member. Reports of the research may take various forms as determined in advance by the student and faculty member. Faculty member's agreement to sponsor required.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad Letter Grade

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2921 - FIELD EXPERIENCE

Minimum Credits: 3

Maximum Credits: 3

Supervised work in a library, archive or other information service environment that provides a frame of reference for understanding and an opportunity to apply the skills, methodologies, and theories presented in other courses. Agreement of faculty sponsor and field work supervisor required.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad SN Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2922 - PRACTICUM IN SCHOOL LIBRARY MEDIA PROGRAMS

Minimum Credits: 3

Maximum Credits: 6

Experience in a school library, under the supervision of a cooperating teacher librarian working collaboratively with teachers, teaching information literacy skills, providing services to students and teachers, and managing resources. Weekly seminars, individual coaching sessions, and other online written requirements focus on identifying best practices and using case studies to problem solve. Professional assessment; completion of SLCP

portfolio of demonstrated competencies and electronic professional portfolio.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad SN Basis

Course Requirements: SBPLAN: School Library Cert Program (Library & Information Science-MLIS) or LIS SLCP Certificate (Library & Information Science-AC) or MLIS Fast Track School Lib Cer (Library & Information Science-MLIS) or Special LIS (Not Candidate for Degree-ND)

Course Attributes: Hybrid

LIS 2923 - PRACTICUM SCHOOL DISTRICT LIBRARY MEDIA PROGRAMS

Minimum Credits: 6

Maximum Credits: 6

Coordinated experience in various aspects of managing district- or regional-level school library programs, including professional development for district school librarians, collections and resources management, professional libraries, central-processing centers, and personnel.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad SN Basis

Course Requirements: SBPLAN: LIS SLCP Certificate (Library & Information Science-AC) or Special LIS (Not Candidate for Degree-ND)

LIS 2924 - FIELD EXPERIENCE IN ARCHIVES AND INFORMATION SCIENCE

Minimum Credits: 3

Maximum Credits: 3

Supervised work in an archive, or other information-service environment that provides a frame of reference for understanding and an opportunity to apply the skills, methodologies, and theories presented in other courses. Agreement of faculty sponsor and field work supervisor required.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad SN Basis

Course Requirements: SBPLAN: Archives and Information Sci (MLISAIS-SP)

LIS 2970 - SPECIAL TOPICS

Minimum Credits: 3

Maximum Credits: 3

Courses offered on an experimental basis or as special topics seminars.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2971 - SPECIAL TOPICS: PUBLIC SERVICES

Minimum Credits: 1

Maximum Credits: 1

Individual 1-credit courses surveying and evaluating the current sources, services, and trends in reference and other public service areas of librarianship. Classes may include practical applications of theory, principles, and standards; hot topics; and discussion of the librarian's distinct roles within the LIS institution.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information

LIS 2975 - SEMINARS: SPECIAL TOPICS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PROG: School of Information Sciences or Sch Computing and Information

LIS 3000 - INTRODUCTION TO DOCTORAL STUDIES

Minimum Credits: 3

Maximum Credits: 3

An introduction to the requirements for the Ph.D. Degree in the department of library and information science and to the broader social and academic context of doctoral studies: its history and traditions, social role, methodologies, and outcomes of doctoral scholarship in library and information science.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Library & Information Science (PHD)

LIS 3300 - SEMINARS IN RESEARCH METHODS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Library & Information Science (PHD)

LIS 3600 - SEMINAR INFORMATION SYSTEMS AND TECHNOLOGY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Library & Information Science (PHD)

LIS 3901 - INDIVIDUAL RESEARCH 1

Minimum Credits: 1

Maximum Credits: 3

Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Library & Information Science (PHD)

LIS 3902 - INDIVIDUAL RESEARCH 2

Minimum Credits: 1

Maximum Credits: 3

Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Library & Information Science (PHD)

LIS 3950 - TEACHING PRACTICUM

Minimum Credits: 3

Maximum Credits: 3

Required teaching practicum in an appropriate LIS course related to area of interest. Learning activities include involvement in course design with instructor, class attendance, presentation of material, office or tutorial hours, and involvement in grading. Sole responsibility for at least one session.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad SN Basis

Course Requirements: PLAN: Library & Information Science (PHD)

LIS 3970 - SEMINARS: SPECIAL TOPICS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Library & Information Science (PHD)

LIS 3999 - DISSERTATION

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: Library & Information Science (PHD); CUM GPA: 3.50

Linguistics

LING 1000 - INTRODUCTION TO LINGUISTICS

Minimum Credits: 3

Maximum Credits: 3

This course is a survey of general linguistics, emphasizing the theory and methodology of the traditional central areas of the field--phonetics, phonology, morphology, and syntax- with special concentration on phonological and syntactic theories and analytical techniques. The remainder of the course will be devoted to phonetics, morphology, historical linguistics, semantics and pragmatics, sociolinguistics, and psycholinguistics.

Academic Career: UGRD

Course Component: Lecture

Grade Component: LG/SNC Elective Basis

LING 2000 - THESIS RES FOR THE MA DEGREE

Minimum Credits: 1

Maximum Credits: 9

This course provides for individual work under the guidance of a faculty member.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

LING 2010 - STATISTICS FOR RESEARCH IN LINGUISTICS

Minimum Credits: 3

Maximum Credits: 3

Students finish this course with a basic understanding of the reasoning behind the most common statistical tests and measures used in linguistics. Students are able to use their knowledge to select, perform, and interpret statistical tests in both corpus-based and experimental research.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LING 2142 - THEORIES AND PRACTICES OF SECOND LANGUAGE TEACHING

Minimum Credits: 3

Maximum Credits: 3

This course is intended to introduce current and prospective foreign and second language teachers to the various theories, approaches, issues, and practices employed in the teaching of English as a foreign or second language and, by extension, to other foreign language teaching as well. The course provides a broad overview of content in order to provide foundational knowledge of the field, and includes lectures, exams, and practical experience components.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: CREQ: LING 1000 or 2144

LING 2143 - SEM LANG TCHNG MATLS DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

This is a course designed to introduce students to the design and development of materials and texts for the teaching of second languages. The course is conducted as a seminar with student presentations on the various aspects of materials designed to teach language skills. Each student also presents a project prospectus that describes the purpose, descriptive objectives, operational objectives, concepts, and procedures for incorporating concepts into the materials. Students then prepare the materials (or part of them) and present reports on their projects.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

LING 2144 - RES METHODS IN APPLIED LING

Minimum Credits: 3

Maximum Credits: 3

This course will give a broad introduction to research methods for the study of non-native language development. Both quantitative and qualitative methods will be discussed for the study of as well as informal learning and acquisition processes. But some emphasis will be put on qualitative methods and on classroom language development. Occasional reference will be made to research strategies in sociolinguistics and psycholinguistics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

LING 2146 - SECOND LANGUAGE ACQUISITION

Minimum Credits: 3

Maximum Credits: 3

This course will deal with second language development from a linguistic and psychological, rather than from an educational point of view. Both the influence of linguistic theory on second language research and the importance of second language data for linguistic theory will be discussed. Second language development in children as well as adults will be described, and frequent comparisons will be made with data from first language acquisitions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: LING 1000

Course Attributes: Global Studies

LING 2147 - CUR ISSUES IN SECOND LANG LRNG

Minimum Credits: 3

Maximum Credits: 3

This course will cover four or five topics that have received a lot of attention in the applied linguistics literature of the last few years. Topics discussed in the past include learning vs. Acquisition, accuracy vs. Fluency, classroom interaction, individual differences, and computer-assisted instruction.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

LING 2149 - ADV SECOND LANGUAGE ACQUISITION

Minimum Credits: 3

Maximum Credits: 3

This course aims to cover a number of topics which are presently under discussion in the field of applied linguistics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: LING 2142 or 2146 or 2148

LING 2195 - PRACTICUM ESL TEACHING

Minimum Credits: 1

Maximum Credits: 1

The requirements of the practicum may be fulfilled by supervised teaching either in the English language institute or in its informal ESL course (for at least 15 contact hours). Teachers are required to attend orientation and training meetings, be observed in class, attend post-observation discussions, and provide an evaluation of the curriculum.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad SN Basis

LING 2197 - TEACHING OF LINGUISTICS

Minimum Credits: 3

Maximum Credits: 3

This course is designed to provide supervision and consultation to graduate student TA's and TF's in under graduate linguistics courses.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

LING 2235 - LANGUAGE, GENDER AND SOCIETY

Minimum Credits: 3

Maximum Credits: 3

The primary objective of this course is to sensitize students to the impressions given through language and the degree to which these are sex-linked. The course addresses a number of questions relevant to gender-specific language variation, including these: does language influence the way we view our gender roles, or do our gender roles condition our language? What do gender differences in languages have to do with the maintenance of social boundaries?

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Global Studies

LING 2253 - PIDGIN AND CREOLE LANGUAGES

Minimum Credits: 3

Maximum Credits: 3

This course surveys the new languages that have sprung up in various parts of the world and under various historical circumstances when people who speak different languages come into contact with each other. These contact languages are called pidgins as long as they are spoken only as second languages, and creoles if they become the main language of a speech community. This course focuses on the major structural, social, and historical features of pidgins and creoles.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

LING 2267 - SOCIOLINGUISTICS

Minimum Credits: 3

Maximum Credits: 3

This is an introductory course in the social aspects of language. The course is divided into three parts: (1) linguistic competence; (2) communicative competence; and (3) language policy, which deals with implications of earlier topics when applied to society.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Global Studies

LING 2270 - ADVANCED SOCIOLINGUISTICS

Minimum Credits: 3

Maximum Credits: 3

This course is a continuation of LING 2267, Sociolinguistics. This course will focus on topics selected by students' particular interests and these topics will be covered in depth.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Global Studies

LING 2274 - LANGUAGE CONTACT

Minimum Credits: 3

Maximum Credits: 3

This course examines the effects of language contact on the structure of the involved languages. We will investigate a variety of language contact situations and the ways in which varying degrees of intensity of contact lead to differing degrees of interference between linguistic systems. Topics include: language contact as a cause for linguistic change (loan words, phonological and other structural change); typologies of language contact (substratum, sprachbund); bilingualism in the individual and the bilingual community (social dialects, diglossia); the emergence of new languages through contact (regional versions of standard languages, pidgins and Creoles).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: LING 1253 or 2253 or 2267

LING 2330 - COMPUTATIONAL LINGUISTICS

Minimum Credits: 3

Maximum Credits: 3

In both linguistics and computer science, we need to study languages and their grammar from a mathematical point of view. This course is an introduction to the mathematical theory of language and its applications. The first half will deal mainly with elements of the theory of automata and its relation to grammars. The second half will survey ways in which this theory can be applied to English grammar and to the design of programming languages. We will concentrate on syntax, but will also pay some attention to theories of meaning. NOTE: CS 401 (Java) combined with Python knowledge can be used as a substitute for the Python prerequisite (CS 8, 10-12). Please email the instructor.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: CS (0008 or 0010 or 0011 or 0012) with grade of B or better

LING 2340 - DATA SCIENCE FOR LINGUISTS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

LING 2391 - PHONOLOGY OF SPANISH

Minimum Credits: 3

Maximum Credits: 3

This course provides a description of Spanish sounds (vowels, diphthongs and consonants in all their allophonic realizations), and prosodic features (stress and intonation) in light of current phonological theories. Special attention will be paid to syllable structure, as well as different phonological processes such as assimilation, dissimilation, and epenthesis. The relationship between phonology and other components of the grammar (in particular morphology and syntax) will also be dealt with.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Latin American Studies

LING 2394 - SPANISH DIALECTOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course looks at varieties of Spanish from different perspectives: regional, social, and stylistic. Phonological, morphological, syntactic, and lexical variation will be taken into account. Special attention will be paid to heritage Spanish, creoles, language contact, as well as the diachronic sources of regional differentiation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

LING 2397 - SPECIAL TOPICS IN HISPANIC LINGUISTICS

Minimum Credits: 3

Maximum Credits: 3

This course aims to cover a number of topics which are presently under discussion in the field of Hispanic linguistics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

LING 2441 - FIELD METHODS IN LINGUISTICS

Minimum Credits: 3

Maximum Credits: 4

This course is meant to simulate the experience of linguistic field work, and raise awareness about the effectiveness of specific interview techniques for acquiring linguistic data. The course will give instruction and experience in eliciting data from a speaker of a non (Indo) European language. Students will undertake the investigation of the phonology, some aspect of grammar, and the ethno semantic study of a taxonomically structured semantic field such as plants or animals. Students will make detailed elicitation plans in advance of their administration.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: LING 2579 and 2773 and 2777

LING 2578 - PHONETICS AND PHONEMICS

Minimum Credits: 3

Maximum Credits: 3

Intensive analysis of the sounds of speech, giving special attention to organs involved in the articulations of speech sounds and auditory discrimination. Students will obtain grounding in practical phonetic skills. Concepts of phoneme, features, abstractness in addition to grammatical theory regarding descriptive phonology will be introduced.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

LING 2579 - PHONOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course introduces the principles of phonological analysis and theory. After a brief survey of the roots of modern phonology in Prague school and American descriptivist ('classical phonemic') theories, the main focus of the course will be on generative phonology. Both in and out of class, students will be expected to solve phonological problems and construct theoretical arguments.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: LING 2578

LING 2682 - INTRODUCTION TO SEMANTIC THEORY

Minimum Credits: 3

Maximum Credits: 3

A survey course designed to introduce students who have been exposed to linguistics and logic to contemporary work in the theory of meaning.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

LING 2720 - STRUCTURE OF SIGN LANGUAGES

Minimum Credits: 3

Maximum Credits: 3

This course will focus on the linguistic structure of sign languages, drawing examples principally, though not exclusively, from American sign language (ASL). It will also highlight similarities and differences between sign languages and spoken languages. In addition to structural features, the course will cover mechanisms unique to visual/spatial languages, the use of the face and body for grammatical signals, language variation, and acquisition of sign languages.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

LING 2721 - SOCIOLINGUISTICS OF SIGN LANG

Minimum Credits: 3

Maximum Credits: 3

There are various sociolinguistic topics that one must consider with respect to signed languages of the deaf. Regarding language contact, ambient languages-either signed or spoken-influence a signed language. Less than 10% of deaf people are exposed to signed language from birth, which results in unique phenomena. Additionally, signed languages exhibit variation based on a myriad of social and geographical factors. These topics, in addition to language planning and language policy, will be addressed in this course.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

LING 2738 - LINGUISTIC STRUCTURES OF ENGLISH

Minimum Credits: 3

Maximum Credits: 3

This course is a "nuts and bolts" description of the lexical and syntactic structures of English. An attempt will be made to provide students with a thorough grounding in traditional grammar, while, at the same time, presenting insights and explanations from a transformational-generative perspective. The class is designed for English language teachers- either those who are teaching it in American school systems or those who wish to teach EFL. Lecture format with class discussion.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: LING 1000

LING 2761 - DISCOURSE ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

Many aspects of language cannot be handled adequately in sentence grammars. Although these aspects arguably pertain to a separate area of study, the fieldworker or student of language in context must not avoid them. This course studies discourse in a number of languages, from formal and functional perspectives. Discourse will be shown to provide rich insights into language and culture.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

LING 2773 - MORPHOLOGY

Minimum Credits: 3

Maximum Credits: 3

Morphology, the study of words, is interrelated with the syntax, the phonology, the lexicon, and semantics. The purpose of this course is to develop operational competence, through problem solving and discussion, in the major aspects of morphological theory. Theoretical issues to be addressed will include lexical phonology, prosodic morphology, morphology and logical form, morphology and valence alternations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Global Studies, Latin American Studies

LING 2777 - SYNTACTIC THEORY

Minimum Credits: 3

Maximum Credits: 3

This course is an introduction, stressing understanding of theoretical concepts, to the transformational generative approach to English sentence structure. This approach uses formal rules to produce sentences, and to explain how they are composed of phrases. The first part of the course concentrates on mechanical manipulation of systems of rules, aiming to acquaint the student with how the rules work. The second part concentrates on how syntacticians use evidence about a language to support or disconfirm their theories.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

LING 2787 - ALTERNATIVE SYNTACTIC THEORIES

Minimum Credits: 3

Maximum Credits: 3

Certain formal linguistic models dominate theoretical linguistic thinking and practice ' government and binding, lexical functional grammar, and

montague grammar. But other theories are being honed and practiced, some formal, such as categorical grammar, arc-pair grammar, and role and reference grammar, and some non-formal, such as functional grammar. This seminar will survey such of these marginal and/or uNorthodox theories as match the current interests of the professor and the students.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

LING 2860 - INTRO TO HISTORICAL LINGUISTICS

Minimum Credits: 3

Maximum Credits: 3

A survey of the principles and methods of historical linguistics; practice in the basic techniques of historical linguistic research. The major topics to be studied are the analysis of sound change, analogic change, contact-induced language change, the relationship between variation (regional and social) and language change, the comparative method, and internal reconstruction.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Global Studies

LING 2902 - DIRECTED STUDY FOR MA STUDENTS

Minimum Credits: 1

Maximum Credits: 9

This course provides for individual work under the guidance of a faculty member.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

LING 2959 - DEPARTMENTAL SEMINAR

Minimum Credits: 1

Maximum Credits: 1

A forum for the exchange of ideas among faculty members and advanced graduate students. Topics to be presented and discussed will include areas of linguistic endeavor which are under current exploration by any of the program participants, i.e. Faculty projects, doctoral dissertation work, and M.A. Long paper research.

Academic Career: Graduate

Course Component: Colloquium

Grade Component: Grad LG/SNC Basis

LING 2990 - INDEPENDENT STUDY FOR MA STUDNTS

Minimum Credits: 1

Maximum Credits: 9

This course provides an opportunity for students to formally pursue work on an individual basis.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

LING 3000 - DISSERTATION RESEARCH FOR PHD

Minimum Credits: 1

Maximum Credits: 9

This course provides for individual work under the guidance of a faculty member.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

LING 3099 - INDEPENDENT STUDY FOR PHD STDNT

Minimum Credits: 1

Maximum Credits: 9

This course provides the opportunity for students to formally pursue work on an individual basis.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

LING 3101 - PHD COMPREHENSIVE PAPER 1

Minimum Credits: 1

Maximum Credits: 9

This course provides students with guidance in proposing, researching, writing, and orally presenting the final draft of part one of the Ph.D. comprehensive requirement, normally no later than their fourth year. Depending on the time spent on the comprehensive, the course can be worth one to nine credits. If nine credits are chosen, the comprehensive paper must be completed by the end of the semester.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

LING 3102 - PHD COMPREHENSIVE PAPER 2

Minimum Credits: 1

Maximum Credits: 9

This course provides guidance to students in proposing, researching, writing, and orally presenting the final draft of part two of the Ph.D. comprehensive requirement, normally no later than their fourth year. Depending on the time spent on the comprehensive, the course can be worth one to nine credits. If nine credits is chosen, the comprehensive paper must be completed by the end of the semester.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

LING 3146 - ADV SECOND LANGUAGE ACQUISITION

Minimum Credits: 3

Maximum Credits: 3

This course is a doctoral seminar in which students discuss the most recent papers on a topic of interest to the professor and the students in second language acquisition and learning. Students and the faculty member will agree on a set of topics to be covered in the class, and students will present papers and lead discussions on topics relevant to their doctoral work.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

LING 3267 - ADVANCED SOCIOLINGUISTICS

Minimum Credits: 1

Maximum Credits: 3

This course is a continuation of LING 2267, Sociolinguistics. This course will focus on topics selected by students' particular interests and these topics will be covered in-depth.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: LING 2267 or 2272

LING 3397 - SPECIAL TOPICS IN HISPANIC LINGUISTICS

Minimum Credits: 3

Maximum Credits: 3

This course aims to cover a number of topics which are presently under discussion in the field of Hispanic linguistics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

LING 3578 - ADVANCED PHONETICS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

LING 3860 - ADVANCED HISTORICAL LINGUISTICS

Minimum Credits: 3

Maximum Credits: 3

This seminar, every time it is offered, will have a specific thematic focus. Each student will undertake a project that will entail dealing with a reasonable body of data, and thereby acquire hands-on experience in doing research in historical linguistics. Thought-experiments or unfocused speculation will not be accepted. Possible topics will include lexical-phonological reconstruction, grammatical re construction, dialectology, language contact, and particular language families.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

LING 3902 - DIRECTED STUDY FOR PHD STUDENTS

Minimum Credits: 1

Maximum Credits: 9

This course provides for individual work under the guidance of a faculty member.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

LING 3990 - INDEPENDENT STUDY FOR PHD STUDENT

Minimum Credits: 1

Maximum Credits: 9

This course provides the opportunity for students to formally pursue work on an individual basis.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

Management Information Systems

BMIS 2034 - INFORMATION TECHNOLOGY GOVERNANCE

Minimum Credits: 3

Maximum Credits: 3

In this course, we will examine issues associated with information systems planning activities (designing, assessing, budgeting, managing, and maintaining) that are often associated with a firm's ability to apply information systems and technologies in the creation of business value, customer satisfaction, supply chain management, and operational cost reductions; while supporting the continuous drive for product innovation & enterprise growth. Through a combination of readings, class discussions, presentations, and hands-on projects, the students will learn about information systems

planning practices and management efforts to better understand the organization's information systems strategic needs, define the systems requirements, acquire, build, and deliver the desired information system solution; plan the systems sustainment needs, and actively plan for future changes. Additional interrelated topics within the (ICT) Information and Communications Technology planning process will be discussed (systems acquisition & sourcing, ICT Supply Chain Risk Management, Vendor Management, Governance, Capital Project & Portfolio Management, decision making mechanisms, standard setting, and the ethical use of information) with the purpose to provide greater insight into the 'why and how' business leaders continuously evaluate and manage their information systems & technology capital investments.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BMIS 2053 - HUMAN FACTORS IN INFORMATION SYSTEMS DESIGN

Minimum Credits: 3

Maximum Credits: 3

While many organizations have outsourced the design of production systems, there is still a need to provide specifications for those systems. In addition, the recent internet and e-commerce explosion has created an even wider need to design corporate web sites. Organizational practices must exist to make sure designers and developers take into account what we know about human factors engineering. This course focuses on how to gather requirements, achieve a usable first draft, and test and improve that draft. A half-dozen course projects will include usability critiques, assessments of users' difficulties in understanding systems, and designs of forms, screen layouts, and icons. A mid-term YouTube video project will evaluate usability of various pc or mobile devices. A final project will provide prototype screens and an in-depth plan for an actual application. The course is intended for anyone with special interest in, and appreciation for usability, and will be especially useful for those who will provide input to design teams, manage projects, or develop systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BMIS 2056 - MGT INFORMATION SYSTEMS PRACM

Minimum Credits: 3

Maximum Credits: 3

The objective of the practicum is to give the student information systems experience in an actual organizational setting. Examples of areas for internships are: Systems Analysis and design; Programming and Implementation; Problem Definition and Documentation; marketing and needs analysis, education and training. A project proposal is prepared by the student that, when approved by both a faculty advisor and a corporate supervisor, becomes the formal agreement to complete the project.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Management of Information Systems(MS)

BMIS 2060 - INDEP STUDY MGT INFOR SYSTEMS

Minimum Credits: 1

Maximum Credits: 6

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BMIS 2074 - STRATEGIC INFORMATION TECHNOLOGY IN GLOBAL SUPPLY CHAINS

Minimum Credits: 2

Maximum Credits: 2

This course focuses on the strategic design and application of integrated information technology systems within the supply chain and how companies depend upon the exchange of data regarding raw materials, supplies, manufacturing, logistics and service commitments between the many different

companies and customers, resulting in a competitive advantage of an end-to-end flow of information in the supply chain. Supply chain management information systems will be explored using related industry cases, project collaboration and simulation within an enterprise resource planning (ERP) system such as sap to provide the student with a working environment to validate key concepts covered in the course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BMIS 2409 - INFORMATION SYSTEMS

Minimum Credits: 2

Maximum Credits: 2

.How does information technology enable the business? How does it provide business value? This course provides an overview of information technology and its application in a business. By simultaneously examining business cases and the capabilities of relevant technologies, students will develop an understanding of how information technology supports and enables business strategies, innovation, and improved business capabilities and processes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BMIS 2501 - ENTERPRISE SYSTEMS AND INTEGRATION OF BUSINESS PROCESSES

Minimum Credits: 3

Maximum Credits: 3

This course introduces concepts in ERP and integrated nature of business processes. Students are introduced to all the major components of SAP ERP. The course participants in enterprise systems and integration of business processes will gain extensive theoretical foundations of the enterprise resource planning (ERP) using the SAP ERP software. The theoretical knowledge is practically implemented and deepened during the course by the use of case studies and hands-on exercises using the SAP ERP system. After completion of the course, students have a comprehensive, theoretical and practical knowledge of the central SAP ERP modules. This includes the organizational and data structure and the integration of a variety of business processes and functional areas. This course is designed to prepare the student for the SAP TERP10 certification exam. The certification - as completion of the course - will be held at the University of Pittsburgh and is a three-hour, 80 multiple-choice questions based knowledge test. Passing the exam leads to a sap certification widely acknowledged in business: the sap certified business associate with SAP ERP 6.0. The course addresses the following functional areas of the SAP ERP systems: logistics, finance, controlling and human capital management. Furthermore, the integration with the SAP systems sap business intelligence (BI) and SAP strategic enterprise management (SEM) is presented.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BMIS 2526 - DATA PROGRAMMING WITH R

Minimum Credits: 3

Maximum Credits: 3

Data science skills are highly valued in the job market and most businesses are heavily investing to develop their analytics capabilities. This course adopts an experience-based learning approach and introduces the practice of data science to Katz graduate students. The course will emphasize the acquisition of skills such as (1) the use of a programming language (R, Python, etc.) to assemble, clean, and analyze data sets, (2) analytical and text-processing procedures for answering business questions, and (3) visualization and presentation of data-driven results for evaluation of business goals. The primary mode of learning will be through hands-on exercises involving real-world data used to make business decisions. For example, students will make use of the datasets and scripts used in data science competitions (e.g., Kaggle). Although no prior programming experience is required to enroll in the course, students should expect intensive out-of-class readings and practice sessions to get the most out of this course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BQOM 2401

BMIS 2527 - PRIVACY, SECURITY AND ETHICAL COMPUTING

Minimum Credits: 3

Maximum Credits: 3

This course requires students to investigate ethical issues that emerge around the use of Information Systems. The focus of the course is to provide awareness, emphasis and analysis of important issues as they are related to Information Systems and Computing, such as ethical use of technology, data protection, cloud computing, cyber security, privacy, the digital divide, social media, intellectual property, whistleblowing, professional codes of conduct, emerging technologies, professional liability, internet freedom in computing, international laws and governance, and other selected topics. Emphasis is placed on the study of ethical situations and responsibilities of IS professionals around current and emerging technologies in a global setting. By studying current issues, cases and applying real world application through active learning techniques, students will gain a greater awareness of the ethical, social, and legal structure around their technology driven environments.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BMIS 2537 - BUSINESS SYSTEMS PLATFORMS

Minimum Credits: 3

Maximum Credits: 3

Lectures and additional presentations by outside speakers will survey the most important software and hardware technologies that businesses used to deploy information systems. This will include an examination of capabilities, strengths, weaknesses, and relevant standards. It will also address alternative implementations and costs. Full-length case studies and class discussion will facilitate the examination of the business implications of and the context in which these system deployment technologies are utilized. Individual and team student projects will give the students experience in researching, understanding, evaluating and explaining information technologies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Joseph M. Katz Grad Sch Bus

BMIS 2538 - BMIS STRATEGIC CYBERSECURITY IN BUSINESS

Minimum Credits: 2

Maximum Credits: 2

This course introduces students to the vital topic of strategic cybersecurity management in business today. An ever increasing demand for effective cybersecurity, driven by the accelerated number of well published data breaches and internet attacks on governments, businesses, and users, has challenged business leaders to increase their awareness and gain a deeper understanding of the cybersecurity threats and risks facing their it operations; a support role once reserved only for the it professional. Accelerating the need for greater management cybersecurity knowledge is the fact that businesses are increasingly integrated via complex global telecommunication networks and management information systems, collaborating with employees, suppliers, and customers. By advancing management's understanding of cybersecurity, leadership will be better prepared in avoiding unauthorized data access, theft, and cyber related attacks.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BMIS 2539 - DATA WAREHOUSING

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BMIS 2542 - DATA PROGRAMMING WITH PYTHON

Minimum Credits: 3

Maximum Credits: 3

This course introduced basic data science concepts behind turning data into actionable insights and knowledge. In addition, the course will emphasize the development of necessary programming skills needed for doing data science. Students will learn and use the Python programming language along with a focus on learning applied statistical inference, machine learning, data visualization, text analysis, and social network analysis techniques. The course takes a hands-on approach and no prior programming experience is expected. This is a required course for students interested in pursuing the Katz Data Science specialization. Follow on courses include Practical Data Science (BMIS 2526) and Advanced Topics in Data Science (BMIS 2543)

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BMIS 2551 - PROJECT MANAGEMENT CONCEPTS AND PROCESSES

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BMIS 2588 - DATA BASE MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

Explains data base design, effective use of data bases, basic design objectives, methods, costs and benefits associated with the use of data base management systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: Katz Graduate School of Business

BMIS 2590 - CUR TOPCS MIS OPEN SOURCE TEC

Minimum Credits: 2

Maximum Credits: 2

In this course, we will examine issues associated with open source technologies. Through a combination of readings, discussion, presentations, and hands-on projects we will examine (1) characteristics of key open source technologies (linux, mysql, and apache), (2) the nature of open source communities and development processes, and (3) the evolving structure of the open source industry.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BMIS 2591 - E-BUSINESS STRATEGY

Minimum Credits: 1.5

Maximum Credits: 1.5

This course focuses on strategic decisions that must be made in e-business, and makes use of tools such as lectures, discussion, guest speakers, case analyses, and a required business plan.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BMIS 2678 - ELECTRONIC COMMERCE

Minimum Credits: 3

Maximum Credits: 3

Examines the opportunities and challenges of online commerce conducted via websites and mobile apps. Students learn how companies launch initiatives to gain competitive advantage and improve their relationships with customers, suppliers, and other business partners. Case study assignments help students gain a deeper and sometimes surprising understanding of well-known sites, and instruct them on how to analyze e-commerce opportunities and risks. A midterm group project analyzes an e-commerce failure selected by the group. A final group project proposes a new e-commerce start-up enterprise, a new app, or a new project for an existing firm. Testing is conducted with multiple quizzes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: Katz Graduate School of Business

BMIS 2679 - TECHNOLOGY INNOVATION, ADOPTION, AND DIFFUSION

Minimum Credits: 3

Maximum Credits: 3

Expose students to concepts in technology innovation, markets for information technology goods and services, and adoption dynamics within organizations for new products and processes, and therefore should prove useful in a variety of student careers. Assignments emphasize written and oral communication skills. There is an opportunity for a self-selected project to customize the course to particular student interests. Skill acquisition and improvement goals for the course include case analysis, short analytic writing, technology research, and long-form writing. Technological innovation is the origin of what the economist Joseph Schumpeter termed the 'creative destruction' of capitalism (1942). This is the dynamic process by which prior technologies, and their accompanying industrial structures and associated leading firms, are replaced by successive generations of technologies. This is a constantly ongoing process that provides both opportunities for new entrants and threats to existing firms in the market. Students are likely to need a thorough understanding of this process throughout their professional careers. Topics typically covered include: innovation sources and management, s-curves and product life cycles, dominant design and paradigm shifts, disruptive and discontinuous innovation, innovation in design, network effects, standards, complementary goods, standards, intellectual property, partnerships, alliances, and value chain ownership, environment/government regulations, organizational assimilation of technology, and lead-user design.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Joseph M. Katz Grad Sch Bus

BMIS 2681 - IS SECURITY

Minimum Credits: 3

Maximum Credits: 3

The goal of this course is to introduce students to the nomenclature, concepts, and applied techniques of Information Systems (IS) security. The course will introduce students to the body of knowledge needed to earn the Certified Information Systems Security Professional (CISSP) credential. The course will give students insight into the psychology of hackers and hacking, and cover the basics of applied cryptography along with the different types of host and network attacks, how they are done, what firms can do when attacks occur, and how consumers and firms can prevent future attacks. We will look at access control and site security, review networking concepts as they pertain to security issues, look in depth at attack methods, examine the elements of applied cryptography, functionality of firewalls, host security, and discuss methods of handling incident and disaster response. Finally, the course will examine how best to manage and govern the IS security function in an organization.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Joseph M. Katz Grad Sch Bus

BMIS 2685 - TECHNOLOGY INNOVATION AND ADOPTION

Minimum Credits: 2

Maximum Credits: 2

Technology innovation and adoption is a graduate-level elective course with a focus on developing student understanding of the technological and market forces underlying the development and use of new technologies, with an emphasis on information technologies. Class sessions will be divided among lecture, discussion, and business cases. Work outside of class will emphasize current readings in technology, academic research, and case studies. The major requirements are a set of one-page written case assignments and one longer assignment. The course will emphasize both oral and written communications skills.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BMIS 2689 - TECHNOLOGY-ENABLED BUSINESS TRANSFORMATION

Minimum Credits: 3

Maximum Credits: 3

Business in the 21st century runs on it. However, competitive advantage seldom comes from having exclusive or proprietary access to a technology. It rather comes from more effectively utilizing the technologies to which everyone 'including the competition' has access. The implications of this reality are many. First, it is necessary to understand what technologies are available in marketplace and what their capabilities are. Next 'and far more challenging -- it is necessary to understand how those capabilities might positively (or negatively) interact with business strategy. The capabilities of information technologies can certainly contribute to meeting a strategy, but it is also conceivable that those same capabilities could contribute to the necessity of changing a strategy. Business transformation has been defined as the alignment of process, people and technology such that it can both support and innovate business strategies. Given that technologies evolve and develop at a rather rapid pace, it is desirable for managers to develop skills that allow them to understand what technologies can do (both established and new) and how they might be leveraged to create real value. Using lecture and current case studies, this course will examine topics to help students develop those skills. These topics include: 1.) Transformation strategies. 2.) The relationship between information technology and business transformation. 3.) When to build and when to buy. 4.) Business analysis. 5.) Process modeling. 6.) Enterprise systems. 7.) Software development methodologies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Joseph M. Katz Grad Sch Bus

BMIS 2811 - INFORMATION TECHNOLOGY AND BUSINESS VALUE

Minimum Credits: 3

Maximum Credits: 3

This required EMBA course introduces students to information technology, with an emphasis on employing it to maximize business value. Topical coverage will be broad, and will examine both processes and its products that executives encounter on a regular basis. After completing the course, students will be better able to communicate with its staff, understand how systems are developed, and evaluate the strategic implications of its decisions. Class sessions will involve lecture, discussion, and business case problem-solving. Outside of the classroom, students will make use of on-line resources, academic research, and case studies. Both written and oral communications skills will be tapped in frequent and focused case write-ups and class presentations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BMIS 2911 - HEALTHCARE INFORMATION TECHNOLOGY

Minimum Credits: 3

Maximum Credits: 3

Healthcare information technology

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: SUBPLAN: EMBA Healthcare Program

BMIS 2999 - MS-MIS PRACTICUM LAB

Minimum Credits: 0

Maximum Credits: 0

The goal of this activity is to introduce students to issues that arise in the practice of it and how their coursework and other reading can help them address those challenges.

Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis
Course Requirements: PLAN: Management of Information Systems(MS)

BMIS 3010 - INDEP STUDY MGT INFOR SYSTEMS

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis

BMIS 3012 - FDS INFORMATION SYSTEMS RESEARCH

Minimum Credits: 3
Maximum Credits: 3

The objective of this course is to provide doctoral students with a foundation for becoming is researchers and scholars. As such, we will cover several areas during the course. We will overview the field of is, reading "classic" articles as well as more current research in a variety of is domains. We will also identify relevant reference disciplines, and discuss their role in is research. Finally, we will examine what it means to do "good" research in is, and how to do such research.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Katz Grad School of Business students only.

BMIS 3019 - HUMAN/COMPUTER INTERACTION

Minimum Credits: 3
Maximum Credits: 3

Investigates the current research and research directions of the Human-Computer Interaction (HCI) literature. The course will emphasize aspects of the relationship between humans and computers, including user learning, understanding and manipulation (usage) of systems.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Katz Grad School of Business students only.

BMIS 3025 - TECHNOLOGY INNOVATION ADOPTION DIFFUSION

Minimum Credits: 3
Maximum Credits: 3

The following topics will be covered in this seminar: adoption/assimilation, technology acceptance, s-curves and diffusion modeling, learning curves, organizational learning, economics of standards, social/fashion bandwagons, implementation process models, adoption of inter-organizational systems.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BMIS 3031 - WORKSHOP SERIES IN INFORMATION SYSTEMS 1

Minimum Credits: 2
Maximum Credits: 2

The purpose of the seminar is to give Ph.D. students a flavor of different topic areas within information systems and exposure to cutting-edge research within these areas. The seminar will also involve speakers from different universities, providing the students with networking opportunities. At the end of the seminar, students will have a broad understanding of the research being conducted in information systems. Students will also get

exposure to the research process in general, including: creating effective paper reviews, developing a research proposal, presenting proposals in a public forum.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BMIS 3041 - OPEN SOURCE SOFTWARE DEVELOPMENT AND ADOPTION

Minimum Credits: 2

Maximum Credits: 2

This seminar exposes Ph.D. students to the state of the art research related to open source software (OSS) development and adoption. The course will focus on four main questions explored in this body of work: 1. Why do developers participate in OSS? 2. How do project managers sustain developer contributions to a project? 3. What factors lead to OSS project success? 4. What factors facilitate OSS adoption? In examining literature that addresses these questions, students will be exposed to a variety of methods (e.g. Archival, survey, simulation and qualitative) at multiple levels of analysis (e.g. Individual and group). Finally, the seminar will focus on how to leverage existing theoretical bases to understand emerging phenomena. Classes will be principally student-led discussions of research papers.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

BMIS 3042 - DESIGN INFORMATION SYSTEMS RESEARCH

Minimum Credits: 2

Maximum Credits: 2

This Ph.D. seminar course exposes students to management theories related to the design of software-intensive products and processes. Drawing upon the literatures of design thinking, software engineering, and sociotechnical systems, we will explore the role of product and process design in influencing phenomena of interest to management scholars such as organizational transformation, innovation, and industrial evolution. Classes will be principally student-led discussions of research papers.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

BMIS 3043 - DESIGN IN INFORMATION SYSTEMS RESEARCH 2

Minimum Credits: 1.5

Maximum Credits: 1.5

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

BMIS 3044 - QUANTITATIVE METHODS IN INFORMATION SYSTEMS RESEARCH

Minimum Credits: 3

Maximum Credits: 3

The goal of this course is to prepare Ph.D. students to understand and confidently apply a variety of statistical methods and research designs that are important for research in information systems and technology management (ISTM). Through discussions of published ISTM research papers and practical data analysis exercises, we will explore models such as those applied for event counts, time-series cross-sectional analysis, causal inference, Bayesian inference, competing risks, differences-in-differences, and designs for randomized field experiments. The course will also place an emphasis on developing skills to communicate econometric results in a rigorous way.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

BMIS 3099 - READINGS IN MIS

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

Materials Science and Engr

MSE 2003 - STRUCTURE OF MATERIALS

Minimum Credits: 3
Maximum Credits: 3
Fundamentals of crystallography; lattice geometry; bravais lattices; crystal systems; stereographic protection; point and space groups; symmetry elements; tensor properties of crystals; physical properties; elasticity of crystals; introduction to diffraction by crystals; reciprocal lattice; ewald construction.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

MSE 2008 - PROCESSING OF MATERIALS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSE 2011 - ENERGETICS

Minimum Credits: 3
Maximum Credits: 3
Advanced classical thermodynamics; chemical equilibrium solution thermodynamics; quasichemical model; electrochemical cells; surface tension; thermodynamics of interfaces; introduction to thermodynamics of irreversible processes.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

MSE 2012 - COMPUTATIONAL MATERIALS SCIENCE

Minimum Credits: 3
Maximum Credits: 3
This course teaches the fundamentals and applications of computational materials science, which concerns the use of modern computational tools to the analysis of the properties and behavior of materials at various temporal and length scales. The current emphasis of this course is on integrated multiscale simulation method. The course covers topics on the first-principles density functional theory, molecular dynamics, Monte Carlo simulation, and phase-field method. Crystal structure, mechanical properties, structural defects, and electronic structures of materials as well as techniques for modeling them are also discussed. The course consists of a term project, in which students perform modeling and simulation of a material system of their choice and analyze simulation results by visualization and data mining methods using software provided.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSE 2013 - KINETICS IN MATERIALS SCIENCE

Minimum Credits: 3

Maximum Credits: 3

Diffusion in solids; mathematics of diffusion; atomistics of diffusion and diffusion mechanisms; diffusion in alloys, the Kirkendall effect; uphill diffusion; generalized phenomenological treatment of diffusion; diffusion in ionic solids; diffusion in multicomponent systems; grain boundary diffusion; surface diffusion and dislocation effects; anelasticity and internal friction phenomena; the liquid state; diffusion in liquids; viscosity.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

MSE 2015 - ELECTROMAGNETIC PROPERTIES MATERIALS

Minimum Credits: 3

Maximum Credits: 3

Magnetic properties of matter; ferro- ferri- and antiferromagnetism; diamagnetic and paramagnetic substances; magnetostatics; the fundamental quantities in the description magnetic behavior; measurement of magnetic quantities; hysteresis; magnetic domains; magnetic anisotropy; magnetostriction; permeability; coercivity; hard and soft magnetic materials for engineering applications.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

MSE 2030 - MECHANICAL BEHAVIOR OF MATERIALS

Minimum Credits: 3

Maximum Credits: 3

Continuum mechanics concepts; elastic, plastic, and viscous deformation; strength in metals, ceramics, and polymers. Application of concepts to details of material tests (e.g., Tension, torsion, compression, hardness tests); metallurgical phenomena (e.g., Precipitate strain fields, dislocations, transformations, residual stresses, anisotropy); failure (by brittle fracture, ductile fracture, creep, fatigue, wear, hydrogen effects); design of components for industrial use or research equipment.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

MSE 2032 - FRACTURE MECHANICS FOR PRODUCT DESIGN AND MANUFACTURING

Minimum Credits: 3

Maximum Credits: 3

Failure of manufactured products in service, implications for design. Energy release rates, toughness, evaluation of experimental tests. Fracture mechanisms in different material systems. Damage tolerance. Fracture control. Design studies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

MSE 2036 - INTRODUCTION TO CONTINUUM MECHANICS

Minimum Credits: 3

Maximum Credits: 3

The fundamental concepts of continuum mechanics necessary for studying the mechanical behavior of solids and fluids. Includes a review of vectors and tensors; stress; strain and deformation; general principles in the form of balance laws; constitutive equations and their restrictions; and specialization to the theories of linearized elasticity and fluid mechanics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

MSE 2037 - NANOMECHANICS, MATERIALS AND DEVICE

Minimum Credits: 3

Maximum Credits: 3

This course is an introduction for current nanotechnology and fundamentals for nanoengineering. It mainly contains three areas: nanomechanics, nanomaterials and nanoscaled devices. In nanomechanics, it covers nanoindentation mechanics, thin film mechanics and one dimensional nanowire mechanics, nanocrack mechanics, deformation in nanomaterials. Nanomechanical model will be emphasized. In nanomaterials, it covers carbon nanotube, one dimensional semiconducting nanowires and nanomultilayers as well as nanostructured composites. Novel property/phenomena reviewed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

MSE 2038 - APPLIED SOLID MECHANICS

Minimum Credits: 3

Maximum Credits: 3

Stress and strain transformations; applied elasticity problems in torsion and plane problems; thermal stresses and elementary plasticity; energy methods; fundamentals of finite element methods.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

MSE 2041 - ADVANCED PHYSICAL METALLURGY 1

Minimum Credits: 3

Maximum Credits: 3

The cold-worked state; crystal plasticity, production of crystalline defects; annealing phenomena; recovery, recrystallization, and grain growth; secondary recrystallization, tertiary recrystallization; genesis of preferred orientation; deformation and recrystallization textures.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

MSE 2042 - ADVANCED PHYSICAL METALLURGY 2

Minimum Credits: 3

Maximum Credits: 3

Strengthening mechanisms in metals and alloys; theoretical strength of crystals; particle strengthening; dislocation particle interactions; grain size strengthening; strengthening by presence of grain boundaries; hall-petch expression; theories of discontinuous yielding; solid solution strengthening; fiber strengthening and the design of high strength microstructures.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

MSE 2043 - ELECTRON MICROSCOPY IN MATERIALS SCIENCE

Minimum Credits: 3

Maximum Credits: 3

Electron optics, lens aberrations, depth of field, depth of focus, resolution, contrast, bright and dark field microscopy, selected area diffraction,

calibration, specimen preparation, electron scattering, electron diffraction, Bragg's law, laue conditions, structure factor, ewald construction, double diffraction, twinning, kikuchi lines, contrast theory, kinematical theory of diffraction by perfect and imperfect crystals, limitations, column approximation, extinction contours, dynamical theory, special techniques, high voltage microscopy, applications.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

MSE 2045 - ADV FERUS PHYSICAL METALLURGY

Minimum Credits: 3

Maximum Credits: 3

Phenomena related to non-metallic inclusions; influence of size, shape, and amount of inclusions on mechanical properties and property anisotropy; thermomechanical treatment of austenite; hot rolling as a thermomechanical treatment; hot rolling behavior of austenite in plain carbon and low alloy steels; grain size and texture control through thermomechanical treatment; relationship between thermomechanical treatment, microstructure, and mechanical properties.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

MSE 2046 - PHYSICAL METALLURGY ENGR ALLOYS

Minimum Credits: 3

Maximum Credits: 3

Property requirements of engineering alloys are discussed: strength, toughness, formability, weldability, fatigue resistance, corrosion/oxidation resistance. Review is made of pertinent phase diagrams, transformations, and microstructures in the Fe-Fe₃C and other alloy systems. Composition, processing, microstructure and properties of important structural steels, sheet steels, stainless steels, tool steels, aluminum alloys, titanium alloys, as well as nickel based & copper-based alloys will be presented. Case studies, design problems & selection criteria are discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

MSE 2047 - ANALYSIS AND CHARACTERIZATION AT THE NANO-SCALE

Minimum Credits: 3

Maximum Credits: 3

This course offers a survey of micro-analytical, microscopy and diffraction methods that are widely used for the analysis of composition, chemistry, structure, scale and morphology of advanced materials. It introduces the most basic concepts required to understand experimental data obtained with these modern techniques. The main objectives of the course are to enable students to interpret and evaluate relevant data sets presented in the research literature and to identify experimental tools to solve a given Nano-research characterization problem. Some prerequisite basic knowledge of the structure of solid matter (e.g. Crystals and amorphous materials), diffraction methods (e.g. X-ray diffraction) and processing-property-structure relationships in materials is expected.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

MSE 2048 - ENGINEERING ALLOYS FOR CONSTRUCTION

Minimum Credits: 3

Maximum Credits: 3

The goal of this course is to understand modern metallic alloys used in construction. To accomplish this goal, the following sequence is offered: review of mechanical properties required of structural alloys; review of physical metallurgy principles: thermodynamics, kinetics, phase diagrams and phase transformations; microstructure and properties of stainless steels, aluminum alloys, titanium alloys, nickel and cobalt-based super alloys

and alloys for nuclear core applications.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering (PENGR)

MSE 2050 - GAS-METAL REACTIONS

Minimum Credits: 3

Maximum Credits: 3

Oxidation of metals, alloy oxidation, internal oxidation, effect of metallurgical variables on oxidation, reactions of metals and alloys with gases other than oxygen, hot corrosion, coatings.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

MSE 2052 - INTRODUCTION TO TECHNICAL COMMUNICATION

Minimum Credits: 3

Maximum Credits: 3

An introduction to technical writing and oral presentation skills using Word, Powerpoint, Mendeley, InkScape and LaTeX.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

MSE 2055 - PRIN OF SOLIDIFICATION ENGRNG

Minimum Credits: 3

Maximum Credits: 3

Study of fundamental phenomenon during the formation of crystalline materials. Delineation of the processing parameters that control crystal perfection, solidification substructure, grain size and shape, microsegregation, macrosegregation, microporosity, inclusions, mechanical properties, and physical properties. Application of fundamental principles to the processing of single crystals, ingots, castings, and composites.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

MSE 2061 - TRIBOLOGY: THE STUDY OF ADHESION, FRICTION, LUBRICATION, AND WEAR

Minimum Credits: 3

Maximum Credits: 3

Tribology is the study of sliding surfaces. This course will cover fundamental topics in tribology relating to surface characterization, surface roughness, adhesion, friction, lubrication, and wear. Students completing the course will be able to describe the theoretical origins of these topics, which relate to mechanics, materials science, and chemistry. They will also be able to apply tools to solve novel problems in these areas. The course will especially emphasize applications in nanotechnology and biology. Students who do not have a background in solid mechanics should contact the instructor before enrolling in the course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQS: FOR UNDERGRADS: ENGR 0022 or ENGR 0145 or Consent from Instructor PREQS: FOR GRADS: ME 2003 or MSE 2036 or BIOENG 1633 or Consent from Instructor

MSE 2067 - ELEMENTS OF MATRLS SCI & ENGRG 1

Minimum Credits: 3

Maximum Credits: 3

This course is primarily designed for graduate students entering the program without a degree in a field of materials engineering. Bonding and structure of materials; thermodynamics and phase diagrams; imperfections in crystals; rate processes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

MSE 2072 - CERAMIC PROCESSING

Minimum Credits: 3

Maximum Credits: 3

The course is focused on powder processing of ceramic materials. It is arranged according to the steps in processing, starting with powder synthesis and characterization, proceeding through the commonly used powder forming methods and finally to the high temperature sintering of the product.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

MSE 2073 - CERAMIC MATERIALS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

MSE 2084 - INTRODUCTION TO POLYMER SCIENCE

Minimum Credits: 3

Maximum Credits: 3

Introduction to basic concepts of polymer science. Kinetics and mechanism of polymerization, synthesis and processing of polymers. Relationship of molecular conformation, structure and morphology to physical and mechanical properties. Structural and physical aspects of polymers. Molecular and atomic basis for polymer properties and behavior. Characteristics of thermoplastic and thermoset polymers for single and multicomponent systems. Understanding of the viscoelastic and relaxation behavior of single and multicomponent systems. Thermodynamics and kinetics of transition phenomena. Structure, morphology and behavior.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MSE 2088 - POWDER PROCESSING OF MATERIALS

Minimum Credits: 3

Maximum Credits: 3

Powder processing is widely practiced in the traditional powder metals and ceramics industries as well as in additive manufacturing. This course will review these applications and focus on the underlying materials science and engineering employed in: production of metals and ceramic powders, powder characterization methods, the forming methods used to make shapes from metal and ceramic powders as well as sintering and heat treatment.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MSE 2090 - CORROSION AND FAILURE ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

This course covers the principles of corrosion and the analysis and prevention of failures. The initial part of the course covers the thermodynamics of corrosion reactions, metallurgical aspects of corrosion, and the various mechanisms of corrosion. An in-depth study is then made of modes of failure and corrosion-assisted failures. Guidelines are given for the prevention of corrosion through the use of coatings, selection of materials, and design improvement.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: MSE 2067; PROG: Swanson School of Engineering

MSE 2096 - MS/MBA INTEGRATED PROJECTS COURSE

Minimum Credits: 2

Maximum Credits: 2

This is the integrated projects course for MS/MBA majors. The project will be jointly overseen by Katz and SSOE. A 1-2 page proposal is due at the beginning of the term, followed by a final report. The project should blend the student's business and engineering skills.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad Letter Grade

MSE 2110 - NUCLEAR MATERIALS

Minimum Credits: 3

Maximum Credits: 3

This course presumes that students have the knowledge base needed to understand materials issues associated with the design and operation of nuclear power plants, such as basic concepts of physical metallurgy, a mechanistic and microstructural-based view of material properties, and basic metallurgical principles. This course will cover the metallurgy and phase diagrams of alloy systems important in the design of commercial nuclear power plants. The micro-structural changes that result from reactor exposure (including radiation damage and defect cluster evolution) are discussed in detail. The aim is to create a linkage between changes in the material microstructure and changes in the macroscopic behavior of the material. Also discussed is the corrosion of cladding materials as well the effects of irradiation on corrosion performance, as well as the effects of primary and secondary coolant chemistry on corrosion. Both mathematical methods and experimental techniques are emphasized so that theoretical modeling is guided by experimental data. Materials issues in current commercial nuclear reactors and materials issues in future core and plant designs are covered.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

MSE 2111 - MATERIALS FOR ENERGY GENERATION AND STORAGE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MSE 2112 - NANOSCALE MODELING AND SIMULATION: MOLECULAR DYNAMICS

Minimum Credits: 3

Maximum Credits: 3

The course covers the essentials of molecular dynamics simulation by integrating theories from dynamics, statistical mechanics, thermodynamics, continuum mechanics, and quantum mechanics. Topics include heat bath methods, time integration methods, accelerated methods, and different applications related to nanotechnology. Students gain hands-on experience using state-of-the-art simulation software.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

MSE 2113 - NANOSCALE MODELING AND SIMULATIONS:

Minimum Credits: 3
Maximum Credits: 3

This course teaches the essentials of nanoscale modeling and simulations, which concerns the use of modern computational tools to the analysis of materials at the nanoscale. The current emphasis of this course is on first-principle density functional theory (DFT) calculation method. The course covers topics on basic quantum mechanics, fundamentals of DFT, statistical mechanics, thermodynamics, and continuum mechanics, and their role in atomistic scale modeling and simulation. Crystal structure, mechanical properties, structural defects, and electronic structures of materials as well as techniques for modeling them are also discussed. The course consists of a term project, in which students perform modeling and simulation of a nanomaterial system of their choice and analyze simulation results by visualization and data mining methods using software provided.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSE 2115 - HEAT TRANSFER AND FLUID FLOW IN NUCLEAR PLANTS

Minimum Credits: 3
Maximum Credits: 3

This course provides advanced knowledge to promote understanding and application of thermal and hydraulic tools and procedures used in reactor plant design and analysis. It assumes that the student has a fundamental knowledge base in fluid mechanics, thermodynamics, heat transfer and reactor thermal analysis. The focus of the course is on physical and mathematical concepts useful for design and analysis of light water nuclear reactor plants. Applications of mass, momentum, and energy balances are combined with use of water properties to analyze the entire reactor plant complex as a whole. Principles are applied through the application of major industry codes to specific cases.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

MSE 2118 - COMPUTATIONAL RADIATION TRANSPORT

Minimum Credits: 3
Maximum Credits: 3

This course provides an in-depth review of modern computational techniques used for solving the linear Boltzmann equation, with specific applications to neutron and photon radiation transport problems. Topics to be covered include: an introduction to the physical processes that govern radiation transport through materials, monte Carlo methods for the simulation of radiation transport, a first-principles derivation of the Boltzmann radiation transport equation for multiplying and non-multiplying systems, the multi-group, diffusion, and discrete ordinates approximations to the transport equation, expansion of the scattering kernel in Legendre polynomials, and numerical methods for approximating solutions to the transport equation. In addition, the course will review many commonly used numerical methods for solving integral and differential equations, including: finite differencing, numerical quadrature, harmonic analysis, and the power method for solving eigenvalue problems. Topics covered in the class will be reinforced with weekly programming exercises designed to illustrate the different methods for solving the Boltzmann radiation transport equation and demonstrate how these methods can be used to solve realistic problems related to nuclear reactor and radiation shielding analysis. The course will also place a strong emphasis on formal quality assurance methods (and best-practices) for the development, verification, and validation of scientific computer codes intended for use in engineering design calculations of record.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSE 2130 - NUCLEAR FUEL CYCLE AND ENVIRONMENTAL ISSUES

Minimum Credits: 3
Maximum Credits: 3

This course will be developed in conjunction with University of Pittsburgh faculty with an interest in environmental issues impacting the nuclear power industry including school of engineering faculty involved with the Mascaro sustainability initiative, faculty from the department of civil and

environmental engineering and faculty from the graduate school of public and international affairs. The course will address such topics as sustainable energy resources, engineering and societal ethical concerns, risk analysis, and future energy supplies in general and as each of these topics relates to such specific issues as the nuclear fuel cycle, nuclear reactor safety, nuclear waste disposal and transportation, and gen iv and the hydrogen economy. Students will better understand the socio-economic issues surrounding achieving a sustainable nuclear power future as it impacts fuel acquisition, plant operation and waste disposal.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MSE 2900 - GRADUATE FELLOWSHIPS AND PROPOSAL-WRITING WORKSHOP

Minimum Credits: 1

Maximum Credits: 1

This workshop will provide information and guidance to students interested in competing for external fellowships to support their graduate research, as well as instruction on proposal writing in general. The workshop will consist of structured class time and outside-the-class mentoring teams to work with students on the preparation of a fellowship application.

Academic Career: Graduate

Course Component: Workshop

Grade Component: Grad SN Basis

MSE 2997 - RESEARCH, M.S.

Minimum Credits: 1

Maximum Credits: 12

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

MSE 2998 - GRADUATE PROJECTS

Minimum Credits: 1

Maximum Credits: 3

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

MSE 2999 - M.S. THESIS

Minimum Credits: 1

Maximum Credits: 12

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

MSE 3001 - PRACTICUM

Minimum Credits: 1

Maximum Credits: 12

Provide in curriculum practical training in an area related to advanced materials related research.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

MSE 3023 - GRADUATE SEMINAR

Minimum Credits: 1

Maximum Credits: 1

Speakers are invited to review their current research on broad areas of interest with materials engineers.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: PROG: Swanson School of Engineering

MSE 3024 - GRADUATE SEMINAR

Minimum Credits: 1

Maximum Credits: 1

Speakers are invited to review their current research on broad areas of interest with materials engineers.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: PROG: Swanson School of Engineering

MSE 3100 - ENGINEERING RESEARCH LEADERSHIP AND MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MSE 3997 - RESEARCH, PH.D.

Minimum Credits: 1

Maximum Credits: 12

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

MSE 3998 - PH.D. INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 3

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis

MSE 3999 - PH.D. DISSERTATION

Minimum Credits: 1

Maximum Credits: 12

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Mathematics

MATH 0120 - BUSINESS CALCULUS

Minimum Credits: 4

Maximum Credits: 4

This course introduces the basic concepts of limits, continuity, differentiation, integration, maximization and minimization. Applications to the social sciences, especially business and economics, are stressed.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: LG/SNC Elective Basis

Course Requirements: PREQ: MATH 0020 or 0031 (MIN GRADE 'C') or MATH PLACEMENT SCORE (61 or GREATER)

MATH 0220 - ANALYTIC GEOMETRY AND CALCULUS 1

Minimum Credits: 4

Maximum Credits: 4

This is the first of a sequence of three basic calculus courses. It covers the derivative and integral of functions of one variable and their applications.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: LG/SNC Elective Basis

Course Requirements: PREQ: MATH 0032 (MIN GRADE 'C') or MATH 0200 (MIN GRADE 'C') or MATH PLACEMENT SCORE (76 or GREATER)

MATH 0230 - ANALYTIC GEOMETRY AND CALCULUS 2

Minimum Credits: 4

Maximum Credits: 4

This is the second of a sequence of three basic calculus courses. It covers the calculus of transcendental functions, techniques of integration, series of numbers and functions, polar coordinates, and conic sections.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: LG/SNC Elective Basis

Course Requirements: PREQ: MATH 0220; MIN GRADE: 'C'

MATH 0280 - INTRO TO MATRICES & LINEAR ALG

Minimum Credits: 3

Maximum Credits: 3

The principal topics which this course will cover include vectors, matrices, determinants, linear transformations, eigenvalues and eigenvectors, and selected applications.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: LG/SNC Elective Basis

Course Requirements: PREQ: MATH 0220 or 0235 (Min Grade 'C')

MATH 0400 - FINITE MATHEMATICS

Minimum Credits: 3

Maximum Credits: 3

The course covers the basic concepts of set theory, logic, combinatorics, Boolean algebra, and graph theory with an orientation towards applications.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: LG/SNC Elective Basis

Course Requirements: PREQ: MATH 0020 or 0031 (MIN GRADE 'C') or MATH PLACEMENT SCORE (61 or GREATER)

MATH 1180 - LINEAR ALGEBRA 1

Minimum Credits: 3

Maximum Credits: 3

This course stresses the theoretical and rigorous development of linear algebra. Major topics include the theory of vector spaces, linear transformations, matrices, characteristic polynomials, bases and canonical forms. Other topics may be covered as time permits.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: LG/SNC Elective Basis

Course Requirements: CREQ: MATH 0413 or MATH 0450

MATH 2000 - THESIS MS

Minimum Credits: 1

Maximum Credits: 15

This course is for students writing a master of science thesis.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

MATH 2010 - TEACHING ORIENTATION

Minimum Credits: 1

Maximum Credits: 1

This course prepares T.A.'S to teach mathematics at a University level.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad SN Basis

MATH 2012 - PREPARING FOR PRELIMS AND RESEARCH

Minimum Credits: 1

Maximum Credits: 1

This course is intended for students who have not yet passed the preliminary exams. The purpose of the course is to help students prepare for the prelims and prepare for research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad SN Basis

MATH 2020 - PROGRESS IN MATH

Minimum Credits: 3

Maximum Credits: 3

This course will deepen the students understanding of analysis through intensive training in problem solving followed by comprehensive study and dissection of the problems attempted. Students preparing for the analysis portion of the preliminary exam are strongly encouraged to enroll.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 2030 - ITERATIVE METHODS

Minimum Credits: 3

Maximum Credits: 3

Topics include matrix theory, matrix and vector norms, error analysis, factorizations, direct and iterative methods for solving linear systems, least squares and the algebraic eigenvalue problem.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 2060 - COMBINATORICS 1

Minimum Credits: 3

Maximum Credits: 3

This is a graduate level course in combinatorics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 2070 - NUMERICAL METHODS IN SCI COMPUTING 1

Minimum Credits: 4

Maximum Credits: 4

This is an introductory survey course for non-numerical analysis students. It covers the underlying theory and computational aspects of numerical linear algebra. Topics include directional iterative methods, computation of eigenvalues and eigenvectors and least squares problems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 2071 - NUMERICAL METHODS IN SCI COMPUTING 2

Minimum Credits: 4

Maximum Credits: 4

This course is a continuation of 2070. Topics include numerical solutions of PDE's by finite differences and finite element methods also numerical differentiation and integration are covered.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 2090 - NUMERICAL SOLUTIONS OF ORDINARY DE

Minimum Credits: 3

Maximum Credits: 3

The topic covered is modern methods for solving initial value problems. This will include the basic theory and software implementations and numerical experiments.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 2301 - ANALYSIS 1

Minimum Credits: 3

Maximum Credits: 3

This course is an introduction to real analysis/measure theory and functional analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 2302 - ANALYSIS 2

Minimum Credits: 3

Maximum Credits: 3

This course presents an introduction to the analysis of holomorphic functions followed by an introduction to harmonic analysis. It is a natural continuation of math 2300 analysis 1.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2303 - ANALYSIS 3

Minimum Credits: 3

Maximum Credits: 3

This course presents an introduction to the analysis of holomorphic functions followed by an introduction to harmonic analysis. It is a natural continuation of MATH 2300 analysis 1.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 2304 - ANALYSIS 4

Minimum Credits: 3

Maximum Credits: 3

Analysis 4 is a new course that follows on from the analysis 1, 2, 3; especially analysis 2. Its focus will be complex and harmonic analysis. We will integrate this new material with the real, functional, complex and harmonic analysis of the previous three courses.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 2370 - MATRICES AND LINEAR OPERATORS

Minimum Credits: 3

Maximum Credits: 3

Linear transformations on finite dimensional vector spaces are studied in a semi-abstract setting. The emphasis is on topics and techniques which can be applied to other areas, e.g., Bases and dimension, matrix representation, linear functional, duality, canonical forms, vector space decomposition, inner products and spectral theory.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 2371 - MATRICES & LINEAR OPERATORS 2

Minimum Credits: 3

Maximum Credits: 3

Continuation of MATH 2370.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 2500 - ALGEBRA 1

Minimum Credits: 3

Maximum Credits: 3

The basic concepts and results of group theory are developed with an emphasis on finite groups. Topics include: homomorphism theorems, isomorphism theorems, Sylow theorems, permutation representations and Hall's characterization of solvable groups.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 2501 - ALGEBRA 2

Minimum Credits: 3

Maximum Credits: 3

In this course the fundamental properties of rings, fields and modules are studied.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 2505 - ALGEBRA 3

Minimum Credits: 3

Maximum Credits: 3

This is a third course in algebra. It covers commutative algebra, homological algebra and rudiments of category theory. The material covered provides the necessary background for the advanced courses in algebraic geometry and number theory.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 2601 - ADVANCED SCIENTIFIC COMPUTING 1

Minimum Credits: 3

Maximum Credits: 3

These courses develop the computational mathematics of evolving areas of current scientific interest.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 2602 - ADVANCED SCIENTIFIC COMPUTING 2

Minimum Credits: 3

Maximum Credits: 3

Course develops the computational mathematics of evolving areas of current scientific interest.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 2603 - ADVANCED SCIENTIFIC COMPUTING 3

Minimum Credits: 3

Maximum Credits: 3

These courses develop the computational mathematics of evolving areas of current scientific interest.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 2604 - ADVANCED SCIENTIFIC COMPUTING 4

Minimum Credits: 3

Maximum Credits: 3

These courses develop the computational mathematics of evolving areas of current scientific interest.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 2700 - TOPOLOGY 1

Minimum Credits: 3

Maximum Credits: 3

A first course in topology, some of the topics covered include separation axioms, bases and sub-bases, product and quotient topology, homeomorphisms, compactness, the Baire category theorem, the Lindelof property, connectedness, topological spaces and compactification.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 2701 - TOPOLOGY 2

Minimum Credits: 3

Maximum Credits: 3

This course is a continuation of 2700. In this course the basic concepts and results in algebraic topology will be covered, this includes both homotopy and homology theory. In particular the calculation of the fundamental group and homology groups from chain complexes will be covered.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 2800 - DIFFERENTIAL GEOMETRY 1

Minimum Credits: 3

Maximum Credits: 3

This course covers introductory topics in differential geometry. Topics include topological manifolds, differential structures, tangent and tensor bundles, vector fields and differential equations, integral manifolds and Riemannian structures.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 2801 - DIFFERENTIAL GEOMETRY 2

Minimum Credits: 3

Maximum Credits: 3

This course is a continuation of 2800 and its goal is to develop advanced concepts in differential geometry. Some topics which might be covered include Riemann surfaces and the differential geometry of \mathbb{R}^4 and in particular the relevance of these to quantum super string theory.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 2810 - ALGEBRAIC GEOMETRY

Minimum Credits: 3

Maximum Credits: 3

This course is an introduction to the basic ideas of algebraic geometry. The approach to the subject may be via either the linear series on a curve approach or the algebraic approach through fields of algebraic functions or the sheaf theoretic approach. Applications may also be included.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 2900 - PARTIAL DIFFERENTIAL EQUATIONS 1

Minimum Credits: 3

Maximum Credits: 3

This is an introduction course to this area. Some of the topics to be covered include: linear second order equations, the method of characteristics, Laplace and wave equations, the heat equation and various maximum principles.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 2901 - PARTIAL DIFFERENTIAL EQUATIONS 2

Minimum Credits: 3

Maximum Credits: 3

This course is a continuation of 2900. The topics covered in this course include an introduction to parabolic and hyperbolic equations, a priori estimates, free boundary problems, shock waves and Riemann problems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 2920 - ORDINARY DIFFERENTIAL EQUATIONS 1

Minimum Credits: 3

Maximum Credits: 3

This course covers basic concepts in O.D.E.'S. In particular, emphasis is given to connections of this area to applied mathematics and differential geometry.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 2921 - ORDINARY DIFFERENTIAL EQUATIONS 2

Minimum Credits: 3

Maximum Credits: 3

This course is a continuation of 2920. Some of the topics which are covered include boundary value problems, green's functions, integral equations and the spectral theory of second order differential equations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 2930 - ASYMPTOTICS & SPECIAL FUNCTIONS

Minimum Credits: 3

Maximum Credits: 3

This course is an introduction to the theory of asymptotic and special functions. Some of the functions studied are the gamma function, orthogonal polynomials and Bessel functions. This course also covers techniques for finding asymptotic expansions of integrals and of solutions to differential equations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 2940 - APPLIED STOCHASTIC METHODS

Minimum Credits: 3

Maximum Credits: 3

This course will provide an overview of stochastic methods that can be applied to problems in biology, finance, and physics. Analytical and computational techniques will be presented which apply to both continuous and discrete stochastic models.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 2950 - METHODS IN APPLIED MATHEMATICS

Minimum Credits: 3

Maximum Credits: 3

This course is a rigorous treatment of various aspects of numerical linear algebra, special features of symmetric operators, optimization with emphasis on properties of convex functions and duality theory.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 15

This course is independent study by the student under the direction of a faculty member.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

MATH 3000 - THESIS PH.D.

Minimum Credits: 1

Maximum Credits: 15

This course is taken by a student who is working on a Ph.D. dissertation under the direction of a student's thesis advisor.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

MATH 3020 - CALCULUS OF VARIATIONS

Minimum Credits: 3

Maximum Credits: 3

This course is an introduction to the subject. Topics include: variation formulation, the Euler-LaGrange equations, and applications.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 3040 - TOPICS IN SCIENTIFIC COMPUTING

Minimum Credits: 3

Maximum Credits: 3

This course seeks to provide a broad introduction to the field of machine learning. The emphasis will be the development of a rigorous mathematical basis for the most commonly used algorithms in the field. Topics to be covered include non-convex optimization, convex optimization, clustering, dimensionality reduction and neural networks. A background in multivariable calculus and linear algebra is recommended. Prior programming experience is not required.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MATH 3060 - TOPICS IN COMBINATORICS

Minimum Credits: 3

Maximum Credits: 3

This course covers a variety of topics in combinatorics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 3071 - NUMRC SOLUTN PARTL DIFFT EQUA

Minimum Credits: 3

Maximum Credits: 3

This course covers contemporary methods for solving initial and boundary value problems. Topics include: properly posed problems, characteristics, finite difference and finite element methods and error estimates.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 3072 - FINITE ELEMENT METHOD

Minimum Credits: 3

Maximum Credits: 3

Topics include a description of the method in one, two and three dimensions, variation and minimum energy principles, implementation and discussion of the necessary data structure and evaluation of the errors. Possibly a special topic such as applications to fluid dynamics will be done.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 3225 - MATHEMATICS OF FINANCE 1

Minimum Credits: 3

Maximum Credits: 3

A mathematical introduction to the pricing of options and other derivative securities, portfolio theory and risk management.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 3226 - MATHEMATICS OF FINANCE 2

Minimum Credits: 3

Maximum Credits: 3

This course will investigate the mathematical modeling, theory and computational methods in modern finance. It will treat mathematical models for financial risk factors, pricing of options and other derivative securities, basic portfolio theory and elementary risk management.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 3227 - MATH FINANCE 3

Minimum Credits: 3

Maximum Credits: 3

This course covers special topics in mathematical finance. Topics will include: extensions of the black-Scholes model to alternative stochastic processes, risk management, models for credit risk and credit derivatives, American options, portfolio selection and derivatives pricing under transaction costs.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 3228 - MATHEMATICS OF FINANCE 4

Minimum Credits: 3

Maximum Credits: 3

This course covers advanced topics in modern mathematical finance. Topics will include: advanced credit risk and interest rate models, stochastic

control and stochastic optimization models for portfolio selection and option pricing, and numerical methods.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 3370 - MATHEMATICAL NEUROSCIENCE

Minimum Credits: 3

Maximum Credits: 3

Course covers computational and mathematical neuroscience. It will do modeling and analysis of complex dynamics of single neurons and large-scale networks.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 3375 - COMPUTATIONAL NEUROSCIENCE METHODS

Minimum Credits: 3

Maximum Credits: 3

This course offers an introduction to modeling methods in neuroscience. Topics range from modeling the firing patterns of single neurons to using computational methods to understand neural coding. Some systems level modeling is also done.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 3380 - MATHEMATICAL BIOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course introduces a number of modeling methods for biological systems. We will examine a number of problems from cell biology, immunology, population biology, physiology and molecular genetics. The main tools will be techniques from ordinary and partial differential equations. Discrete and delay-differential equations will also be used however the background for these will not be assumed. We will take models from current and classic papers in the field.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 3440 - FIXED POINT THEORY IN BANACH SPACES

Minimum Credits: 3

Maximum Credits: 3

We will begin with an overview of basic fixed point theory in banach spaces, from the banach contraction mapping theorem and schauder's theorem through to kirk's theorem. The course will continue with topics in metric fixed point theory and its connections to banach space geometry and topology. This will include recent work of pei-kee lin, who showed that there exists a non-reflexive banach with the fixed point property for nonexpansive mappings; and tomas dominguez benavides, who proved that every reflexive banach space can be equivalently renormed to have the fixed point property for nonexpansive mappings. We will also discuss extensions of Lin's work to the function space L^1 by Maria Japon Pineda and Carlos Hernandez Linares. The course will further include some of my (joint) research in this area, and related research of other authors.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 3550 - LIE GROUPS AND LIE ALGEBRAS

Minimum Credits: 3

Maximum Credits: 3

This course will cover the basic properties of lie groups and lie algebras. Also the basic classification of simple lie algebras and lie groups.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MATH 3600 - TOPICS IN PURE MATH

Minimum Credits: 3

Maximum Credits: 3

This course covers special topics in pure mathematics. The subject matter varies each semester. Topics may include the theory of modular forms, automorphic representations, Galois representations, class field theory, trace formula, special topics in algebraic geometry, the Langland's program, discrete and algorithmic geometry, motivic integration, and the formalization of pure mathematics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 3760 - TOPICS IN TOPOLOGY

Minimum Credits: 3

Maximum Credits: 3

Topics will include topological algebra, especially non metric topological groups, and topological semi-groups.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 3761 - TOPICS IN TOPOLOGY 2

Minimum Credits: 3

Maximum Credits: 3

The course will be concerned with topics of current research activity in analytic topology, especially in the areas of generalized metric spaces and topological algebra.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 3900 - INTERNSHIP

Minimum Credits: 1

Maximum Credits: 9

Internship and/or employment experience under the supervision and oversight of a faculty member. This experience is to be an integral part of the student's individual course of study.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad SN Basis

MATH 3902 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

This is a course of directed study under a faculty member covering a topic of special interest which is not normally in the curricula.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

MATH 3923 - TOPICS PARTIAL DIFFERENTIAL EQNS

Minimum Credits: 3

Maximum Credits: 3

This course will explore recent developments in the theory of partial differential equations centered on the notion of viscosity solution. After a review of Hamilton-Jacobi equations, we will discuss how they can be used as a substitute for convolution in non-linear problems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 3935 - TOPICS IN APPLIED MATHEMATICS

Minimum Credits: 3

Maximum Credits: 3

After briefly introducing very elementary theory of asymptotic expansions, the course will focus on its applications. In particular, boundary layer expansion, interior interfacial layer expansion, as well as multi-scale expansion techniques will be quite detailed by examples of a number of up-to-date research problems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MATH 3940 - APPLIED ANALYSIS 1

Minimum Credits: 3

Maximum Credits: 3

Methods will be developed to analyze the behavior of bumps and waves in integral models arising in neuroscience, and also in reaction-diffusion biological type models.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Mechanical Engineering

ME 2001 - DIFFERENTIAL EQUATIONS

Minimum Credits: 3

Maximum Credits: 3

Ordinary differential equations; series solutions of differential equations; introduction to partial differential equations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2002 - LINEAR AND COMPLEX ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

Linear algebra; vector analysis; complex variables; intro to calculus of variations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2003 - INTRODUCTION TO CONTINUUM MECHANICS

Minimum Credits: 3

Maximum Credits: 3

The fundamental concepts of continuum mechanics are necessary for studying the mechanical behavior of solids and fluids. Includes a review of vectors and tensors; stress; strain and deformation; general principles in the form of balance laws; constitutive equations and their restrictions; and specialization to the theories of linearized elasticity and fluid mechanics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2004 - ELASTICITY

Minimum Credits: 3

Maximum Credits: 3

Fundamental concepts of stress and strain. Linear theory; boundary-value problems of elasticity, including plane stress, plane strain, torsion, and flexure. Elementary variational theory of elasticity.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: ME 2003; PROG: Swanson School of Engineering

ME 2005 - STRUCTURE OF MATERIALS

Minimum Credits: 3

Maximum Credits: 3

Fundamentals of crystallography; lattice geometry; Bravais lattices; crystal systems; stereographic projection; point and space groups; symmetry elements; tensor properties of crystals; physical properties; elasticity of crystals; introduction to diffraction by crystals; reciprocal lattice; Ewald construction.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2007 - ELEMENTS OF MATERIAL SCIENCE AND ENGINEERING 1

Minimum Credits: 3

Maximum Credits: 3

This course is primarily designed for graduate students entering the program without a degree in a field of materials engineering. Bonding and structure of materials; thermodynamics and phase diagrams; imperfections in crystals; and rate processes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2009 - PROCESSING OF MATERIALS

Minimum Credits: 3

Maximum Credits: 3

This course is primarily designed for graduate students entering the program without a degree in a field of materials. Alloy design, strengthening mechanisms, mechanical properties: plastic deformation, mechanical properties and microstructure control; high temperature deformation, grain size control during reheating and during deformation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2010 - NANOMECHANICS, MATERIALS AND DEVICE

Minimum Credits: 3

Maximum Credits: 3

This course is an introduction for current nanotechnology and fundamentals for Nano engineering. It mainly contains three areas: Nano mechanics, nanomaterials and nanoscale devices. In Nano mechanics, it covers Nano indentation mechanics, thin film mechanics and one dimensional nanowire mechanics, Nano crack mechanics, deformation in nanomaterials. Nano mechanical model will be emphasized. In nanomaterials, it covers carbon nanotube, one dimensional semiconducting nanowires & Nano multilayers as well as nanostructured composites. Novel property/phenomena reviewed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2011 - FUNDAMENTALS OF MICRO AND NANOMANUFACTURING

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ME 2012 - COMPUTATIONAL MATERIALS SCIENCE

Minimum Credits: 3

Maximum Credits: 3

This course teaches the fundamentals and applications of computational materials science, which concerns the use of modern computational tools to the analysis of the properties and behavior of materials at various temporal and length scales. The current emphasis of this course is on integrated multiscale simulation method. The course covers topics on the first-principles density functional theory, molecular dynamics, Monte Carlo simulation, and phase-field method. Crystal structure, mechanical properties, structural defects, and electronic structures of materials as well as techniques for modeling them are also discussed. The course consists of a term project, in which students perform modeling and simulation of a material system of their choice and analyze simulation results by visualization and data mining methods using software provided.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ME 2015 - ROBOT MODELING AND CONTROL

Minimum Credits: 3

Maximum Credits: 3

This course is intended for graduate students interested in human movement control. The engineering framework from robotics controls, and filtering will be widely employed to model human movement and its control. These concepts will be merged with neurophysiology and computational neuroscience to understand adaptability in human motor control and its applications to neuro-rehabilitation. The course will introduce dynamic modeling of human limbs, internal models for movement control, sensorimotor integration using optimal filtering, neurophysiology of locomotion, and motor skill learning in able-bodied persons and persons with mobility disorders the course will be helpful for students who want to pursue a career in robotics and control for neuro-rehabilitation. The course will also be valuable to students who are curious about robotics, control, and estimation theory

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2020 - MECHANICAL VIBRATIONS

Minimum Credits: 3

Maximum Credits: 3

Analysis of linear and non-linear multi-degree of freedom systems. Lagrangian formulation, model analysis, lumped parameter analysis of discrete systems, and continuous system vibrations.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2022 - APPLIED SOLID MECHANICS

Minimum Credits: 3

Maximum Credits: 3

Stress and strain transformations; applied elasticity problems in torsion and plane problems; thermal stresses and elementary plasticity; energy methods; fundamentals of finite element methods.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2027 - ADVANCED DYNAMICS

Minimum Credits: 3

Maximum Credits: 3

Variational principles, Lagrangian and Hamiltonian formalisms, kinematics and dynamics of rigid bodies, first integrals, Routh's method, stability, canonical transformations, the Hamiltonian-Jacobi theory.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2033 - FRACTURE MECHANICS FOR PRODUCT DESIGN AND MANUFACTURING

Minimum Credits: 3

Maximum Credits: 3

Failure of manufactured products in service, implications for design. Energy release rates, toughness, evaluation of experimental tests. Fracture mechanisms in different material systems. Damage tolerance. Fracture control. Design studies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2035 - COMPOSITE MATERIALS DESIGN AND APPLICATIONS

Minimum Credits: 3

Maximum Credits: 3

Extensive uses of composites can be seen in several aspects of engineering applications. Industrial sectors, such as in wind turbines, oil and natural gas exploration and production, natural gas and hydrogen vehicle storage tanks, high-speed and precision machinery, etc., are today the largest user of composites, surpassing aerospace industries. Other applications are in semiconductor manufacturing equipment; automobile engines, bodies, brakes and clutches; energy storage flywheels; gas turbine engines; process industries equipment; data storage equipment; medical diagnostic equipment; prosthetics and orthotics, etc. The advantages of composite materials stem from their outstanding strengths and stiffnesses, low densities, in addition to their unique and tailorable physical properties, including good thermal conductivities compared to copper and thermal expansions that can be varied from high to near zero. Composites, such as metallic, ceramic and carbon materials have both high-temperature and low-temperature capabilities, making them useful in high temperature regimes, e.g. in gas turbine engines, automobile and aircraft brakes. This course offers an in-depth presentation of design, analysis and manufacturing methods for composites, with particular reference to polymer matrix composites. For an efficient use of composites in lightweight structural design applications, this course offers the needed fundamental understanding of the structure, properties, and mechanics of composite materials. A typical mechanical analysis and design of composite structures, which are significantly more complex than those of their metallic equivalents due to the anisotropic nature of laminated composite materials, will be presented.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: ME 2001 and 2003 and 2004, or sufficient background in structural mechanics; PLAN: Swanson School of Engineering

ME 2042 - MEASUREMENT AND ANALYSIS OF VIBRO-ACOUSTIC SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

This course will present measurement and analysis techniques for dynamic systems, with particular emphasis on mechanical vibrations and acoustics. Background on vibration of lumped and continuous parameter systems, acoustics, and noise and vibration control will be given. Other concepts include FFTs, windowing, input/output relationship calculations, test methods, transducers, instrumentation, and the use of dynamic signal analyzers. Application to system identification and modal analysis will be included, as well as hardware demonstrations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2045 - LINEAR CONTROL SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

This course builds upon the foundation laid in a classical feedback control course. The tools will be developed for analyzing and designing controllers for multi-input, multi-output dynamic systems. Ideas of controllability and observability will be discussed, as well as modern control design techniques such as pole-placement.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2046 - DIGITAL CONTROL SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

This course provides the student with the tools necessary to analyze and design discrete-time (digital computer) control systems for real-time control of dynamic systems. It builds upon the background of classical control topics including Nyquist, bode, and root locus, and transform ideas will be used extensively for design and analysis to give the student an understanding of how discrete-time and classical control systems are related. State-space representations will be used for MIMO systems, so a prior understanding of modern control ideas is important.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2047 - FINITE ELEMENT ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

Development of elements from variational principles and application to static continuum problems. Introduction to techniques for dynamics, stability, and generalized field problems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2048 - ENGINEERING ALLOYS FOR CONSTRUCTION

Minimum Credits: 3

Maximum Credits: 3

The goal of this course is to understand modern metallic alloys used in construction. To accomplish this goal, the following sequence is offered: review of physical metallurgy principles: thermodynamics, kinetics, phase diagrams and phase transformations; microstructure and properties of stainless steels, aluminum alloys, titanium alloys, nickel and cobalt-based super alloys and alloys for nuclear core applications.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering (PENGR)

ME 2049 - THERMAL MANAGEMENT IN ELECTRONIC SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

This course reviews the prevalent thermal management techniques commonly employed to mitigate overheating of electronic systems. The primary goal of this course is to gain fundamental understanding of the following topics: thermal spreading, contact resistance, free and forced convection, radiation, fins and heat sinks, phase change materials, boiling/condensation/immersion cooling, jet impingement, heat pipes, and microchannels. The secondary goal is to acquire the ability to apply this knowledge to real applications including computing and communication systems as well as military and medical electronic systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2050 - THERMODYNAMICS

Minimum Credits: 3

Maximum Credits: 3

Detailed presentation of the conceptual foundations of thermodynamics. Energy and the first law of thermodynamics. The second law of thermodynamics and entropy. Thermo-physical properties of pure substances. Energy conversion systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2052 - INTRODUCTION TO TECHNICAL COMMUNICATION

Minimum Credits: 3

Maximum Credits: 3

An introduction to technical writing and oral presentation skills using Word, Powerpoint, Mendeley, InkScape and LaTeX.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ME 2053 - HEAT AND MASS TRANSFER

Minimum Credits: 3

Maximum Credits: 3

Steady state and transient conduction in solids. Conservation laws of mass, momentum, and energy. Forced and free convection heat transfer; condensation and boiling; thermal radiation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2054 - PARALLEL COMPUTING FOR ENGINEERS

Minimum Credits: 3

Maximum Credits: 3

Modern engineering is increasingly relying on numerical software applications and benefits from fast turnaround time enabled by multi-core processors. From smart phones to flagship supercomputers, parallelism has become pervasive. This class introduces students to parallel scientific computing with compiled languages. Students will develop a basic understanding of computer architecture, memory hierarchy, number representations and computer arithmetic. Students will become proficient in modern software environment of supercomputers, working with large scientific software and using sophisticated external libraries to solve technical problems. Students will learn Flynn's taxonomy for parallel computers and develop parallel programs using the message passing interface (MPI) library for distributed-memory parallelism, OpenACC for computing with graphics processing units (GPU) and shared memory parallelism with OpenMP. Students will learn common data formats to store and visualize large data. Class assignments and projects will be derived from linear algebra, partial differential equations and numerical analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ME 2055 - COMPUTR ANAL TRANSPORT PHENOMENA

Minimum Credits: 3

Maximum Credits: 3

This course provides an introduction to implementation of some of the numerical/computational methods for solving problems in transport phenomena. Fields described by linear and non-linear ordinary differential equations (initial and boundary value problems), and partial differential equations (elliptic, parabolic and hyperbolic) will be considered by means of various examples from fluid dynamics, heat and mass transfer, and combustion. Numerical discretization techniques based on finite difference methods (FDM) will be the subject of main discussions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2056 - INTRO TO COMBUSTION THEORY

Minimum Credits: 3

Maximum Credits: 3

Covers the general solution techniques associated with combustion phenomena as well as chemical thermodynamics, heat and mass transfer, laminar flame theory, one dimensional reactive flow, heterogeneous combustion, and turbulent combustion.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2060 - NUMERICAL METHODS

Minimum Credits: 3

Maximum Credits: 3

Introduction to numerical techniques for the solution of linear and non-linear equations, numerical integration and differentiation, interpolation, ordinary and partial differential equations, and eigenvalue problems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2061 - REDUCED ORDER MODELING FOR ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

This course will provide an introduction to dimension reduction techniques and reduced order modeling. The course covers the mathematical foundation of all the techniques discussed and includes a diverse set of applications. In particular, the course covers the utility of dimension reduction in diagnostics of complex data, deterministic and stochastic reduced order modeling and their applications in optimization and uncertainty

quantification.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ME 2062 - ORTHOPAEDIC ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

This is an advanced course that applies mechanics of materials, material failure theories and rigid body dynamics to orthopedic device design, tissue mechanical modeling and surgical procedure evaluation. The course is meant to provide an introductory background to engineering aspects of orthopedic medicine and biomechanics for students preparing for medical school, positions in the medical device industry or graduate studies in this field.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2067 - MUSCULOSKELETAL BIOMECHANIC

Minimum Credits: 3

Maximum Credits: 3

Course work will include the structure, function, and mechanics of the musculoskeletal system. Specific topics will include the kinematics and control of human movement and the mechanics of the musculoskeletal connective tissues, such as ligament, tendon, bone, cartilage, and muscle. Special emphasis will be placed on the relationship between function and material properties of these tissues. A research paper will be required as a term project.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2070 - MICROFLUIDICS

Minimum Credits: 3

Maximum Credits: 3

The basic hypotheses in the macro-scale fluid mechanics may no longer be applicable in micro or even smaller scale. The objectives of this course are: to identify dominant forces and their effects in micro-scale fluid systems that are different from those in the macro-scale; to understand the fundamentals of micro fluidic phenomena; to discuss various micro fluidic applications in research and commercial levels and to explore new possible microfluidic applications in the emerging fields.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2074 - ADVANCED FLUID MECHANICS 1

Minimum Credits: 3

Maximum Credits: 3

Kinematics of fluids, Eulerian and Lagrangian descriptions, continuity, stream and potential functions, stress and rate of strain relation, derivations of Navier stokes and energy equations, some exact solutions, boundary layer theory, turbulent flows.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2075 - ADVANCED FLUID MECHANICS 2

Minimum Credits: 3

Maximum Credits: 3

Fluid mechanics is a broad field of study that serves as a fundamental subject in various disciplines such as aerospace engineering and geosciences. Nonlinear aspects of the governing Navier-Stokes equations manifest themselves in unique ways in different applications while sharing a common theory. This course builds upon the first graduate fluid mechanics course in the mechanical engineering graduate curriculum. The course will emphasize the nonlinear aspects of fluid mechanics in the context of different applications and provide the essential techniques and methods to study them. The course will cover the theory of temporal flow instabilities, statistical theory and modeling of turbulence for wall bounded and free shear flows, geophysical fluid dynamics and compressible aerodynamics at the intermediate level to prepare graduate students to pursue graduate level courses in each subject.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: Swanson School of Engineering

ME 2082 - ELCTRMECHL SENSORS & ACTUATORS

Minimum Credits: 3

Maximum Credits: 3

The objective of this course is to provide a thorough understanding of the various mechanisms that can be exploited in the design of electromechanical sensors and actuators. These transduction mechanisms include: 1) transduction based on changes; in the energy stored in the electric field, 2) in the energy stored in the magnetic field, 3) piezoelectricity and pyro electricity, 4) linear inductive transduction mechanisms, and 5) resistive transduction mechanisms. Will discuss various transduction materials, sensors and actuators from a wide range of applications.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2084 - INTRODUCTION TO POLYMER SCIENCE

Minimum Credits: 3

Maximum Credits: 3

Introduction to basic concepts of polymer science. Kinetics and mechanism of polymerization, synthesis and processing of polymers. Relationship of molecular conformation, structure and morphology to physical and mechanical properties. Structural and physical aspects of polymers. Molecular and atomic basis for polymer properties and behavior. Characteristics of thermoplastic and thermoset polymers for single and multicomponent systems. Understanding of the viscoelastic and relaxation behavior of single and multicomponent systems. Thermodynamics and kinetics of transition phenomena. Structure, morphology and behavior.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2085 - GRADUATE SEMINAR

Minimum Credits: 0

Maximum Credits: 0

Designed to acquaint graduate students with various subjects in advanced mechanics and graduate-level current research in mechanical engineering; aspects of graduate-level engineering and applied mechanics not normally encountered in classes.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: PROG: Swanson School of Engineering

ME 2086 - DESIGN & MECHANICS OF 3D PRINTED MATERIALS AND STRUCTURES

Minimum Credits: 3

Maximum Credits: 3

This course covers the mechanics of materials and structures fabricated by 3D printing. Topics to be covered include various 3D printing processes and materials, effects of process parameters and printing direction on mechanical behavior, microstructure-mechanical property relationships, constitutive models, etc. The difference between 3D printing and traditional materials will be highlighted.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2087 - STRUCTURAL TOPOLOGY OPTIMIZATION FOR ADDITIVE MANUFACTURING

Minimum Credits: 3

Maximum Credits: 3

This course introduces structural topology optimization and teaches the related problem solution skills. Specific methods including SIMP (Solid Isotropic Material with Penalization), level set method, and PTO (proportional topology optimization) will be explained in depth. Topics to be covered include the different types of topology optimization problems (compliance-minimization, stress-constrained, natural frequency design, etc.), multi-material topology optimization, multi-scale topology optimization and meta-material design, etc. Applications will be focused on addressing manufacturability issues in order to produce manufacturing-friendly design solutions. With regard to design optimization for additive manufacturing (or 3D printing), various important topics will be covered, including lattice structure design, self-support structure and infill design, material anisotropy issue, hybrid manufacturing part design, etc. Homework assignments and projects will focus on implementing basic topology optimization algorithms and performing design optimization using a commercial tool for additive manufacturing.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: ME 2047 and 2060 and 2022 and 2003 and 2004

ME 2089 - RAPID PROTOTYPING TO ADDITIVE MANUFACTURING

Minimum Credits: 3

Maximum Credits: 3

In this course we will analyze the seven primary types of additive manufacturing, their materials, and machines, highlighting their benefits and limitations. Examples of industrial applications will be given along with ongoing research trends and future directions. Labs will focus on design for additive manufacturing, data capture and input, machine setup, and post processing. Field trips will include observation of machine building and part production at some local industries.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2094 - PRACTICUM

Minimum Credits: 1

Maximum Credits: 1

This course is designed to provide students who are engaged in thesis or dissertation research an opportunity to participate in an internship with an external organization (industry or government laboratory). The internship must be related to the thesis or dissertation research.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

ME 2095 - GRADUATE PROJECTS

Minimum Credits: 1

Maximum Credits: 15

A special problems or reading course of individual study guided by the student's major adviser. Topics selected from any phase of mechanical engineering not covered in the regular M.S. - Level course. This course serves as comprehensive examination for non-thesis programs.

Academic Career: Graduate

Course Component: Directed Studies
Grade Component: Grad HSU Basis

ME 2096 - MS/MBA INEGRATED PROJECTS COURSE

Minimum Credits: 2

Maximum Credits: 2

This is the integrated projects course for MS/MBA majors. The project will be jointly overseen by KATZ and SSOE. A 1-2 page proposal is due at the beginning of the term, followed by a final report. The project should blend the student's business and engineering skills. Prerequisites: approval of advisor and graduate director.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: Swanson School of Engineering

ME 2097 - SPECIAL STUDY MECHANICAL ENGRG

Minimum Credits: 3

Maximum Credits: 3

Special topics of particular importance to an individual's plan of study.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

ME 2100 - FUNDAMENTALS OF NUCLEAR ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

Provides an introduction to application of theory to practical aspects of nuclear science and technology. It is intended as a ramp-up course for non-nuclear engineers who wish to pursue a graduate level certificate in nuclear engineering at the University of Pittsburgh. Graduate level content will be assured by use of open-ended assignments and group discussions via an electronic blackboard. The course is designed to accommodate working adults who must travel from time to time. Topics will include: 1. Introduction: a grand tour of the nuclear fuel cycle 2. Power reactors and nuclear systems 3. Atomic and nuclear physics: the Einstein connection 4. Nuclear reactions and radiation: the life and trials of a neutron 5. Radiation and radiation protection: radiation and realism 6. Nuclear reactor theory: from complex to simple 7. Reactor kinetics and control: thanks for delayed neutrons 8. Reactor energy removal: the balance between resilience and power density 9. Power conversion systems and the balance of plant: from neutrons to electricity 10. Reactor accidents and lessons learned.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2101 - NUCLEAR CORE DYNAMICS

Minimum Credits: 3

Maximum Credits: 3

This course reviews the mathematics of nuclear reactor kinetics. Linear systems of ordinary differential equations are solved by state vector techniques, laplace transform techniques, or finite difference techniques including the treatment of discretization errors resulting from various finite differencing approximations. A review of the physics of nuclear kinetics is followed by treatments of the kinetics equations including the effect of uncertainties, approximate solutions, and the interpretation of experiments to measure kinetics parameters. Representations and the physical basis of reactivity feedback mechanisms are treated. Lumped and distributed parameter models of fuel, coolant, fission products are derived and applied to develop quantitative static relationships and qualitative dynamic results for transient conditions. The course provides an introduction to space dependent reactor kinetics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2102 - NUCLEAR PLANT DYNAMICS AND CONTROL

Minimum Credits: 3

Maximum Credits: 3

This course provides an integrated engineering examination of a nuclear power plant from the perspective of instrumentation and control systems used to infer the condition of the nuclear plant and its systems, control its normal operation, and provide protection during transient situations as well as assess core damage during severe accident situations. Students will apply previous knowledge of analog, digital, and microprocessor electronics techniques to nuclear power plant design and operation and reactor protection and safety considerations that influence the design of the reactor plant. A major outcome of this course will be an integrated understanding of the interaction between the physics of nuclear plant control (reactivity and heat balance) and the control and protection systems. This integrated plant understanding will be essential for the successful completion of the integrated nuclear power plant operations course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2103 - INTEGRATION OF NUCLEAR PLANT SYSTEMS WITH THE REACTOR CORE

Minimum Credits: 3

Maximum Credits: 3

This course examines design bases for major systems and components in a nuclear plant and evaluates how the systems function in an integrated fashion. The student will examine a typical nuclear power plant and those components and systems of the nuclear plant complex that have the potential for affecting core power, and whose failure could be an initiating event for a plant transient. Dynamic relationships for the systems developed in the companion nuclear courses will be transformed into stable, numerical algorithms for computer solutions and system interactions will be illustrated using a major industry transient analysis code. Emphasis is on how operations of and faults in systems and components can influence reactivity and core behavior. Through classroom discussions the students will assess engineering problems and operational problems that have been experienced in historical nuclear plant operations. The intended outcome is an aptitude for predicting complex transient behavior of the integrated nuclear plant considering factors that are important for safe and efficient operation: reactivity management and control, coolant inventory control, and core heat removal.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2104 - NUCLEAR OPERATIONS AND SAFETY

Minimum Credits: 3

Maximum Credits: 3

This course reviews the development of reactor safety concepts, the emergence of safety strategies and culture, and the perspectives of severe accidents and how they can be mitigated. Risk-influenced regulatory practices will be introduced and quantitative use of probabilistic risk assessment will be described in terms of its use as a guide to intelligent decision-making. The characteristics of accident progression in the reactor vessel and containment in the unlikely event of core melting and relocation of fuel material will be explained. Offsite impacts of such severe accidents will be introduced. Source terms, dispersion of radionuclides, and dose projections will be developed for both conservative and realistic evolutions. Protective actions and emergency preparedness will be introduced. This course will cover the regulatory aspects of nuclear operations and the roles that the NRC, INPO, WANO and the IAEA play and what impact each has on plant operations. An introduction into regulatory requirements, the safety analysis report, nuclear safety and licensing, and whistle-blower rules will be provided.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2105 - INTEGRATED NUCLEAR POWER PLANT OPERATIONS

Minimum Credits: 3

Maximum Credits: 3

This course promotes understanding of how the integrated nuclear plant works and what challenges the operator faces, and helps an engineer 'speak

operations' with interfacing groups. Use of the replica simulator is an effective way for students to understand accident control, emergency operating procedures, and how the control room interfaces with the rest of the plant. Emphasis is placed on understanding plant characteristics and controls, rather than on developing control manipulation skills. Intended outcomes are an aptitude for predicting transient behavior of the integrated plant and a command of reactivity management and control that is important for efficient operation of a nuclear plant complex. The course presumes knowledge of the major systems in a nuclear power plant and will emphasize how operations of and faults in those systems and components can affect reactivity and core transient behavior.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2106 - NUCLEAR QUALITY ASSURANCE MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

An introduction to the basic concepts of nuclear quality assurance through a series of case studies of the 18 criteria of NQA-1, 10CFR50 appendix B and other applicable standards that govern work in the construction, service and the supply of safety related items to support the nuclear industry. There will be a concentration of pragmatic examples of what to expect as engineers in support of nuclear power plants. These lectures will highlight such topics as the following: small modular reactors, new passive system designed in the new generations of nuclear power plants, relationships with the NRC, authorized nuclear inspectors, and the nation board, what to expect with respect to acquiring patents and your registered professional engineer qualifications, what is critical to know about non-destructive examinations, software control and validation and verification requirements, an introduction to auditing, welding and other special processes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2107 - HIGH PERFORMANCE COMPUTING ALGORITHMS AND METHODS

Minimum Credits: 3

Maximum Credits: 3

The objective of this course is to solve complex physical problems using algorithms developed for supercomputing platforms. The course will introduce key concepts in the field of high performance computing, including how to design algorithms. The theoretical concepts will be tied directly to practical applications in the field of science and engineering such as radiation transport, heat transfer, and acoustics. Particular attention will be devoted to hardware selection for supercomputing applications, and will cover the concept and utilization of "open source" libraries, a key component for rapid algorithm development in today's scientific environment.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2110 - NUCLEAR MATERIALS

Minimum Credits: 3

Maximum Credits: 3

In this course, materials principles are taught in the initial lectures; students do not need to have prior understanding of them. The course will cover the metallurgy and phase diagrams of alloy systems important in the design of commercial nuclear power plants. The micro-structural changes that result from reactor exposure (including radiation damage and defect cluster evolution) are discussed in detail. The aim is to create a linkage between changes in the material microstructure and changes in the macroscopic behavior of the material. Also discussed is the corrosion of cladding materials as well as the effects of irradiation on corrosion performance, and the effects of primary and secondary coolant chemistry on corrosion. Both mathematical methods and experimental techniques are emphasized so that theoretical modeling is guided by experimental data. Materials issues in current commercial nuclear reactors and materials issues in future core and plant designs are covered.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2112 - NUCLEAR CHEMISTRY AND RADIOCHEMISTRY

Minimum Credits: 3

Maximum Credits: 3

Nuclear and radiochemistry are subdisciplines of nuclear science that focus on the study of radioactive materials and their applications. The course will provide students with knowledge of fundamental nuclear science concepts that are key to the understanding of nuclear power plant safety, spent fuel and nuclear waste management, nuclear fuel reprocessing, environmental radioactivity, nuclear forensics, radionuclide production, medical imaging, nuclear pharmacy, and medical and health physics. The proposed course will consist of lectures on nuclear science fundamentals that include: atomic structure, nuclear models and properties, phenomenon of radioactive growth and decay, radiation emissions, nuclear reactions, radiation interactions with matter, radiation detection and measurement, radiation dosimetry and biological effects, and applications of nuclear and radiochemistry in science, engineering, and medicine.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2113 - RADIATION DETECTION AND MEASUREMENT

Minimum Credits: 3

Maximum Credits: 3

This combined lecture and laboratory course will provide students with an introduction to the principles of radiation detection and measurement and experimental techniques. The lecture material will provide students with an understanding of the theoretical basis of detector operation, radiation interactions with matter, signal conditioning and processing electronics, measurement techniques, and statistical considerations. Laboratory work will emphasize the practical aspects of radiation detection using an array of radioactive sources, detectors, and associated signal processing electronics. Through a series of laboratory experiments, students will learn to configure and operate instrumentation used in a wide range of radiation detection applications that are of interest to nuclear power, nuclear medicine, radiochemistry, and other scientific disciplines.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: ME 2100 or ENGR 2100; PROG: Swanson School of Engineering (PENGR)

ME 2115 - HEAT TRANSFER AND FLUID FLOW IN NUCLEAR PLANTS

Minimum Credits: 3

Maximum Credits: 3

This course provides advanced knowledge to promote understanding and application of thermal and hydraulic tools and procedures used in reactor plant design and analysis. It assumes that the student has a fundamental knowledge base in fluid mechanics, thermodynamics, heat transfer and reactor thermal analysis. The focus of the course is on physical and mathematical concepts useful for design and analysis of light water nuclear reactor plants. Applications of mass, momentum, and energy balances are combined with use of water properties to analyze the entire reactor plant complex as a whole. Principles are applied through the application of major industry codes to specific cases.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2116 - BOILING WATER REACTOR THERMAL-HYDRAULICS AND SAFETY

Minimum Credits: 3

Maximum Credits: 3

BWR thermal-hydraulics and safety is a course that focuses on the boiling water reactor (BWR), design, operation, transient response, and abnormal operating conditions and accidents; boiling water heat transfer and two-phase flow; applications with respect to the Fukushima Dai-ichi BWRs. The course will cover the evolution of BWR systems including BWR features and characteristics and containment configurations. Basic thermal-hydraulics (T/H), boiling heat transfer and two-phase flow in BWR systems, T/H performance and thermal limits, BWR abnormal operating conditions and accidents including accident evaluations and overview of the state-of-the-art safety analysis techniques will be the focus of this course.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2118 - COMPUTATIONAL RADIATION TRANSPORT

Minimum Credits: 3

Maximum Credits: 3

This course provides an in-depth review of modern computational techniques used for solving the linear boltzmann equation, with specific applications to neutron and photon radiation transport problems. Topics to be covered include: an introduction to the physical processes that govern radiation transport through materials, monte carlo methods for the simulation of radiation transport, a first-principles derivation of the boltzmann radiation transport equation for multiplying and non-multiplying systems, the multi-group, diffusion, and discrete ordinates approximations to the transport equation, expansion of the scattering kernel in legendre polynomials, and numerical methods for approximating solutions to the transport equation. In addition, the course will review many commonly used numerical methods for solving integral and differential equations, including: finite differencing, numerical quadrature, harmonic analysis, and the power method for solving eigenvalue problems. Topics covered in the class will be reinforced with weekly programming exercises designed to illustrate the different methods for solving the boltzmann radiation transport equation and demonstrate how these methods can be used to solve realistic problems related to nuclear reactor and radiation shielding analysis. The course will also place a strong emphasis on formal quality assurance methods (and best-practices) for the development, verification, and validation of scientific computer codes intended for use in engineering design calculations of record.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2120 - MATHEMATICALL MODELING OF NUCLEAR PLANTS

Minimum Credits: 3

Maximum Credits: 3

Graduate students will develop the graphics/simulation framework and the underlying mathematical models for simulating nuclear power plants in ME/ENGR 2120 mathematical modeling of nuclear plants. Models will be developed in Matlab/Simulink(tm) and configured to run on a PC so that students can both examine the mathematical models on which the simulation is based and use the simulation program in laboratory-like sessions to study the effect of design changes on plant behavior. The simulation model fidelity developed is suitable for educational purposes and provides students with a desktop tool to realistically model and better understand reactor performance under various conditions. While it would not be intended to replace or duplicate the high-fidelity dynamic simulation used in major accident analysis codes such as Relap, Trac, and Trace, the course will provide the student with an introduction and a working knowledge what is embodied in these industry standard codes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2122 - MANAGEMENT PRINCIPLES IN NUCLEAR POWER

Minimum Credits: 3

Maximum Credits: 3

This course will teach management theory and best practices associated for a successful manager in the nuclear industry. The following topics presented and discussed: management theory and practice; ethics; generation economics across the U.S.; dispatch curves; implications of economic factors for existing and new nuclear plants and likely future changes; compensation theory and best practices; labor law issues and challenges common to the nuclear industry; contract law issues and challenges in the nuclear industry; management techniques for dealing with the diverse age groups; change management techniques and best practices in corporations; ethics challenges and issues in the nuclear field; management interactions with inpo and the nrc; project management techniques and practices; management's role in nuclear safety and security culture. Case studies of actual business situations will be studied.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2125 - CASE STUDIES IN NUCLEAR CODES AND STANDARDS

Minimum Credits: 3

Maximum Credits: 3

Presentation of major issues associated with systems and component engineering relative to the nuclear power industry and the industry's consensus codes and standards. The course provides an explanation of the necessity of consensus codes and standards, a high-level view of codes and standards organizations, and shows how codes and standards promotes the safe operation of nuclear power plants. The course discusses how the NRC adopts and makes use of consensus codes and standards. It covers codes and standards for current, advanced and next generation, and high-temperature reactors, including global conformity assessment requirements. Relevant codes and standards from other communities, including nuclear quality assurance, are also summarized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2130 - NUCLEAR FUEL CYCLE AND ENVIRONMENTAL ISSUES

Minimum Credits: 3

Maximum Credits: 3

This course will be developed in conjunction with university of Pittsburgh faculty with an interest in environmental issues impacting the nuclear power industry including school of engineering faculty involved with the Mascaro sustainability initiative, faculty from the department of civil and environmental engineering and faculty from the graduate school of public and international affairs. The course will address such topics as sustainable energy resources, engineering and societal ethical concerns, risk analysis, and future energy supplies in general and as each of these topics relates to such specific issues as the nuclear fuel cycle, nuclear reactor safety, nuclear waste disposal and transportation, and gen iv and the hydrogen economy. Students will better understand the socio-economic issues surrounding achieving a sustainable nuclear power future as it impacts fuel acquisition, plant operation and waste disposal.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: (ME 2100) or (ENGR 2100); PROG: Swanson School of Engineering (PENGR)

ME 2201 - BIOMATERIALS AND BIOMANUFACTURING

Minimum Credits: 3

Maximum Credits: 3

The purpose of this course is to provide students having a background in biomaterials and bio manufacturing with an opportunity to learn about the many modern aspect of biomaterials from basic science to clinical applications, across the formulations and chemistry of polymers, ceramics, metals and their use in various biomedical devices and implants, as well as their clinical performance and host responses. Students will also gain knowledge and experiences with designing and manufacturing biomedical devices through team projects. This one-semester, graduate course is intended for students majoring in the industrial engineering, or those who contemplating such a major (or minor). Students enrolled in the class should have an understanding of various biomaterials, and the ability to understand biological phenomena and manufacturing processes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ME 2222 - NANOSCALE MODELING AND SIMULATION: MOLECULAR DYNAMICS

Minimum Credits: 3

Maximum Credits: 3

The course covers the essentials of molecular dynamics simulation by integrating theories from dynamics, statistical mechanics, thermodynamics, continuum mechanics, and quantum mechanics. Topics include heat bath methods, time integration methods, accelerated methods, and different applications related to nanotechnology. Students gain hands-on experience using state-of-the-art simulation software.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2223 - NANOSCALE MODELING AND SIMULATIONS:

Minimum Credits: 3

Maximum Credits: 3

This course teaches the essentials of nanoscale modeling and simulations, which concerns the use of modern computational tools to the analysis of materials at the nanoscale. The current emphasis of this course is on first-principle density functional theory (DFT) calculation method. The course covers topics on basic quantum mechanics, fundamentals of DFT, statistical mechanics, thermodynamics, and continuum mechanics, and their role in atomistic scale modeling and simulation. Crystal structure, mechanical properties, structural defects, and electronic structures of materials as well as techniques for modeling them are also discussed. The course consists of a term project, in which students perform modeling and simulation of a nanomaterial system of their choice and analyze simulation results by visualization and data mining methods using software provided.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2227 - FINITE ELEMENT ANALYSIS 2

Minimum Credits: 3

Maximum Credits: 3

This course builds upon material given in an entry level finite element course. Variational principles are introduced and used to derive element quantities. The theory and methods for the development of advanced continuum and beam and plate elements are covered.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2242 - OPTIMAL FILTERING AND ESTIMATION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ME 2247 - INTRODUCTION TO NONLINEAR CONTROL DESIGN

Minimum Credits: 3

Maximum Credits: 3

This course is devoted to Lyapunov-based control design for nonlinear dynamical systems. Mainly, this course is developed as an introduction to nonlinear control. In the beginning, the course will emphasize the drawbacks of linearization and richness of nonlinear phenomena compared to linear dynamics. A brief introduction to study qualitative behavior of linear and nonlinear systems using phase portraits will also be provided. These topics will be used as motivations for this course where main topics include: Lyapunov stability analysis for autonomous and nonautonomous systems, input-output stability, Barbalat's lemma, feedback linearization, and nonlinear control design tools such as Lyapunov redesign, sliding mode control, integrator backstepping, and other robust and adaptive control methods. If time allows, we will cover nonlinear control design methods for dynamical systems with delays. The content will be mathematically supplemented with application examples taken from robotics and human musculoskeletal system. Prerequisites for the course include an understanding of undergraduate calculus, linear algebra, and linear control methods (ME 2045). Students are also expected to be able to use some simulation software (e.g. Matlab).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 2252 - CONDUCTION HEAT TRANSFER

Minimum Credits: 3

Maximum Credits: 3

To provide the student with an understanding of the classical and general approach to heat conduction within stationary homogeneous materials through the analysis of one- and multi-dimensional steady-state and transient system with homogeneous and non-homogeneous boundary conditions. This includes analytical and numerical solutions to Fourier's law and the conduction equation using separation of variables, Laplace transforms, superposition, variation of parameters and similarity techniques. Phase change will be introduced and resolved analytically and numerically. Special topics will include micro- and nano-scale heat transfer.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ME 2253 - RADIATION

Minimum Credits: 3

Maximum Credits: 3

To provide the student with an understanding of radiative heat transfer, include surface to surface radiation heat transfer, electromagnetic theory applied to thin films, radiation through participating media, solar cells, thermoelectrics, lasers, and combined heat transfer modes (conduction, convection, and radiation).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ME 2255 - TWO PHASE FLOW AND HEAT TRANSFER

Minimum Credits: 3

Maximum Credits: 3

This course is a graduate level course dealing with two-phase flow, boiling and condensation heat transfer in engineering systems. Physical phenomena and applications of various types of theoretical models to real systems will be emphasized. The real systems will be industries. Two-phase flow ranks as one of the more complex engineering problems. Two-phase flow combines all of the uncertainty of turbulent flow and the physical processes that occur at the gas-liquid interface.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ME 2256 - APPLIED COMPUTATIONAL HEAT AND MASS TRANSFER

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: ME 2060 Strongly recommended; PROG: Swanson School of Engineering

ME 2257 - TRANSPORT PHENOMENA IN NANO-TO-MICRO SCALE

Minimum Credits: 3

Maximum Credits: 3

This intermediate graduate level course will discuss the transport phenomena of heat (phonons), mass (molecules), and charge (electrons) from nano- to micro-scale using the Boltzmann transport theory. The transport phenomena in extremely large and small scales are often described by the continuum equations and wave equations, respectively. These two extreme cases leave an intermediate length scale (often nano- to micro-meter scale) where the continuum description is invalid, and the wave characteristics of carriers can be ignored. The Boltzmann transport equation (BTE) bridges this gap and is used to describe the transport phenomena in nano- to micro- scale, which exist in many modern engineering problems. While the Boltzmann transport theories of those carriers share the same fundamental basis and similarities, the theories have been developed and discussed in different disciplines without many cross-disciplinary interactions. A goal of this course is to provide a unified perspective regarding the transport phenomena of the three practically important carriers - phonons, molecules, and electrons. This course also aims at providing a summary of introductory statistical thermodynamics and solid-state physics for the graduate students in early years. *** No Pre-reqs: It is highly recommended that students previously took at least one or two of the following undergraduate-level courses : classical thermodynamics in mechanical engineering dept., heat transfer, fluid mechanics, statistical mechanics, and solid-state physics.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2260 - SCANNING PROBE MICROSCOPY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2440 - FUNDAMENTALS OF ACOUSTICS AND VIBRATION

Minimum Credits: 3
Maximum Credits: 3
This course will provide the basic fundamentals of acoustics, including wave motion, the wave equation and its solution, modal solutions, acoustic sources, radiation and reception, and filters, and sound/structure interaction. In addition, the student will be introduced to acoustic metamaterials and hearing.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2646 - LINEAR SYSTEM THEORY

Minimum Credits: 3
Maximum Credits: 3
Linear spaces and operators, mathematical descriptions of linear systems, controllability and observability, irreducible realization of rational transfer-function matrices, canonical forms, state feedback and state estimators, stability.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2671 - OPTIMIZATION METHODS

Minimum Credits: 3
Maximum Credits: 3
Analytical and computational aspects of finite dimensional optimization, unconstrained and equality constrained problems, basic descent methods, conjugate direction methods, nonlinear programming, and the Kuhn-Tucker Theorem, linear programming, dynamic programming, multicriteria optimization.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Swanson School of Engineering

ME 2801 - INTRODUCTION TO CYBER-PHYSICAL SYSTEMS

Minimum Credits: 1
Maximum Credits: 1
This course is an introductory course to be taken with hacking for defense (h4d). It will introduce lean startup concepts used (h4d), and will present fundamental and necessary background information in cyber-physical systems (more generally described as mechatronics and the internet of things). Topics covered include: embedded systems and micro-controllers, interfacing with physical systems, networks, communications, and mobile platforms.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2811 - HACKING FOR DEFENSE

Minimum Credits: 3
Maximum Credits: 3

This course will teach students how to build products and services using lean methods. This will be done by solving real-world military and intelligence community problems. The course uses the lean launchpad platform for entrepreneurship. This is a highly customer-centered hypothesis-test approach to developing a mission modes, and is particularly well-suited for technology startups. It incorporates customer needs and user testing to build a minimum viable prototype. At the conclusion of the course, students will be able to understand the problems/needs of searching for product-market fit; understand all the stakeholders, deployment issues, costs, resources, and ultimate mission value; deliver minimum viable products that match customer needs in an extremely short time; produce a repeatable model that can be used to launch other potential technology solutions.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2812 - HACKING FOR ENERGY

Minimum Credits: 3
Maximum Credits: 3

This course will teach students how to build products and services using lean methods. This will be done by solving real-world energy industry problems. The course uses the lean launchpad platform for entrepreneurship. This is a highly customer-centered hypothesis-test approach to developing a mission modes, and is particularly well-suited for technology startups. It incorporates customer needs and user testing to build a minimum viable prototype. At the conclusion of the course, students will be able to understand the problems/needs of searching for product-market fit; understand all the stakeholders, deployment issues, costs, resources, and ultimate mission value; deliver minimum viable products that match customer needs in an extremely short time; produce a repeatable model that can be used to launch other potential technology solutions.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ME 2900 - GRADUATE FELLOWSHIPS AND PROPOSAL-WRITING WORKSHOP

Minimum Credits: 1
Maximum Credits: 1

This workshop will provide information and guidance to students interested in competing for external fellowships to support their graduate research, as well as instruction on proposal writing in general. The workshop will consist of structured class time and outside-the-class mentoring teams to work with students on the preparation of a fellowship application.

Academic Career: Graduate
Course Component: Workshop
Grade Component: Grad SN Basis

ME 2997 - RESEARCH, M.S.

Minimum Credits: 3
Maximum Credits: 3

Students prepare a literature survey on a major research problem and submit an outline for future work on the master of science thesis.

Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad SN Basis

ME 2999 - M. S. THESIS

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

ME 3003 - THEORY OF CONTINUOUS MEDIA

Minimum Credits: 3

Maximum Credits: 3

Kinematics of deformation, compatibility, material rates, relative deformation. Analysis of stress; balance equations; constitutive relations for simple materials, isotropy groups; elastic solids, viscous fluids.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 3008 - FINITE ELASTICITY OF SOFT TISSUES

Minimum Credits: 3

Maximum Credits: 3

This team-taught course is designed as the second course in graduate biomechanics that applies and builds on the concepts of finite elasticity to study the constitutive response of various soft tissues. Course topics will include kinematics of large deformation, concepts of stress, thermodynamic principles, and development of constitutive relationships for hyperelastic materials. Isotropy, transverse isotropy, incompressibility, viscoelasticity as well as isotropic damage will be discussed. Specific application areas will include the mechanics of three general types of primary load-bearing soft tissues: vascular, orthopedic, and reproductive.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ME 3023 - COMPOSITES

Minimum Credits: 3

Maximum Credits: 3

Anisotropic linear elasticity, laminates. Basic micromechanics; particulates reinforcement, polycrystalline aggregates, continuous fiber reinforced materials. The inclusion problem. Hashin-Shtrikman bounds and estimates of overall moduli. Strength. Micro cracking and damage.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 3024 - ADVANCES IN NANOCOMPOSITES

Minimum Credits: 3

Maximum Credits: 3

The intent of this course is to address the theory and applications of bio-inspired and nuclear materials at Nano scales. The course will provide an overview of nanomaterials, with specific applications to bio-inspired intelligent structures and nuclear materials and the relations to energy and fission reactor concepts under extreme temperature and radiation conditions; background on the types of composite materials used in nuclear reactors and their response to neutron irradiation will be presented, case studies in mechanochemical functions, chemical modification of nanocomposites, emerging applications for bio-inspired and nuclear-composite materials will also be presented.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 3047 - ADVANCED FINITE ELEMENT ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

Theory and analysis of integration methods for transient finite element problems; finite elements for the modeling of plates and shells; variational principles; plastic analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 3054 - CONVECTION HEAT TRANSFER

Minimum Credits: 3

Maximum Credits: 3

Derivation of general governing equations using tensor notations; heat transfer in laminar and turbulent flows; incompressible and compressible thermal boundary layers; advanced solution methods for convective heat transfer.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 3055 - MULTIPHASE FLOW

Minimum Credits: 3

Maximum Credits: 3

Study of the fluid mechanics and heat transfer processes in multiphase system; steady-state and transient models, boiling regimes, and a variety of correlation relations for void, critical phenomena, and flow regimes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 3075 - HYDRODYNAMIC STABILITY

Minimum Credits: 3

Maximum Credits: 3

Global stability and uniqueness, Stuart-Landau theory, introduction to bifurcation theory, thermal instability, inertial instability, and stability of parallel shear flow.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 3079 - TURBULENCE

Minimum Credits: 3

Maximum Credits: 3

Definitions and equations of turbulent flow, correlations, scales of turbulence. Differential equations, spectrum and decay of isotropic turbulence. Nonisotropic turbulence, mathematical models, transport processes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Swanson School of Engineering

ME 3090 - SPEC TOPICS IN MECHANICAL ENGRNG

Minimum Credits: 3

Maximum Credits: 3

Special topics of current interest to students and faculty given by a senior member of the faculty.

Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

ME 3095 - GRADUATE PROJECTS

Minimum Credits: 3

Maximum Credits: 3

A special problems or reading course of individual study guided by the student's major advisor. Topics selected from any phase of mechanical engineering not covered in the regular Ph.D.-Level course.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

ME 3100 - ENGINEERING RESEARCH LEADERSHIP AND MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ME 3997 - RESEARCH, PHD

Minimum Credits: 1

Maximum Credits: 12

Research methods and procedures for outlining methods of solution of research problems. Students are assigned problems and are required to submit an outline of attack and prepare a literature survey concerning a research problem that can meet the dissertation requirement.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

ME 3999 - PHD DISSERTATION

Minimum Credits: 1

Maximum Credits: 15

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Mechanical Engr and Materials Science and Engr

MEMS 2090 - CORROSION AND FAILURE ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

Prerequisite: MSE 2067 (can be waived for graduate students with MSE undergraduate degree) This course covers the principles of corrosion and the analysis and prevention of failures. The initial part of the course covers the thermodynamics of corrosion reactions, metallurgical aspects of corrosion, and the various mechanisms of corrosion. An in-depth study is then made of modes of failure and corrosion-assisted failures. Guidelines are given for the prevention of corrosion through the use of coatings, selection of materials, and design improvement.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Medical Education

MEDEDU 2005 - COMPUTER METHODS FOR CLINICAL RESEARCH

Minimum Credits: 1

Maximum Credits: 1

The course provides instruction on the use of computerized methods for clinical research. Dataset manipulation, descriptive statistics, and the graphical presentation of data will be presented using a standard statistical package.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2010 - CLINICAL RESEARCH METHODS

Minimum Credits: 3

Maximum Credits: 3

Clinical research methods provides an overview of the basic research strategies, methods, and goals of clinical research. Topics include study design, data analysis and interpretation, and determination of appropriate methodologies to answer different research questions. Bias and confounding in observational research, the clinical value of diagnostic tests, appropriate use of cross-sectional, case control and cohort study designs, and various statistical modeling used in clinical research will be presented.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2020 - BIOSTATISTICS

Minimum Credits: 4

Maximum Credits: 4

This course focuses on basic concepts and statistical methods and their application to problems in the health and biomedical sciences. Topics include data description and summarization, basic probability theory, estimation, and hypothesis testing with emphasis on one- and two-sample comparisons involving continuous and categorical data. Linear regression and analysis of variance will be introduced. Students will develop their analytic skills through the analysis and discussion of large clinical studies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: CLRES 2005; PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2040 - MEASUREMENT IN CLINICAL RESEARCH

Minimum Credits: 1

Maximum Credits: 1

The course focuses on properties of good measurement that are integral to the research process. Specific objectives are to analyze methods for testing psychometric properties (reliability and validity) of psychological instruments and physiological instruments; to evaluate the adequacy of selected scaling methodologies used in research; to apply knowledge of instrumentation to the description of a psychosocial instrument and a physiological instrument for a research proposal; and to synthesize course content with statistical criteria for scale evaluation and make decisions regarding scale revision. The domain sampling model is presented as the major theory of measurement error, with the parallel test model presented as a special case of the domain sampling model. The construct, criterion, and content validity of psychosocial instruments are explored, and methods for evaluating each of these relative to specific instruments are presented. A variety of scaling methodologies, as well as the principles involved in the design and formatting of questionnaires, will be discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2045 - SURVEY DESIGN AND DATA ANALYSIS

Minimum Credits: 1

Maximum Credits: 1

Survey design and data analysis will provide information on the skills and resources needed to design and conduct survey and techniques of analyzing survey data. The skills include identifying and developing specific survey objectives, designing survey studies, sampling respondents, developing reliable and valid self-administered questionnaires, and administering surveys. The techniques of analyzing survey data include both classic methods such as factor analysis and advanced methods such as item response theory. A majority of lectures will focus on survey research, constructing surveys, response set, survey administration methods, questionnaire construction and programming surveys, sampling and power calculation, maximizing response rates, data coding and entry, reliability and validity, survey data analysis, factor analysis and item response theory. The students will be introduced to the internet based survey and the computerized adaptive testing to broaden their scope of the current survey design and collection. I will use manuscripts of survey data and protocols of completed studies to facilitate learning of concepts discussed in class.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: CLRES 2040 or MEDEDU 2040; PLAN: Medical Education (ACM or MS) or Clinical Research (ACM or MS) or Clinical and Translational Sci (PHD)

MEDEDU 2080 - MASTERS RESEARCH

Minimum Credits: 1

Maximum Credits: 3

Trainees may register for this course with approval from the mentor and selected faculty of the Degree Granting Programs in Medical Education Curriculum Committee. The course is designed for trainees who are prepared to undertake their substantive research project or thesis.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2100 - ENHANCING TEACHING SKILLS

Minimum Credits: 2

Maximum Credits: 2

This course will briefly review the basic principles of adult learning as they relate to clinician-educators but will devote the majority of the time to discussing, developing, and advancing teaching skills of clinician-educators. Using a combination of formal didactics, presentations by students, role playing, and videotape review, participants will have ample opportunity to refine their skills in case-based learning, teaching at the bedside, and teaching in small and large groups. Topics will also include setting goals and expectations, feedback and evaluation, and dealing with the student in need of remediation. MEDEDU 2100 is intended to complement the Medical Mind, Cognitive Studies in Medicine, and Enhanced Teaching Skills: Longitudinal Practicum, and, in an integrated fashion, provide comprehensive knowledge and experience to shape future teaching skills of the master teacher.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2111 - FUNDAMENTALS OF ADULT LEARNING PART 1

Minimum Credits: 1

Maximum Credits: 1

At the completion of this course, participants will have demonstrated through class participation and written assignments, 1) knowledge of current

research and theory on the adult learner and adult learning as they relate to the practice of adult education, 2) understanding of the theoretical basis of clinical reasoning and concepts of expertise and 3) skill in the selection and use of theoretical foundation of learning as it applies to the context of medical education practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2120 - PROFESSIONAL DEVELOPMENT

Minimum Credits: 1

Maximum Credits: 1

Academic physicians who function as clinician-educators face career challenges unique to their career path. This course will provide future clinician-educators with information about these challenges so they are better prepared when starting their career. In addition, the course will provide specific skills to enhance the ability of clinician-educators to set goals, demonstrate their suitability for promotion, manage time effectively, and function in leadership roles. This course is open to Medical Education students ONLY.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2125 - ASSESSMENT OF MEDICAL LEARNERS

Minimum Credits: 1

Maximum Credits: 1

This course will prepare learners to use a wide variety of assessment methods in their educational programs. Specifically, we will address assessing knowledge, clinical performance and technical skills and create questions and cases in class. The theory behind constructing high quality assessments for educational programs will be discussed, and participants will use assessment data to make competency decisions for UGME and GME scenarios.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MEDEDU 2130 - CURRICULUM DEVELOPMENT & EVALTN

Minimum Credits: 1

Maximum Credits: 1

This course is designed to explore and develop the principles of curriculum design, implementation, and evaluation. Students will learn the fundamentals of developing goals and objectives; performing a needs assessment for curriculum development; designing the most efficient teaching strategy, including lecture, workshop, and problem-based learning sessions; evaluating student performance, including both knowledge assessment and performance-based assessment; evaluating faculty performance and course success; and strategies for grading.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2131 - STRATEGIES FOR DEALING WITH THE PROBLEM LEARNER

Minimum Credits: 1

Maximum Credits: 1

MEDEDU 2131 is designed to be a practical, hands-on approach to dealing with students who present with learning difficulties. Both didactic instruction and small-group problem solving for difficult learners will be presented. The goals for the course are to learn how to identify problem learners; to develop a differential diagnosis of problem learner behavior; to develop strategies for remediation and monitoring remediation; to review strategies for documentation and tracking of problem students; and to review issues of competency and promotion.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2140 - MEDICAL WRITING & PRESENTATION SKILLS (ONLINE)

Minimum Credits: 1

Maximum Credits: 1

Medical educators and researchers must be able to present their work clearly and effectively. However, important educational material and research data are sometimes obscured by poorly delivered presentations or poorly written manuscripts. The main objective of this course is to help students develop excellent medical writing and presentation skills. This objective will be achieved through a combination of videos, readings, individual assignments, and team projects in which students will practice specific skills. Students will craft an abstract, write a discussion section of a manuscript, practice methods of disseminating their science to the lay public, create a poster, construct a table or figure, and develop a PowerPoint presentation and record themselves delivering a 10-minute talk.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2150 - LEADING EDUCATIONAL PROGRAMS IN ACADEMIC MEDICINE

Minimum Credits: 1

Maximum Credits: 1

This course provides an overview of how medical schools and residency programs run in regards to accreditation, recruitment, finances, and leadership positions. We will examine forces shaping medical education by reviewing its history, social responsibility, and public accountability. Clinician-educator pathways will be explored, from program director to medical school course director to all the administrative faculty roles possible within UME and GME. The practical aspects of designing, implementing, and sustaining an educational program will be explored. *Please note in previous terms, this course was titled "Medical Education: Current Practice, Administration and Future Directions".

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2160 - CURRENT TOPICS IN TEACHING AND LEARNING - A SEMINAR SERIES

Minimum Credits: 1

Maximum Credits: 1

This seminar series includes critical discussion and evaluation of relevant topics in medical education and presentation review of methods employed by researchers in medical education. Seminars on the first Friday of the month (Medical Education Journal Club) consist of presentations of recent medical education research evaluating new teaching methods or educational curricula. Seminars on the third Friday of the month (Medical Education Research Conference) deal with topics in research methods in medical education and also serve as a forum to present research-in-progress or completed research projects. Enrollees for this series are expected to present at one of these conferences during the year, having reviewed their presentation topic with the course director prior to the session. Attendance at 16 sessions in addition to the presentation is required for 1 credit.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2170 - MAKING THE MOST OF MENTORING

Minimum Credits: 1

Maximum Credits: 1

We strongly believe that effective mentoring is the cornerstone of a successful academic career, whether it be in education, research, or clinical work. Good mentors are able to guide mentees as they attempt to navigate through the course of their careers. This course is designed to provide a basis for understanding the mentor-mentee relationship and to provide strategies for making the most out of the experience. Topics will include communication and negotiation, the use of mentoring contracts, providing and accepting feedback, evaluating the mentoring relationship, and solving problems and meeting challenges. Fellows, postdocs, other Institute for Clinical Research Education (ICRE) trainees, and junior faculty will discover useful ways to enhance the mentoring relationship and make it a rewarding experience both for the mentees and the mentors.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2185 - STRATEGIC LEADERSHIP IN ACADEMIC MEDICINE

Minimum Credits: 1

Maximum Credits: 1

Health care professionals regularly occupy leadership roles in research, educational, and clinical arenas, and leadership opportunities abound in academic settings. Yet clinicians have been described as "accidental administrators," lacking training in skills necessary to be an effective leader. Given the current challenges facing healthcare, increasing reliance on interdisciplinary teams to provide care, and greater emphasis on cost control and quality improvement, the need for clinicians to develop effective leadership skills is paramount. This course is designed for clinician-educators and researchers who want to understand the basics of leadership and management. Through selected readings, this course will develop participants' leadership skills across a variety of domains. Topics covered include understanding how academic medical centers function and how to set team culture, run a meeting, manage time, lead across difference, and create/maintain a five year plan. At the completion of the course, trainees will understand of the basic principles of leadership and management in the context of academic medicine. *Please note in previous terms, this course was titled "Managing Your Career in Clinical & Translational Science" and "Strategic Leadership".

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

MEDEDU 2190 - TEACHING ACROSS TEAMS

Minimum Credits: 1

Maximum Credits: 1

This special educational course will provide a component that is rarely provided in medical education and often not in other health professions education. Trainees will: 1. Be able to describe the training that other health professionals receive and come to understand the purpose of multidisciplinary teams as well as each provider's role on the team, 2. Review and practice critical communication skills necessary to build teams and negotiate conflict, 3. Learn educational methodology to assess team communication skills, and 4. Have the opportunity to participate in interdisciplinary learner teaching.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2201 - OUTPATIENT TEACHING

Minimum Credits: 0.5

Maximum Credits: 3

This course involves 16 hours of observed outpatient clinical teaching plus feedback and evaluation by teaching preceptor. The student is required to identify a primary preceptor who will be responsible for observation and evaluation of clinical teaching in the outpatient setting. Deliverables include a formal summative evaluation by primary preceptor reviewed with student and a 1-page personal reflection response by student. This course can be completed over several terms and can be registered for only once.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2202 - INPATIENT TEACHING

Minimum Credits: 0.5

Maximum Credits: 3

This course involves 16 hours of observed patient clinical teaching on inpatient service (including consult services) plus feedback and evaluation by teaching preceptor. Optimally, this observation should be a mix of bedside teaching, work rounds and formal teaching rounds. Deliverables include a formal summative evaluation by primary preceptor reviewed with student and a 1-page personal reflection response by student. This course can be completed over several terms and can be registered for only once.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2203 - CLASSROOM TEACHING

Minimum Credits: 0.5

Maximum Credits: 3

This course involves 16 hours of observed nonclinical teaching including but not limited to classroom teaching, lectures, PBL facilitator, student teaching attending. Deliverables include a formal summative evaluation by primary preceptor reviewed with student and a 1-page personal reflection response by student. This course can be completed over several terms and can be registered for only once.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2220 - TEACHING EVIDENCE BASED MEDICINE

Minimum Credits: 1

Maximum Credits: 1

Course will introduce the core concepts of evidence-based medicine and introduce methods to teach it in the clinical setting. The course will begin by reviewing the history of evidence-based medicine and clinical epidemiology & describe its rise to now become a new "paradigm of clinical practice". We will review the core concepts and practices of evidence-based medicine as they relate to clinical questions of therapy, diagnosis, prognosis and harm. We will then describe the current approaches to teaching evidence-based medicine and the literature to support those approaches.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2230 - INNOVATIVE TEACHING STRATEGIES

Minimum Credits: 2

Maximum Credits: 2

This course is designed to enable medical educators to use information and telecommunications technology (ITT) to expand access to educational resources, implement new models of education, and enhance student and physician competence throughout the continuum of training and practice.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2240 - CULTURAL COMPETENCE MEDICAL EDUCATION

Minimum Credits: 1

Maximum Credits: 1

Cultural differences have always been integral to U.S. society and represent a dynamic mixture of races, ethnicities, and beliefs. Indeed, these differences are one of the characteristics most associated with Americans overseas. Only recently has there been recognition of the importance of these cultural differences in medical education. Therefore, there is still some confusion in medical academia regarding what the focus should be and why cultural competence is now of interest to the Liaison Committee on Medical Education, the accrediting body for allopathic medical schools, universities, managed care organizations, and various governmental bodies. This course is designed to explore the impact of diversity on the training of physicians and other health care providers.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2250 - TEACHING COMMUNICATION SKILLS

Minimum Credits: 2

Maximum Credits: 2

The most common thing that a physician does in his or her career is communicate with patients. This is the method that physicians use to gather information for the medical history, educate patients about their illness, and obtain informed consent regarding the various therapeutic options. During the past 25 years, doctor-patient communication has received increasing attention in medical education. Every medical school currently has a course focusing on communication skills, and many internal medicine, family medicine, and pediatric programs devote attention to these skills. The new ACGME requirements list communication skills as one of the six major focuses. In the future, physicians will need to be able to document their communications skills for certification and licensure. Over the past 10 years, there have been increasing data regarding the efficacy of educational interventions to improve physician communication skills. Courses at the medical school level and at the residency level need to incorporate these data to develop evidence-based interventions. The point of this course is to ensure that medical educators both understand the data and have the practical skills needed to design and teach communication courses.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2260 - CURRENT TOPICS IN MEDICAL EDUCATION RESEARCH - A SEMINAR SERIES

Minimum Credits: 1

Maximum Credits: 1

This course allows students the flexibility to choose among 3 established seminar series in medical education and attend specific topics of interest and relevance to their teaching roles. The seminar series include: mermaid series: medical educational research methods and innovative design, academy of master educators (AME) seminar series, and medical education grand rounds. Specific information of dates and current and past topics for each series is contained on the individual websites. In order to receive the credit, the student is responsible to document attendance at 16 sessions. In order to promote active learning and enhance the relevance of the topics to the individuals' teaching roles, enrollees for this course will be required to choose one skill or learning point from the any of the 16 sessions attended. The enrollee will then provide a one page (maximum) description on how this was implemented in one of their specific teaching assignments or activities and describe its outcome. This needs to be completed prior to credit allocation and submitted to the course director.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Medical Education (CERT-Master's or MS), Clinical Research (CERT-Master's or MS), Clinical and Translational Sci (PHD)

MEDEDU 2325 - FUNDAMENTALS OF ADULT LEARNING IN MEDICAL EDUCATION PART 2

Minimum Credits: 1

Maximum Credits: 1

The process by which physicians make decisions is complicated and multifactorial. Understanding this process is critical for teaching the principles of clinical problem solving and medical decision making. Many theories and strategies have been put forward to better elucidate the process. The overall goals of this course are to introduce the learner to the principles of adult learning, to demonstrate how the principles are applied in the medical arena, and to develop strategies for teaching problem-solving and medical decision-making skills in the clinical setting.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Medical Elective

MSELCT 5100 - PSTP PROFESSIONAL DEVELOPMENT 1

Minimum Credits: 0

Maximum Credits: 0

This course is designed for entering PSTP students. The purpose of this course is to highlight contemporary questions in biomedicine and how different scientific fields approach these questions. After surveying appropriate background material the students analyze scientific papers from the primary literature under the mentorship of different department faculty. Presentation of these papers provides a forum for discussion of experimental design, technique, laboratory and clinical observations. Exposure to different departments and faculty will help the students select laboratories for the summer rotations and the research year.

Academic Career: Medical School

Course Component: Workshop

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 1

MSELCT 5110 - PSTP LABORATORY RESEARCH ROTATION

Minimum Credits: 0

Maximum Credits: 0

This lab is designed to introduce the student to relevant laboratory methods as well as the layout and conceptualization of experiments. The course will serve to acquaint the student with the laboratory process, and to facilitate his/her selection of a lab for the research year.

Academic Career: Medical School

Course Component: Workshop

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 1

MSELCT 5120 - PSTP PROFESSIONAL DEVELOPMENT 2

Minimum Credits: 0

Maximum Credits: 0

This course prepares PSTP students to successfully navigate key developmental milestones in their trajectory toward a physician scientist career. Career expectations are discussed and framed in the perspective of grant writing and the review process. A small amount of lecture material is linked to a series of workshops, where each student composes a bio-sketch, specific aims, experimental plan and training plan related to their research year. Constructive peer critiquing of grant material provides a perspective on which to build grant writing skills.

Academic Career: Medical School

Course Component: Workshop

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 1

MSELCT 5130 - PSTP RESEARCH BASIS OF MEDICAL KNOWLEDGE

Minimum Credits: 0

Maximum Credits: 0

This small group session is required during the first 3 semesters of medical school. Class meets to review primary literature linked to current first and

second year curricula. Before each session, a faculty member and one student meet and review the paper assigned for that week. Students learn about the research basis of knowledge and how to present and critically review primary literature.

Academic Career: Medical School

Course Component: Workshop

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 1

MSELCT 5215 - MENTORED PROJECT INTERIM GRADE

Minimum Credits: 0

Maximum Credits: 0

The mentored scholarly project is a longitudinal experience of the four-year medical school curriculum. It is a graduation requirement and progress must be shown throughout. Students will register and be graded for each term of registration, beginning with the spring term of the second year.

Interim grades will be assigned in May of the second year, November and May of the third year, and November of the fourth year. This course will record the grade assignment for May 1 of the second year.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 2

MSELCT 5300 - BOARD STUDY ELECTIVE

Minimum Credits: 0

Maximum Credits: 0

This course will be registered when the necessity to record a block of time taken to participate in an intensive study period is required. This will usually mean a structured USMLE study course taken outside Pitt but could include a self-structured study schedule here at the school. The course may be given a specific title including the number of weeks.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: No Grade Required

Course Attributes: School of Medicine Year 3

MSELCT 5301 - SPECIAL STUDIES

Minimum Credits: 0

Maximum Credits: 0

This course will be registered when students are permitted to participate in a special project for one month during the third year of medical school. A descriptive title will be recorded on the official transcript to define this one month period of time.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

MSELCT 5310 - MENTORED PROJECT INTERIM GRADE

Minimum Credits: 0

Maximum Credits: 0

The mentored scholarly project is a longitudinal experience of the four-year medical school curriculum. It is a graduation requirement and progress must be shown throughout. Students will register and be graded for each term of registration, beginning with the spring term of the second year.

Interim grades will be assigned in May of the second year, November and May of the third year, and November of the fourth year. This course will record the grade assignment for November 1 of the third year.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

MSELCT 5315 - MENTORED PROJECT INTERIM GRADE

Minimum Credits: 0

Maximum Credits: 0

The mentored scholarly project is a longitudinal experience of the four-year medical school curriculum. It is a graduation requirement and progress must be shown throughout. Students will register and be graded for each term of registration, beginning with the spring term of the second year. Interim grades will be assigned in May of the second year, November and May of the third year, and November of the fourth year. This course will record the grade assignment for May 1 of the third year.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

MSELCT 5400 - BOARD STUDY ELECTIVE

Minimum Credits: 0

Maximum Credits: 0

This course will be registered when the necessity to record a block of time taken to participate in an intensive study period is required. This will usually mean a structured USMLE study course taken outside Pitt but could include a self-structured study schedule here at the school. The course may be given a specific title including the number of weeks.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: No Grade Required

Course Attributes: School of Medicine Year 4

MSELCT 5401 - SPECIAL STUDIES

Minimum Credits: 0

Maximum Credits: 0

This course will be registered when students are permitted to participate in a special project for one month during the fourth year of medical school. This project will probably fall outside the responsibility of a specific clinical department. A descriptive title will be recorded on the official transcript to define this one month period of time.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSELCT 5405 - MASTER'S THESIS PREPARATION

Minimum Credits: 0

Maximum Credits: 0

Students participating in a second degree program during the course of medical school may not have completed the MS portion before reentering the clinical curriculum. In these cases, students are permitted to utilize a portion of the senior electives to complete and defend their thesis. Credit toward the MD Degree will be given for a maximum of two months.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: No Grade Required

Course Attributes: School of Medicine Year 4

MSELCT 5410 - MENTORED PROJECT INTERIM GRADE

Minimum Credits: 0

Maximum Credits: 0

The mentored scholarly project is a longitudinal experience of the four-year medical school curriculum. It is a graduation requirement and progress must be shown throughout. Students will register and be graded for each term of registration, beginning with the spring term of the second year. Interim grades will be assigned in May of the second year, November and May of the third year, and November of the fourth year. This course will

record the grade assignment for November 1 of the fourth year.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSELCT 5450 - GET READY FOR RESIDENCY

Minimum Credits: 0

Maximum Credits: 0

This elective is an intensive preparation for students who are about to enter residency. Through daily interactive sessions, students will explore potential challenges a resident may face in a variety of specialties including medicine, infectious disease, pediatrics, obstetrics/gynecology, psychiatry, radiology, etc. There will also be simulated patient scenarios, entitled "nightmares on call," medical/legal preparation, including a mock deposition and trial, and procedural workshops. The course objectives are: 1) integrate clinical skills and knowledge in preparation for internship; 2) facilitate the fusion of knowledge obtained throughout the four years of medical school and translate it into treatment of complex patients with multi-system issues; 3) explore the evaluation and treatment of the patient with acute abdominal pain including when to call for a surgical consult; 4) identify the acutely ill child and explore the appropriate advice to give parents; 5) identify and treat the top ten women's health issues; 6) evaluate and manage acute electrolyte imbalances; 7) evaluate and treat illnesses in the pregnant patient including medication use in pregnancy; 8) gain insight into treating the patient with acute delirium and management of the violent patient; 9) evaluate and treat acute epistaxis; 10) interpret disease processes on chest x-rays, abdominal films and ct scans; 11) gain insight in to the treatment of a patient with an acute stroke; 12) learn the proper way to communicate with patients, parents of patients and health care providers on the telephone; 13) manage (through simulation) a variety of urgent patient situations the student may encounter while on call in the hospital; 14) become familiar with the steps involved in legal actions against a medical practitioner including a simulated deposition and trial; 15) help students develop essential and durable approaches to personal wellness.

Academic Career: Medical School

Course Component: Practicum

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSELCT 5455 - LITERATURE AND MEDICINE

Minimum Credits: 0

Maximum Credits: 0

This course is intended for the student participating in the medical humanities area of concentration (AOC). The objective of this independent study elective is to use different kinds of culturally relevant literature (drama, poetry, children's literature, popular fiction, classics) to help explore the ways our culture imagines and interprets the experience of medicine. Specifically to gain an appreciation for the various parts physicians play in the literature of our culture. To learn to use the tools and systems of literary criticism to analyze literature, and then in turn to analyze the "text" of a clinical medical encounter. To gain an appreciation for the complex ways in which our own words and actions may be interpreted and misinterpreted within the clinical setting by patients who listen to us with ears and minds which have been prepared for the encounter by the literature, myths and stories of our culture. Selections to be read may include selections from Moliere, dr. Seuss, Nathaniel Hawthorne, Gwendolyn brooks, Jane Austen, J.R.R. Tolkien, the bible, mother goose and others. Requirements consist of: completion of a set of mutually agreed upon reading assignments. Preparation and submission of four, weekly essays each approximately 3 to 4 pages long. These essays will generally be reflective papers based on that week's reading assignment. Completion of an in-depth reflective manuscript of approximately 10 pages. This manuscript will be based on my reading of the poetry of Charles Bukowski, and will address the specific theme of Bukowski's attitudes (mainly pessimistic) towards the body and medicine, as well as his portrayal of poverty, addiction and other forms of "hard living." I may change my topic pending discussion with and approval of dr. Maier. Iv. Attend a literature and medicine discussion series during the four week elective. The progress of this elective will be assessed on the basis of the submitted essays, final paper, and participation in the literature discussions. All of the assigned papers will be submitted no later than the Friday of the fourth week of the rotation.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSELCT 5495 - FUNDAMENTALS OF ORAL AND MAXILLOFACIAL SURGERY

Minimum Credits: 0

Maximum Credits: 0

This four-week clinical elective is offered by the School of Dental Medicine and is designed for the medical student seeking exposure to oral and

maxillofacial surgery and oral medicine. There is an emphasis for the physician-student to develop skills in the initial evaluation, differential diagnosis, and decision-making for a variety of problems in the oral cavity and craniomaxillofacial region. Development of medical decision-making skills will be encouraged by working closely with the attending staff and residents in ambulatory and inpatient settings. The clinical experience consists of supervised activity with a variety of patients who have issues related to craniofacial trauma, congenital deformities, oral pathology, oral manifestations of systemic disease, and other entities useful for most any practicing physician. The course curriculum includes an orientation to the scope of oral and maxillofacial surgery, a workshop on performing a detailed examination of the head and neck, and a laboratory experience on anesthetic injection techniques. Students will be able to formulate a basic differential diagnosis of a variety of disorders and evaluate a variety of different imaging modalities commonly used. A sizeable component of the rotation occurs in the operating room, where students will encounter a wide variety of procedures including trauma reconstruction, cleft and craniofacial surgery, treatment of pathology, and others. Continuity of care is emphasized by having the opportunity to see patients with the attending staff both pre- and post-operatively. Students will also participate in the department's conference series and journal club. Other in-depth experiences may be arranged based on individual interests and career paths. One of the strengths of this elective is the ability to formulate a custom approach to learning based upon the student's desires. Student's interest in careers in otolaryngology, emergency medicine, OMFS, ophthalmology, pathology, plastic surgery, or dermatology are likely to find this experience particularly interesting and practical.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSELCT 5500 - INTERNATIONAL MEDICINE

Minimum Credits: 0

Maximum Credits: 0

This elective is intended to give some structure and guidelines for students wishing to experience medical care in another country. Students are encouraged to pursue their own interests and contacts to arrange an international experience. The student is responsible for arranging this rotation. Information to be provided to the office of student affairs at least two months in advance - prepare an international clinical experience request form, travel abroad contract and checklist for international electives; designate one primary preceptor at the elective site and have written approval from the preceptor or school; develop a list of goals and objectives and a tentative list of activities which will allow the goals to be met. The student is responsible for assuring that a grade is received at the end of the four-week elective.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSELCT 5700 - CHANGING SCIENCE, CHANGING SOCIETY: A GUIDE TO 21ST CENTURY MEDICINE

Minimum Credits: 0

Maximum Credits: 0

Biomedical knowledge is evolving at an ever-increasing pace. The environments where our graduates will practice are also changing, in response to society's needs and fiscal and policy influences. The most effective medical care of patients will be inextricably linked to the application of the most up-to-date knowledge. Optimal care will be patient-centered, and take fully into account the social determinants that influence health, illness and well-being. This new course directly supports learning about these subjects, at an opportune point in students' professional development.

Academic Career: Medical School

Course Component: Lecture

Grade Component: Grad SN Basis

MSELCT 5720 - SCHOLARLY PROJECT ELECTIVE

Minimum Credits: 0

Maximum Credits: 0

Analytical thought and rational decision-making are the hallmarks of modern medical practice. The ability to read and critically evaluate medical literature and to think through a patient's medical concerns or a biomedical problem from first principles is an essential component of undergraduate medical education in the current era. The design, performance, and presentation of an independent project and the critical evaluation of the projects of others represent one outstanding way to develop and crystallize analytical thinking skills and the tools for rational decision-making. Students are given an opportunity to read and critically evaluate scientific and medical literature, present a research proposal and get direct feedback from faculty and other students on that proposal, perform a research project under direct mentorship from an expert in that field, present the research project in both informal and formal collegial venues, and discuss, trouble-shoot, and critique the research and presentations of their colleagues in their medical

school class. Students must spend the equivalent of eight weeks in pursuit of their mentored project during the final two years of medical school. Students may participate during a block of time or over an extended period of time. When a block of time is used, this course is registered. The grading and evaluation for this course is completed by the student mentor.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3, School of Medicine Year 4

MSELCT 5730 - MENTORED PROJECT COMPLETION

Minimum Credits: 0

Maximum Credits: 0

The design, performance, and presentation of an independent project and the critical evaluation of the projects of others represent one outstanding way to develop and crystallize analytical thinking skills and the tools for rational decision-making. Students are given an opportunity to read and critically evaluate scientific and medical literature, present a research proposal and receive direct feedback from faculty and other students on their proposal, perform a research project under direct mentorship from an expert in that field, present the research project in both informal and formal collegial venues, and discuss, trouble-shoot, and critique the research and presentations of their colleagues in their medical school class. The completion of a mentored project is a graduation requirement. This course is registered by all fourth-year students to verify that this graduation requirement has been met. The final grade is assigned by the Mentored Project Steering Committee and the Associate Dean for Student Research.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3, School of Medicine Year 4

MSELCT 5745 - REMEDIATE MENTORED PROJECT

Minimum Credits: 0

Maximum Credits: 0

The mentored project (aka scholarly project) is a graduation requirement. MSELCT 5745 will be registered when an unsatisfactory grade is assigned to MSELCT 5730, mentored project completion. The scholarly project (SP) committee will outline a plan to remediate the deficiency. The plan will include a specific period of time in which the student must successfully complete the remediation to the satisfaction of the SP committee. The student transcript will record that MSELCT 5745 is a repeat of MSELCT 5730.

Academic Career: Medical School

Course Component: Workshop

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSELCT 5805 - INTERPROFESSIONAL HEALTH CARE TEAMS

Minimum Credits: 0

Maximum Credits: 0

Course objectives: clarify the knowledge base, skills and resources different professions contribute to a health care problem, and develop understanding and respect for those contributions; explore overlapping roles and responsibilities of HC team members; clarify boundaries and responsibilities unique to individual professions; learn to communicate constructively with other HC team members; learn to design patient care plans based on shared input; identify ways of managing team members with shared / different responsibilities; realize one's own limitations and recognize when it is appropriate to seek advice or assistance from another profession. This elective course will bring together advanced level students in medicine, nursing and pharmacy to learn about and actively practice interprofessional, team-based health care. Clinically based, experiential learning will be emphasized and interwoven with didactic and reflective sessions. The course will begin with presentations and discussions to explore the meaning of interprofessional teamwork; to introduce students to the backgrounds and contributions of different professions on teams; to provide examples of highly functional vs.. Dysfunctional team interactions; and to consider the consequences of team behavior for patient care. The experiential components are organized around two disease models, heart failure and renal disease, and include inpatient and outpatient settings. Each student team will be paired with patients and participate in various aspects of care including, for example, assessment of a patient's disease and ongoing status, development of management plans responsive to the patient's evolving state, discharge planning, follow-up and care in outpatient settings, etc. Students will interact with health care teams at various sites, as well as receive instruction and feedback from core teaching faculty. Evaluation and grading will consist of attendance and participation; presentation of a written assessment, care plan and patient summary for each "disease unit," to include a team oral presentation.

Academic Career: Medical School

Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSELCT 5808 - ADVANCED INTERPROFESSIONAL NURSING HOME HEALTH CARE TEAMS

Minimum Credits: 0

Maximum Credits: 0

This elective course brings together advanced level students in medicine, nursing, and pharmacy to learn about and actively practice interprofessional, team-based health care in nursing home (NH) environments. Clinically based, experiential learning is emphasized and interwoven with didactic and reflective sessions. The course entails presentations and discussions to explore the meaning of interprofessional team work; to introduce students to the backgrounds and contributions of different professions and teams; to provide examples of functional vs. Dysfunctional team interactions; and to consider the consequences of team behavior for patient care. The experiential components are organized around a NH model and include patients in various care stages in this overall setting. Each student team will be paired with patients and participate in various aspects of care including, for example, assessment of a patient's history (medical, nursing, pharmacy, social/family, financial, etc.) And ongoing status, development of management plans, and evaluation of outcomes. Students will interact with health care team members at a local nursing home site, as well as receive instruction and feedback from core teaching faculty. The course will run Monday through Friday. Evaluation and grading will be done on both an individual and a team participation level. Included will be attendance, written assessments, care plans and patient summaries. A team oral presentation will be evaluated by core faculty and representative health care experts.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSELCT 5850 - PEPTIDE HORMONE RECEPTORS

Minimum Credits: 0

Maximum Credits: 0

This four to eight week senior elective is available for one student per month. Research is in the general area of the mode of action of polypeptide hormones, the isolation of hormone receptors and structure function studies of biologically active polypeptide hormone receptors.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSELCT 5851 - RESUSCITOLOGY

Minimum Credits: 0

Maximum Credits: 0

Research opportunities are provided for one student per month at the international resuscitation research center under the direction of the director. Laboratory studies range from the cellular level to long-term animal outcome experiments on total circulatory arrest (cardiac arrest) and shock states.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSELCT 5852 - HEALTH SERVICE RESEARCH

Minimum Credits: 0

Maximum Credits: 0

Four week elective is a quality assurance program for community hospitals-to provide technical assistance to participating hospitals in the design of module audit and quality assurance studies with a particular emphasis upon forms design, data collection, data analysis, and the utility of data to inform and educate professionals in participating hospitals research in the area of population, family planning, and maternal and child health. Studies in public health gerontology-numerous studies of the provision of supportive services to the elderly.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSELCT 5853 - HEALTH POLICY

Minimum Credits: 0

Maximum Credits: 0

The objectives of this course are to expose medical students to current health policy issues and to methods used in analyzing them. Medical students do independent studies of issues of interest to them. They may also join teams of researchers in the health policy institute in conducting institute-sponsored studies.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSELCT 5854 - ETHICS IN CLINICAL PRACTICE

Minimum Credits: 0

Maximum Credits: 0

The aim of the four week elective is to help physicians identify, analyze and resolve the ethical dilemmas they face in clinical practice. Students will meet in small group seminars with faculty to discuss readings which emphasize the central issues in medical ethics. Students will also participate in one of several in-patient services, identifying patients about whom ethical issues arise. The students will present these cases at ethics rounds for discussion. Students will also be involved in formal hospital ethics counsels.

Academic Career: Medical School

Course Component: Workshop

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSELCT 5855 - CLINICAL GENETICS

Minimum Credits: 0

Maximum Credits: 0

A tutorial experience is tailored to the interests of the student with the advice of senior faculty. The experience is modeled after the diverse responsibilities of a clinical fellow in medical genetics, with some consultations on clinic and hospital patients, attendance at selected seminars and classes in genetics, and participation in a research project, including in the molecular genetics, biochemical genetics, or cytogenetics laboratories or with clinical or mathematical geneticists.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSELCT 5856 - MILITARY SCHOLARSHIP ELECTIVE

Minimum Credits: 0

Maximum Credits: 0

This course will accommodate health profession scholarship students who must do an active duty tour during each year of medical school for which they have a scholarship. These clinical experiences do not always conform to a specific course offered by the medical school, such as flight surgeon and aerospace medicine. This generic course will cover all military exposures for credit.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSELCT 5857 - EVIDENCE-BASED MEDICINE

Minimum Credits: 0

Maximum Credits: 0

A 4 week elective to introduce graduating students to the latest techniques in EBM as they apply to the clinical practice of medicine. EBM is the conscientious, explicit, and judicious use of the best available evidence in making decisions about the care of individual patients. It is an approach to problem solving based on information gathering and analysis. The course consists of a clinical rotation, small group workshops, computer lab sessions and independent study. Each student will present the results of their analysis of one clinical question.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSELCT 5858 - PUBLIC HEALTH FIELD PRACTICUM

Minimum Credits: 0

Maximum Credits: 0

This elective is a hands-on public health practicum that is appropriate for 3rd and 4th year medical students. Prior public health experience, while useful, is not required. Under faculty guidance, students will be placed at a local or state public health agency and participate in on-going activities. These may include disease surveillance and early warning; communicable disease control including outbreaks and food safety; environmental health (air, water, and ground); disaster preparedness, planning and response; health policy and planning; vector and pest control; and applied epidemiology. Specifics of the activities will vary depending on site and student interest. Students wishing to develop their own field-placement opportunity may arrange alternative sites with the advance approval of the course director. Students will also participate in a series of focused seminars on public health topics, presented on one half-day per week, on topics such as: public health practice; epidemiology in clinical practice; disasters, outbreaks and emergencies; avian and pandemic influenza. A short presentation and paper (3 - 5 pages) summarizing key aspects of the experience is also required. Through these activities, students will gain the opportunity to work closely with experienced public health professionals and to develop a fuller understanding of the intersection of clinical medicine and public health.

Academic Career: Medical School

Course Component: Practicum

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSELCT 5860 - EDUCATIONAL TECHNOLOGY

Minimum Credits: 0

Maximum Credits: 0

This 4-week elective combines medical science with new technology in the information and computer sciences. The student will study a wide variety of aspects of technology as it relates to research, clinical medicine and/or medical education. The elective will provide an opportunity for expansion of the student's knowledge base and allow the student to create and/or evaluate a new implementation of technology in medicine. This elective assumes basic understanding of current computer software, the internet and general use.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: Grad LG/SU5

Course Attributes: School of Medicine Year 4

MSELCT 5890 - EXTRAMURAL RESEARCH

Minimum Credits: 0

Maximum Credits: 0

Students will register for this four-week elective when they have arranged to do research with a preceptor who is not a faculty member of the university of Pittsburgh school of medicine. The research will be completed within the United States. The research prospectus will be vetted by the student research administrative office and a copy of the approval will be maintained in the student record.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSELCT 5895 - INTERNATIONAL RESEARCH

Minimum Credits: 0

Maximum Credits: 0

Students will register for this four-week elective when they have arranged to do research with a preceptor outside of the United States. The research prospectus will be vetted by the student research administrative office and a copy of the approval will be maintained in the student record.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSELCT 5900 - TRANSLATING KNOWLEDGE INTO ACTION: THE BASIC SCIENCE OF CARE

Minimum Credits: 2

Maximum Credits: 2

The "basic science of health care" course was designed to help all health science students understand that: 1) the delivery of excellent medical care requires an interdisciplinary approach; 2) there are many barriers in the current health-care environment to the delivery of safe, effective, evidence-based care, and that these problems can be remedied; 3) the health care delivery system is buffeted by many structural and economic constraints that inhibit the delivery of excellent, efficient medical care; 4) information systems play an essential role in improving and delivering cost-effective, error-free medical care; and 5) professionalism includes the personal obligation of all health care professionals to work together to remove the barriers to the delivery of safe, effective, and evidence-based care.

Academic Career: Medical School

Course Component: Lecture

Grade Component: Grad HSU Basis

MSELCT 5901 - INTERDISCIPLINARY COLLABORATION, PROBLEM SOLVING, AND CREATIVITY IN HEALTH CARE DELIVERY

Minimum Credits: 1

Maximum Credits: 1

The "interdisciplinary collaboration, problem solving, and creativity in health care delivery" course was designed to help all health science students understand that: 1) the delivery of excellent medical care requires an interdisciplinary approach; 2) there are many barriers in the current health-care environment to the delivery of safe, effective, evidence-based care, and these problems can be remedied; 3) the health care delivery system is buffeted by many structural and economic constraints that inhibit the delivery of excellent, efficient medical care; 4) information systems play an essential role in improving and delivering cost-effective, error-free medical care; and 5) professionalism includes the personal obligation of all health care professionals to work together to remove the barriers to the delivery of safe, effective, and evidence-based care.

Academic Career: Medical School

Course Component: Lecture

Grade Component: Grad HSU Basis

MSELCT 5910 - AREA OF CONCENTRATION

Minimum Credits: 0

Maximum Credits: 0

This four-week elective will allow the student a dedicated period of time to complete the area of concentration (AOC) requirements. The AOC program at the university of Pittsburgh school of medicine offers the opportunity for students to pursue an area of personal interest, over their four years of medical school. This is accomplished with a series of longitudinal, elective experiences which supplement the required core curriculum. These para-curricular education tracks provide an opportunity for interested students to explore a potential career plan and uniquely enhance their medical education. The AOC may be utilized to meet the scholarly project, which is a graduation requirement.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

MSELCT 5950 - PSTP WORK IN PROGRESS SEMINAR

Minimum Credits: 0

Maximum Credits: 0

This course meets monthly throughout the year and is designed for all physician scientist training program students. The purpose of this course is to

provide each PSTP student a forum to present his or her research and to discuss their research ideas, designs and results, and to give and to obtain peer feedback. Each student has the opportunity to present at all stages of a project, whether it is starting a project, planning the design, analyzing the data, or getting ready to present the results at conferences or in manuscripts. This course encourages all students to engage in scientific discussion and feedback on each project.

Academic Career: Medical School

Course Component: Seminar

Grade Component: H/HS/S/LS/U

MSELCT 5975 - CLINICAL SCIENTIST TRAINING PROGRAM RESEARCH

Minimum Credits: 0

Maximum Credits: 0

Students who apply and are accepted to the clinical scientist training program (CSTP) participate in a course of study leading to either a certificate or a master of science in clinical research. Participants will devote one year of dedicated study to clinical research following the third year of the professional medicine (md) program. During the fourth year of the md program, a maximum of twelve (12) weeks may be scheduled to complete CSTP course work or the research project. This experience will be graded by the director of the CSTP program and will be recorded on the student's official university transcript. A course subtitle form will be processed to record the specific amount of time (in weeks) to be given credit, e.g., CSTP-related research 12 weeks.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

Medical Scientist Training Program

MSTP 5010 - MOLECULAR MEDICINE

Minimum Credits: 0

Maximum Credits: 0

This course is designed for entering MSTP students. The purpose of this course is to highlight contemporary questions in biomedicine and how different scientific fields approach these questions. After surveying appropriate background material the students analyze scientific papers from the primary literature under the mentorship of different department faculty. Presentation of these papers provides a forum for discussion of experimental design, technique, laboratory and clinical observations. Exposure to the primary scientific literature will prepare the students for entry into the Ph.D. component of the combined degree. Exposure to different departments and faculty will help the students select laboratories for their thesis work.

Academic Career: Medical School

Course Component: Lecture

Grade Component: H/HS/S/LS/U

MSTP 5015 - MSTP LABORATORY RESEARCH ROTATION

Minimum Credits: 0

Maximum Credits: 0

This lab is designed to introduce the student to relevant laboratory methods as well as the layout and conceptualization of experiments. The course will serve to acquaint the student with the laboratory process, and to facilitate his/ her selection of a lab for dissertation research. Students are required to register for and complete rotations through three different laboratories, thereby ensuring broad exposure to method and practice.

Academic Career: Medical School

Course Component: Practicum

Grade Component: H/HS/S/LS/U

MSTP 5290 - RESEARCH BASIS OF MEDICAL KNOWLEDGE

Minimum Credits: 0

Maximum Credits: 0

This small group session is restricted to MD/Ph.D. students during their first two years of medical school. Class meets to review primary literature linked to current first and second year curricula. Before each session, a faculty member and one student meet and review the paper assigned for that

week. Students learn about the research basis of medical knowledge and how to present and critically review primary literature.

Academic Career: Medical School

Course Component: Seminar

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 2

MSTP 5955 - MSTP WORKSHOPS

Minimum Credits: 0

Maximum Credits: 0

This discussion-based course, guided by faculty preceptors, meets eight (8) times per year over dinner and is attended by MSTP students from all years. Each class begins with description of a topic related to training on being a physician scientist. The topic for discussion is developed by students from different years in order to assure good representation of the challenges offered at various stages of training. After presentation of the topic, students work in groups of 8-10 at assigned dinner tables and each table reports a summary of the discussion followed by group discussion. Every student must complete a class evaluation at the end of each session. The goals of the course are to provide a forum in which students can openly discuss training and ethically challenging situations with their peers; to provide a venue in which junior students can learn from senior students; to understand that responsible conduct of research and medicine is a critical aspect of research training and that it remains an important concern at all levels of a research career.

Academic Career: Medical School

Course Component: Workshop

Grade Component: H/HS/S/LS/U

MSTP 5971 - MSTP PROFESSIONAL DEVELOPMENT

Minimum Credits: 0

Maximum Credits: 0

This course is required of the students participating in the md/Ph.D. program medical student training program (MSTP), at the end of their first graduate school year. Career expectations are discussed and framed in the perspective of grant writing and the review process. A small amount of lecture material is linked to a series of workshops, where each student composes a biosketch, specific aims, experimental plan and training plan related to their Ph.D. thesis. Constructive peer critiquing of grant material provides a perspective on which to build grant writing skills.

Academic Career: Medical School

Course Component: Workshop

Grade Component: H/HS/S/LS/U

MSTP 5973 - PROFESSIONAL DEVELOPMENT II: METHODS AND ANALYSIS

Minimum Credits: 0

Maximum Credits: 0

This seminar style course is designed for MSTP students during the summer between the first and second year of medical school with one or two faculty facilitators. The learning objectives of the course are to foster social and scientific collaboration between students; to expose students to different scientific methods, techniques, and analyses; to create an environment where students can voice difficulties with their research, labs or mentors and seek constructive feedback; to develop habits of daily writing/presenting. The students are required to present three times during the course and assessed on the clarity and quality of their MSTP retreat poster.

Academic Career: Medical School

Course Component: Seminar

Grade Component: H/HS/S/LS/U

MSTP 5975 - CAREER-RELATED RESEARCH

Minimum Credits: 0

Maximum Credits: 0

Students apply and are accepted to the medical scientist training program (MSTP) during which they participate in the first two years of the professional medicine program before taking leave to pursue a doctor of philosophy degree of their choosing. They must defend their thesis before reentry to the professional program. They then participate in the combined third and fourth years of the professional program, which will grant a maximum of six months of credit for being granted the Ph.D. degree. A number of these physician-scientists will chose to spend all or part of this six months of the fourth year in the pursuit of research related to their Ph.D. field of study. The proposal for this research is vetted by the dean of the

MSTP and when approved the student will be registered for this elective course. This experience will be graded by the research preceptor and recorded on the student's official university transcript. A course subtitle form will be processed to record the specific amount of time (in weeks) to be given credit.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

MSTP 5983 - ETHICS FOR MEDICAL SCIENTISTS

Minimum Credits: 0

Maximum Credits: 0

Offered to md/Ph.D. students in the first three Ph.D. years. Part one is a 4-hr introductory workshop with emphasis on principles in ethical decision-making and formulating conceptual frameworks for evaluating situations with ethical implications. Part two consists of student participation in upper-level case-based workshops. Facilitation will be by university faculty and will apply the principles and methods of general ethics problem solving covered in the introductory workshop. The scenarios will be of specific import to the physician scientist.

Academic Career: Medical School

Course Component: Workshop

Grade Component: H/HS/S/LS/U

MSTP 5990 - LONGITUDINAL CLINICAL COURSE

Minimum Credits: 0

Maximum Credits: 0

20 - 1/2 days are given 2 weeks outpatient credit. Students evaluate patients in a specialty outpt clinic. Plan and conduct appropriate evaluations and therapeutic approaches. Attending physician oversee student's learning of adv clinical skills in interviewing and physical diagnosis, with emphasis on symptom-based exam. Students involved in decision-making regarding the need for hospitalization and longitudinal care. Extensive opportunity for followup care of patients with chronic disorder both for eval of new symptoms and for health maintenance. Emphasis on role of clin investigator in care of pt.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

MSTP 5993 - LONGITUDINAL CLN CLERKSHIP 3

Minimum Credits: 0

Maximum Credits: 0

2 weeks junior hospitalist service are given for preparation of return to medical school. This course is not graded (pass/fail) and is not credited. This course is a General medicine service with 3 residents and 1 attending. Each MSTP student will be paired with a resident on this internal medicine clerkship following up 1-2 patients, interviewing and examining patients, writing notes, presenting patients to residents and attending during rounds. Students receive structured feedback from resident and attending during these 2 weeks. To be eligible for this course, a student must have completed LCC1 and LCC2. In addition, 8 additional hours of formal preparation either by attending Clinical Reasoning mini elective (taught evenings in Winter) or attending 8 Clinical Reasoning Conferences or M&Ms in the most recent year, is a prerequisite to participate in LCC3. Attendance at Pre Clerkship week (held in May) is strongly recommended for students returning to medical school in May or September for LCC 3, while it is highly recommended for students returning to medical school in January and can be done in the prior year.

Academic Career: Medical School

Course Component: Clinical

Grade Component: No Grade Required

Medicine

MED 2101 - BIO-MEDICINE:PAST,PRESENT,FUTURE

Minimum Credits: 3

Maximum Credits: 3

Course offered to honors college students only. Topics will provide knowledge of basic and diverse elements constituting the present structure of

biomedicine and how these elements arose from and interacted with historical, social and technological events. Develop an appreciation of the revolution in biomedicine over the past five centuries and how it applies to societal concepts of health. Become more critically able to evaluate claims about such topics as biomedical progress, the war on cancer, transplantation, healthcare economics and the influence of genomics on medical ethics.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: (BIOSC 0160 or 0716 or 0191 or 0180 or BIOL 0102 or 0120) and (BIOSC 1250 or 1070 or NROSCI 1250 or 1070); LVL: Jr, Sr

Course Attributes: University Honors Course

MED 5112 - FOUNDATIONS OF MEDICINE 1

Minimum Credits: 0

Maximum Credits: 0

Medical anatomy - section 1 of the basic science block introduces themes from anatomy, as well as providing an introduction to imaging and radiology. Instructional modalities in this intensive course include lecture, dissection and problem based learning exercises.

Academic Career: Medical School

Course Component: Lecture

Grade Component: S/U Basis

Course Attributes: School of Medicine Year 1

MED 5116 - FOUNDATIONS OF MEDICINE 3

Minimum Credits: 0

Maximum Credits: 0

Section 3 of the basic science block begins with a segment that elucidates the systems of communication that are activated upon challenge by disease causing organisms and physiologic stressors (immunology). The final course in this section is the study of disease-causing organisms, their occurrence, preferred hosts and the diseases they cause. Evaluation is based on laboratory exercises, problem-solving sessions and written examinations.

Academic Career: Medical School

Course Component: Lecture

Grade Component: S/U Basis

Course Attributes: School of Medicine Year 1

MED 5124 - PATIENT, PHYSICIAN AND SOCIETY 1

Minimum Credits: 0

Maximum Credits: 0

This section consists of two courses: 1) introduction to being a physician has case problems on public health and medicine, breast cancer and HIV/AIDS with patient interviews, group exercises, lectures, independent study and self-directed learning; 2) ethics, law and professionalism addresses the basic concepts and methods for analysis of ethical and legal issues in the physician-patient relationship. The course's sessions are structured as seminars with both didactic and interactive components. Videotapes, email case discussions, and debate will complement the lectures.

Academic Career: Medical School

Course Component: Lecture

Grade Component: S/U Basis

Course Attributes: School of Medicine Year 1

MED 5127 - FOUNDATIONS OF MEDICINE 2

Minimum Credits: 0

Maximum Credits: 0

Section 2 of the basic science block is a multi-disciplinary section that introduces students to core principles and terminology of cell and tissue biology and pathology, genetics and metabolism. It introduces students to the biochemical and molecular basis of cell function in the context of normal physiologic function, and to the processes of disease at the cellular level. Cellular, individual and population genetics builds on this course and study of the principles governing energy metabolism of cells and organisms necessary to maintain homeostasis complete this sequence of

courses. Lectures, workshops, laboratory exercises and small group problem-solving sessions comprise this section.

Academic Career: Medical School

Course Component: Lecture

Grade Component: S/U Basis

Course Attributes: School of Medicine Year 1

MED 5128 - PATIENT, PHYSICIAN AND SOCIETY BLOCK - SECTION 2: BEHAVIORAL MEDICINE

Minimum Credits: 0

Maximum Credits: 0

Section 2 of this block consists of the course - behavioral medicine - which is a multi-faceted consideration of human behavior from the perspectives of both the patient and the physician. The course uses the biopsychosocial model to consider defining elements of the patient-physician relationship, showing how neurobiological, behavioral and social factors can have determinative and interactive impacts in the causation and course of human disease, how they contribute to health, and how they can be modified. Topics are introduced in large group format via patient interviews, videos and panel discussions, each followed by breakout small group sessions featuring case-based scenarios to further the understanding of this complex topic. Student evaluations are based on small group participation, a writing assignment and an exam.

Academic Career: Medical School

Course Component: Lecture

Grade Component: S/U Basis

Course Attributes: School of Medicine Year 1

MED 5133 - NEUROSCIENCE/PSYCHIATRY

Minimum Credits: 0

Maximum Credits: 0

This first organ systems block includes two courses: neuroscience and introduction to psychiatry. The neuroscience course provides a detailed, comprehensive survey of nervous system structure, function and dysfunction. Topics include sensory and motor systems, learning and memory, language, sleep and epilepsy, as well as brain imaging methods, vascular disorders, neoplasms, and infections of the central nervous system. Material is integrated across multiple disciplines including neurophysiology, neurology, pharmacology, neuropathology and neuroradiology. The goal is to provide a mechanistic understanding of normal and pathological brain function, and to teach methods of identifying and localizing major disease processes. The learning formats are lectures, laboratories, PBLs, case-based neurology conferences and self-study. Student evaluation is based on two written exams and PBL participation. The introduction to psychiatry course introduces students to common psychiatric illnesses and their assessment and treatment. There is a written exam and a final paper or presentation due at the end of the course. Student group attendance and small group participation are also included in the overall course grade, which will combine the two courses.

Academic Career: Medical School

Course Component: Lecture

Grade Component: S/U Basis

Course Attributes: School of Medicine Year 1

MED 5137 - INTRODUCTION TO PATIENT CARE 1

Minimum Credits: 0

Maximum Credits: 0

The medical interviewing course assists the student in developing interviewing skills using patient simulators. The introduction to physical examination course provides the first introduction to the techniques of performing a history and physical examination. Practicing on peers, students learn the skills of a normal physical exam and how to conduct it in an orderly and sequential fashion. Emphasis is on technique and normal findings with little discussion of pathophysiology. Use of the stethoscope, oto-ophthalmoscope, reflex hammer and tuning fork are demonstrated and practiced. The goal is to familiarize students in the use of their instruments and prepare them to be observers in physician offices during the remainder of the first year.

Academic Career: Medical School

Course Component: Lecture

Grade Component: S/U Basis

Course Attributes: School of Medicine Year 1

MED 5138 - INTRODUCTION TO PATIENT CARE 2

Minimum Credits: 0

Maximum Credits: 0

The clinical experience course is designed to familiarize students with how physicians practice medicine in their offices and to expose students to the various aspects of health care delivery in the community. The advanced physical examination course spans the first two years. Pathophysiology and its correlation to hx and ph skills are stressed. Students will record and synthesize the information collected during the clinical encounter as a written history, physical exam, and patient assessment with a goal to do complete and accurate history-taking and physicals.

Academic Career: Medical School

Course Component: Lecture

Grade Component: S/U Basis

Course Attributes: School of Medicine Year 1

MED 5180 - EVIDENCE AND DISCOVERY 1

Minimum Credits: 0

Maximum Credits: 0

The first course of this block, introduction to medical decision making, teaches critical thinking regarding diagnosis, treatment and prevention of disease as well as statistical methods applicable to clinical studies. This course uses lecture, small group learning sessions, and final individual presentations by students.

Academic Career: Medical School

Course Component: Lecture

Grade Component: S/U Basis

Course Attributes: School of Medicine Year 1

MED 5181 - EVIDENCE AND DISCOVERY 2

Minimum Credits: 0

Maximum Credits: 0

The second section of this block is the first part of a two-year course intended to prepare students for their four- year, mentored scholarly project. In this segment, students will use the tools and skills obtained during the preceding course to analyze seminal literature in science and medicine. Evaluation will be based on student critiques of assigned papers as well as on a formal presentation, to their small group, of a problem of interest to them, methods of approaching it and feasibility of their proposed approach.

Academic Career: Medical School

Course Component: Lecture

Grade Component: S/U Basis

Course Attributes: School of Medicine Year 1

MED 5218 - ORGAN SYSTEMS PATHOPHYSIOLOGY SECTION 2: INTRODUCTION TO PATHOBIOLOGY - BODY FLUID HOMEOSTASIS

Minimum Credits: 0

Maximum Credits: 0

This second section of the organ systems pathophysiology block consists of four segments: a week long study of principles of pharmacology, followed by courses on the cardiovascular, renal, and pulmonary systems. The course is interdisciplinary. In addition to the basic science components, the subject matter includes clinical aspects of diseases and their medical management. The learning format is in small groups, laboratories, lectures, tutorials/conferences and self-study. Student evaluation is based on written exams and small group problem-solving participation.

Academic Career: Medical School

Course Component: Lecture

Grade Component: S/U Basis

Course Attributes: School of Medicine Year 2

MED 5223 - ORGAN SYSTEMS PATHOPHYSIOLOGY 3: GI/ENDOCRINE/HEMATOLOGY/SKIN/MUSCULOSKELETAL/REPRO AND DEVELOPMENT

Minimum Credits: 0

Maximum Credits: 0

Academic Career: Medical School
Course Component: Lecture
Grade Component: S/U Basis
Course Attributes: School of Medicine Year 2

MED 5225 - ORGAN SYSTEMS PATHOPHYSIOLOGY SECTION 4: PHARMACOLOGY

Minimum Credits: 0

Maximum Credits: 0

This course begins with the neuroscience segment of organ systems pathophysiology (OS) and runs through all of the courses in organ systems 1, 2 and 3, including a concentrated week of principles of pharmacology with an emphasis on adrenergic pharmacology at the beginning of os2. At appropriate times in those courses, basic mechanisms of pharmacologic agents are taught in the context of each organ system. This course covers classes of agents, mechanisms and drug targets as well as potential side effects and future developments. The format is primarily lecture with some workshops, as well as material incorporated into problem-based learning sessions.

Academic Career: Medical School

Course Component: Lecture

Grade Component: S/U Basis

Course Attributes: School of Medicine Year 2

MED 5227 - ORGAN SYSTEMS PATHOPHYSIOLOGY SECTION 5: INTEGRATED CASE STUDIES

Minimum Credits: 0

Maximum Credits: 0

The course objective of this fifth section of the organ systems block is to apply information acquired during the first two years to patient cases as presented on the computer, further developing independent active learning and data acquisition skills. In addition, the course serves as a bridge to the direct patient responsibilities of the final two years of medical school. The format is exclusively problem-based learning. There is no final examination. The course is honors/pass/fail based on small group participation.

Academic Career: Medical School

Course Component: Lecture

Grade Component: S/U Basis

Course Attributes: School of Medicine Year 2

MED 5233 - INTRODUCTION TO PATIENT CARE SECTION 3: ADVANCED PHYSICAL EXAMINATION 2 AND CLINICAL EXPERIENCE 2

Minimum Credits: 0

Maximum Credits: 0

The advanced physical examination course of the introduction to patient care block is an extension of the introduction to physical examination course. During this course, which spans the first two years, students will expand their knowledge of history taking and physical examination skills by examining patients both in adult medicine and in the pediatric setting. Patho-physiology and its correlation to history and physical examination skills are stressed. Students are also expected to record and synthesize the information collected during the clinical encounter as a written history, physical exam, and patient assessment. The goal is to prepare students to do complete and accurate history-taking and physical examinations during their clerkships. This course is integrated with the clinical experience course. There are seven, month-long sessions, four of which will be physical examination sessions and three will be the clinical experience rotations described below. There is a written examination, a clinical performance grade from instructors, and a required performance-based assessment at the end of the course. The clinical experience course is designed to familiarize students with how physicians practice medicine in their offices and to expose students to the various aspects of health care delivery in the community. Each student will be scheduled for three, month-long rotations, one month of one afternoon a week in a physician's office, one month of once a week afternoon visits to an assigned community site for underserved populations, and one month with a student-selected ambulatory subspecialty office or an additional month at a primary care physician's office. There will also be full class sessions on health care disparities, alcohol and substance abuse, and health care to the underserved. No textbook is required but a syllabus is provided. Completion of weekly teaching and learning logs is required. Grading is determined by attendance and passing the final examination.

Academic Career: Medical School

Course Component: Practicum

Grade Component: S/U Basis

Course Attributes: School of Medicine Year 2

MED 5234 - INTRODUCTION TO PATIENT CARE-SECTION 4: ADVANCED MEDICAL INTERVIEWING - CLINICAL PROCEDURES

Minimum Credits: 0

Maximum Credits: 0

The first four weeks of the final section of the introduction to patient care block will be the advanced medical interviewing course. This course is designed to move students from the basic patient interviewing skills that were introduced in the first year medical interviewing course to a higher skill level in patient communication which will be required during the clinical clerkship years. Using patient simulators, and with guidance from a faculty facilitator and peers in small groups, students will learn and practice "hard to ask questions" and deal with specific "content-sensitive" cases (e., Abuse, anger, drug use and sexuality). The second four weeks of the block will consist of the clinical procedures course, which will introduce students to basic diagnostic, therapeutic, invasive, and non-invasive procedures commonly performed in clinical medicine. This course gives students the opportunity to practice clinical procedures in a laboratory setting, through interactive small-group sessions with the faculty, using equipment and supplies normally found on patient care units. The goal is to familiarize students with basic clinical procedures that they may be asked to perform on patients during their clinical rotations.

Academic Career: Medical School

Course Component: Practicum

Grade Component: S/U Basis

Course Attributes: School of Medicine Year 2

MED 5261 - PATIENT, PHYSICIAN AND SOCIETY: POPULATION HEALTH

Minimum Credits: 0

Maximum Credits: 0

This course has been developed to bring students essential and timely content on selected topics in population health. The course will address issues of: health care finance from the patient's perspective; public health overview; social determinants of care; global health issues with an emphasis on the global burden of disease and related financial issues; financial preparedness for physicians (student debt and looking ahead to specialty choice); health care reform. Learning modalities will be large group didactic sessions, self-study segments, and small group exercises. Evaluation will be determined by: completion of assigned self-study units; attendance at large group sessions; completion of course segment assignments.

Academic Career: Medical School

Course Component: Lecture

Grade Component: S/U Basis

Course Attributes: School of Medicine Year 2

MED 5265 - EVIDENCE AND DISCOVERY 3

Minimum Credits: 0

Maximum Credits: 0

The third section of this block is the second part of a two-year course (methods and logic in medicine) intended to prepare students for their four-year, mentored scholarly project. In this segment, students will use the tools and skills obtained during the preceding course to analyze seminal literature in science and medicine. Evaluation will be based on students' critiques of assigned papers as well as on a formal presentation, to their small group, of a problem of interest to them, methods of approaching it and feasibility of their proposed approach.

Academic Career: Medical School

Course Component: Lecture

Grade Component: S/U Basis

Course Attributes: School of Medicine Year 2

MED 5322 - ADULT INPATIENT MEDICINE

Minimum Credits: 0

Maximum Credits: 0

This is an 8 week interdisciplinary clerkship divided into 2 blocks of 4 weeks each. During each block, the student is assigned to an inpatient rotation either at Montefiore, the Oakland V.A. medical center or Shadyside hospital. On the first day of each block, the student is required to attend didactic sessions given by faculty in emergency medicine and geriatric medicine. During the inpatient rotation, students are assigned their own patients and are taught, under supervision, to apply acquired skills to clinical situation. Usml in medicine is given at end of rotation and exam in CCM.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

MED 5328 - COMBINED AMBULATORY MEDICINE AND PEDIATRIC CLERKSHIP

Minimum Credits: 0

Maximum Credits: 0

The eight week combined ambulatory medicine and pediatrics clerkship provides a combination of four week experiences in the disciplines of internal medicine and pediatrics. One half-day per week the students participate in a multi-faceted, interactive didactic session learning advanced skills and discussing issues common to both of these disciplines. Student's clinical experiences in internal medicine and pediatrics are at office or clinic sites where they will be exposed to the spectrum of care that is provided in the ambulatory setting. Sites may include hospital-based practices and community locations. This is a required clerkship.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

MED 5345 - CLERKSHIP REPEAT COURSE

Minimum Credits: 0

Maximum Credits: 0

This course will be registered when the necessity to record a student's unsuccessful makeup is required. The course will be used only in those instances when the clerkship is repeated in a shorter or longer time frame than the previous course taken and failed. The specific title given the course will reflect the number of weeks repeated.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

MED 5346 - AMBULATORY CLERKSHIP REPEAT

Minimum Credits: 0

Maximum Credits: 0

This course will be registered when the necessity to record a student's repeat of an unsatisfactory performance in the ambulatory care clerkship of the third year. This course is used only in those instances when the clerkship is repeated in a shorter or longer time frame than the previous course taken and failed. The specific title given the course will reflect the number of weeks repeated.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

MED 5350 - DEATH, DYING AND THE DOCTOR

Minimum Credits: 0

Maximum Credits: 0

This elective offers medical students the opportunity to explore in depth some of the philosophical, cultural, religious, and existential aspects of human beings' encounter with death. The course will employ short stories and poetry, the visual arts, and more traditional scholarly work in the humanities and social sciences. Though the course is not a clinical introduction to palliative care, it is intended to enhance students' preparation for intelligent, self-aware, and skillful care of critically ill and dying patients. While students will have some contact with the palliative care consultation service during the elective, the primary goal of the course is to enrich students' appreciation of the meanings of death and dying as experienced and expressed by human beings throughout history, and in various cultural settings. Requirements will include weekly meetings to discuss assigned reading, observation with the palliative care service, and a personal reflection paper of 7 to 10 pages.

Academic Career: Medical School

Course Component: Practicum

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

MED 5398 - CLINICAL MILITARY CLERKSHIP

Minimum Credits: 0

Maximum Credits: 0

Medical students who are on military scholarship and must do an active duty tour, will be given credit provided it is approved by the school as a worthwhile education experience. This is a third year level, four week experience.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

MED 5399 - NON-CLINICAL MILITARY CLERKSHIP

Minimum Credits: 0

Maximum Credits: 0

Medical students who are on military scholarship and must do an active duty tour, will be given credit provided it is approved by the school as a worthwhile experience. The course will be given a course title appropriate to the contents at the time of evaluation. This is a third year level, four week experience.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

MED 5401 - MEDICINE ACTING INTERNSHIP

Minimum Credits: 0

Maximum Credits: 0

Elective provides student with exceptional insight into the practice and theory of internal medicine and serves as preparation for other intensive primary care oriented specialties. Student will have an advanced degree of primary patient involvement. Sub intern will perform initial patient evaluation and institute appropriate diagnostic, therapeutic measures under direct guidance and supervision of resident and attending physician and begin to learn order-writing skills. This experience serves as a bridge between basic clerkship and internship year. Also available at hospitals outside the health center.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5402 - ACTING INTERNSHIP IN MICU

Minimum Credits: 0

Maximum Credits: 0

Course designed to actively involve students in evaluation and therapy of critically ill patients with shock, respiratory failure and other acute life-threatening disorders. Students have primary responsibility for a limited number of patients in the ICU under direct supervision of medical residents and pulmonary critical care fellows. Student will perform initial evaluation of patient with a resident and assist in resuscitation and life support procedures. Students will formulate diagnosis and therapeutic plan of management.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5403 - CARDIAC INTENSIVE CARE UNIT

Minimum Credits: 0

Maximum Credits: 0

Course is designed to actively involve qualified students in evaluation and therapy of critically ill patients with acute myocardial infarction, unstable angina pectoris, disorders of cardiac rate and rhythm, heart failure, cardiogenic shock, and other life-threatening cardiac disorders. Students have

primary responsibilities for limited number of patients under direct supervision of residents and cardiology fellows. Students perform initial evaluation with resident/fellows and assist in all aspects of acute care with members of cicu-team.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5406 - EXTRAMURAL ACTING INTERNSHIP

Minimum Credits: 0

Maximum Credits: 0

Students will register for this course when participating in an internal medicine acting internship at an institution outside of the university of Pittsburgh school of medicine. This experience will not fulfill the required acting internship experience to meet graduation requirements.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5425 - COMBINED MEDICINE/PEDIATRICS HEALTH CARE TRANSITIONS

Minimum Credits: 0

Maximum Credits: 0

The goals of this elective are to introduce medical students to the specialty of combined internal medicine-pediatrics. In particular, this elective focuses on understanding the issues of patients with special health care needs as they transition from pediatric to adult-centered care. Students will be involved in numerous educational activities, including attending several outpatient specialty clinics, visiting pediatric rehabilitation facilities, performing home visits with patients, performing independent learning activities, and reading the current literature about transitions in care. Students are supervised by internal medicine, pediatric, and med/peds faculty members who are involved in caring for patients with special health care needs of all ages. If students have a particular interest in a certain subspecialty clinic, every effort will be made to accommodate a request made to the course director.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5430 - CLINICAL PHARMACOLOGY AND HYPERTENSION

Minimum Credits: 0

Maximum Credits: 0

During a 4 week elective, students will engage in daily patient care activities; seeing hypertensive patients and patients with treatment-related problems (adverse reactions, drug abuse, drug interaction problem, therapeutic misadventures). Student has opportunity to study diagnosis and treatment in hospitalized patients at PUH and VAH only, as well as in hypertensive clinics at both hospitals. Proper evaluation of specific therapy will be emphasized to the student indicating the role of clinical pharmacology in the internist's activities with reference to ongoing research whenever applicable.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5440 - CARDIOLOGY

Minimum Credits: 0

Maximum Credits: 0

This 4 week elective offers broad experience in clinical cardiology and exposure to current research problems at the health center as well as at hospitals outside health center. Activities center on cardiology teaching service, noninvasive graphics, coronary care unit, intensive cardiac monitoring area, central heart station (ECG), and nuclear cardiology. Students participate in daily activities including inpatient and outpatient consultations of the initial workup on patients. Students observe pacemaker insertions, cardioversions, cardiac catheterizations, etc.

Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5460 - ENDOCRINOLOGY AND METABOLISM

Minimum Credits: 0

Maximum Credits: 0

Emphasis is placed on clinical and lab evaluation and treatment of patients with endocrine disorders during 4 week elective. Under supervision of resident and fellow, student will perform initial workups of all patients seen in consultation by endocrinology service. Patients will be presented to attending physician and discussed in depth on rounds held 3-4 days/week. Students will perform initial evaluation of outpatients seen in endo-diabetic clinic. Goal is to provide student with knowledge of endocrinology that is expected of a general internist. The elective is also available at hospitals outside the health center.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5470 - GASTROENTEROLOGY AND NUTRITION

Minimum Credits: 0

Maximum Credits: 0

This 4 week elective gives students the exposure to the wide variety of diseases referable to the gastrointestinal tract, liver, biliary system and pancreas. Student is offered the opportunity to perform initial consultation workups of patients, observe and/or participate in special procedures as procto proctosigmoidoscopy, colonoscopy, endoscopy, liver biopsy and endoscopic retrograde cholangiopancreatography and attend clinical conferences and seminars for discussion of case findings, x-rays and histologic material for patient management. Also available at hospitals outside the health center.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5471 - OUTPATIENT GI AND HEPATOLOGY

Minimum Credits: 0

Maximum Credits: 0

This is a unique ambulatory care experience in a nonhospital setting. Students will take medical histories and perform physical examinations under supervision of a gastroenterologist. Student will observe the clinical evaluation as well as performance of endoscopic procedures in patients with gastrointestinal disorders.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5479 - ONCOLOGY

Minimum Credits: 0

Maximum Credits: 0

Elective provides opportunity to be involved in care of patients with diverse oncologic diseases. Students participate in consults at PUH, MUH, VAH, and PGH cancer institute outpatient clinic. Consults and rounds are supervised by residents and fellows. Objectives are to provide an in-depth understanding of patho-physiology of cancer and metastasis, as well as the principles of systemic treatment with standard anti-neoplastic agents and rationale and approach of clinical investigation of new approaches to cancer diagnosis and therapy.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5480 - HEMATOLOGY/ONCOLOGY

Minimum Credits: 0

Maximum Credits: 0

This 4 week elective provides an opportunity to be involved in the care of patients with diverse hematologic and oncologic diseases. Consultations are supervised by the fellows with formal rounds being made on all patients seen, resident and fellows with formal rounds being made on all patients seen in consultation. Clinical and research conferences and morphology review conferences are held weekly. Also available at hospitals outside the health center.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5481 - BLOOD COAGULATION

Minimum Credits: 0

Maximum Credits: 0

This 4 week elective offers a number of interesting and useful experiences. Student is exposed to both outpatient and inpatient bleeding problems. In addition, student learns to evaluate and interpret clotting tests. There is also an opportunity to meet, examine and become involved in the treatment of 200 hemophiliacs followed in the hemophilia center of Western pa.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5485 - STEM CELL TRANSPLANTATION SERVC

Minimum Credits: 0

Maximum Credits: 0

This 4-week elective supervised by a hematology fellow and a dedicated nurse practitioner manages patients receiving high dose chemotherapy and the complications of stem cell transplantation (eg. Graft versus host disease, opportunistic infections). Clinical and research conferences are held weekly.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5490 - INFECTIOUS DISEASES

Minimum Credits: 0

Maximum Credits: 0

This 4 week elective will acquaint the student with the clinical and laboratory aspects of infectious diseases, with varying emphasis on one or the other, may be tailor-made to the interest of the individual student. Student will be supervised by resident or fellow and will make daily rounds on patients. Students will workup cases and present them to a senior staff member with whom they will also have daily contact. Student will learn to correlate and evaluate laboratory findings. Formal rounds are held weekly where pathogenesis, diagnosis and treatment are discussed.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5491 - WOMEN'S HEALTH

Minimum Credits: 0

Maximum Credits: 0

The Women's Health Elective is a multidisciplinary elective facilitated by the Department of General Internal Medicine. Students will rotate primarily with the General Internal Medicine Women's Health Faculty in the Montefiore Outpatient Clinic. They will also have the opportunity to work with several other disciplines including gynecology, urogynecology, gastroenterology, cardiology, rheumatology, endocrinology, maternal fetal medicine, genetics, pelvic floor physical therapy, breast oncology, and cancer survivorship. Clinical preceptors have a passion for women's health and gender-based care. These experiences are not guaranteed every rotation and are subject to clinic availability. Students will also partake in a core women's health didactic curriculum and weekly lunch lectures hosted by the Section of Women's Health. Topics vary by year but tend to cover advanced women's health topics such as care of the pregnant patient, interpersonal violence, hypercoagulable disorders in women, challenging contraception cases, gynecologic issues (endometriosis, fibroids, chronic pelvic pain), depression/anxiety/PTSD, migraines, thyroid disorders, and other conditions that have a gender predisposition. Students will be involved in basic bedside gynecologic procedures such as IUD insertion/removal, endometrial biopsy, nexplanon insertion/removal, and participate in routine and acute gynecologic care. Students will be asked to review a journal article toward the end of the rotation in a small group setting. This rotation counts as part of the Women's Health AOC Elective requirement. Away students are encouraged to apply but will need to be granted permission to ensure a good fit with this elective.

Academic Career: Medical School

Course Component: Clinical

Grade Component: Exchange MED SU5

MED 5500 - PULMONARY MEDICINE

Minimum Credits: 0

Maximum Credits: 0

Elective is aimed at acquainting student with the diagnostic and therapeutic approaches to the common pulmonary diseases, including lung cancer, asthma, chronic bronchitis, emphysema, etc. Student will become acquainted specifically with chest roentgenogram and subtleties of its interpretation through daily rounds with staff and fellows. Student will work as a team with a fellow and staff attending seeing consultations and developing therapeutic and diagnostic plans which will be reviewed and critiqued by the fellow and attending. This is a 4 week elective.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5510 - RHEUMATOLOGY AND IMMUNOLOGY

Minimum Credits: 0

Maximum Credits: 0

This four week elective is engaged in an integrated program of patient care, teaching and research with emphasis on clinical evaluation and treatment of patients with a variety of rheumatic and immunologic disorders. Students perform initial exam of patients seen under the supervision of a fellow and rotating residents and take an active role in teaching rounds with a member of the faculty specifically assigned to this service. Students may share in responsibility for primary care of patients admitted to hospital and several outpatient clinics.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5520 - RENAL DISEASE

Minimum Credits: 0

Maximum Credits: 0

This 4 week elective provides exposure to a full range of renal and fluid-electrolyte disorders. Students interview and examine patients admitted to the care of the renal staff physician or referred consultation, will follow the patients jointly with the nephrology fellow and participate in daily rounds with faculty. Attending also conducts ad hoc discussions regarding renal pathophysiology, diagnosis and management of acute and chronic renal diseases, and electrolyte disorders. Students attend regularly scheduled conferences. This elective is also available at hospitals outside the health center.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5530 - NUTRITION AND INTESTINAL HEALTH

Minimum Credits: 0

Maximum Credits: 0

This elective is designed to offer students a learning experience in both the science and practice of medical nutrition. Under the supervision of faculty and fellows, students will be given responsibility for evaluation and management of patients seen in nutrition clinics, admitted to the medical and surgical services. Daily work and teaching rounds are supplemented with regular conferences and seminars on basic and clinical topics in nutrition. Students will be required to participate in weekly journal club to review current literature pertinent to nutrition.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5540 - GERIATRIC MEDICINE

Minimum Credits: 0

Maximum Credits: 0

This 4 week elective will introduce students to fundamentals of practice of geriatric medicine. Students will participate in all aspects of a multidisciplinary clinic, working primarily with interests but also with geriatric psychiatrists and geriatric social workers. Primary care of the elderly will be stressed, but consultative work will also be done. Conference will be held to discuss cases with all team members and for more didactic teaching, including weekly geriatric psychiatry conferences. Also participate in evaluation and care of nursing home patients, in home visits, family conferences and WPIC.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5560 - PULMONARY INTENSIVE CARE UNIT

Minimum Credits: 0

Maximum Credits: 0

This elective is designed to actively involve qualified students in evaluation and therapy of critically ill medical patients with shock, respiratory failure and other acute life-threatening disorders. Students have primary patient responsibilities for a limited number of patients in the ICU under direct supervision of medical residents and pulmonary critical care fellows. Student will perform initial evaluation of patient with a resident and will assist in resuscitation and life support procedures. Students will formulate diagnostic and therapeutic plan of management.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5565 - PALLIATIVE/HOSPICE CARE

Minimum Credits: 0

Maximum Credits: 0

A structured clinical rotation to increase awareness, knowledge and clinical skills when dealing with terminally ill patients and their families. Time will be spent doing consults and seeing patients and families in outpatient clinics and their homes. The objectives include assess, diagnose and effectively manage common problems and symptoms of terminal illness; recognize and know how to deal with symptoms of normal and complicated grief; recognize common psychosocial and spiritual issues faced; understand the impact on the family and friends; develop appropriate communication skills.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5570 - LIVER TRANSPLANT

Minimum Credits: 0

Maximum Credits: 0

This 4 week elective offers an opportunity to participate in the workup and evaluation of prospective liver and gut transplant candidates. Student will work closely with GI fellow and senior staff of the division. Student will be taught the criteria utilized to make a decision for transplantation and an appreciation of the care required in the management of such patients.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5590 - SUBSTANCE ABUSE IN PRIMARY CARE

Minimum Credits: 0

Maximum Credits: 0

This elective is offered to explore diagnosis and treatment of substance abuse disorders in primary care setting (both inpatient and outpatient). A variety of clinical sites will be used to accomplish objectives of identifying common presenting symptoms, become familiar with diagnostic criteria for dependence vs hazardous use, become familiar with variety of screening and assessment instruments, participate in patient detox, experience inpatient rehabilitation, implement brief interventions for hazardous drinkers, experience 12 step program, participate in smoking cessation counseling.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5600 - OUTPATIENT MEDICINE

Minimum Credits: 0

Maximum Credits: 0

This 4 week elective will introduce students to the practice of outpatient medicine. Student will have the opportunity to evaluate new patients in the outpatient setting and plan appropriate investigative and therapeutic approaches. Student will also provide follow-up care of patients with chronic illness in an attempt to maintain their maximum wellbeing and also evaluate new symptoms in patients with chronic illness. Student will be involved in decision-making regarding the need for hospitalization and how to minimize this aspect of patient care.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5601 - COMMUNITY HEALTH

Minimum Credits: 0

Maximum Credits: 0

The community health elective is a four-week course designed to expose fourth-year medical students to health care access and public health issues among underserved populations in the Pittsburgh area. The curriculum will include assigned readings/research on health issues for underserved populations, particularly in community organizing and health promotion/disease prevention. Clinical experience involves supervising patient care in many locations, such as: community health centers (squirrel hill community health center, hilltop clinic, Mt. Oliver, McKeesport, and Wilkinsburg); family links; Beth haven; wellspring; jubilee kitchen. Also included are those homeless clinics or outreach locations operated by the program for health care to underserved populations (PHCUP): (operation safety net; Birmingham clinic; the salvation army Northside). Exposure will be given to multi-disciplinary outreach efforts by the health care for the homeless project and other social services agencies. Students will also spend one-half day at the health law clinic assisting law students and their clients on disability cases, tenant-landlord dispute and other legal services. Students may also have the opportunity to assist clients at their court hearings. Students will also have the opportunity to lead health talks at community agencies and present at the community health forum. Very interested and motivated students will be taught the basics of designing survey, conducting focus groups and community needs assessment. There are also opportunities to participate in ongoing research projects by PHCUP. Students participating in the underserved area of concentration are given time to pursue their longitudinal projects. A short self-reflective or advocacy paper is also required. Patient care is sixty percent of the elective with thirty percent of that spent at the Birmingham clinic. Twenty percent is spent within multi-disciplinary outreach. Twenty percent of the four-week elective will be spent doing research, attending or giving health talks and a presentation.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5610 - BONE MARROW TRANSPLANTATION

Minimum Credits: 0

Maximum Credits: 0

Provides an introduction to adult bone marrow transplantation for the treatment of acute and chronic leukemia, aplastic anemia, other hematologic diseases and treatment of solid tumors. Student has an opportunity to participate in initial selection of patients, the intake interview, and the marrow harvesting procedure and become familiar with various marrow preparative regimens. Student participates in daily patient management rounds, treatment of complications, including graft vs host disease, interstitial pneumonia and various infectious problems.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5620 - INTERNAL MEDICINE CONSULTATION

Minimum Credits: 0

Maximum Credits: 0

This consult service provides consultation for patients on the psychiatric service. Students participate as partners with a senior medical resident under direct supervision of the course director. Objectives are that student be proficient in HX, PE and assessment required of GIM consultant; be proficient in fiscally responsible diagnosis and treatment; be proficient in clinical pharmacology of psychiatric patient and develop skills required to participate as a member of the psychiatric therapeutic team.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5630 - ADVANCED CLINICAL REASONING

Minimum Credits: 0

Maximum Credits: 0

Academic Career: Medical School

Course Component: Lecture

Grade Component: H/HS/S/LS/U

MED 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0

Maximum Credits: 0

An individualized course of study may be arranged with the department of internal medicine to fit the student's needs. The student will meet with a department faculty person to design a clinical course of study for a four-week period of time. A written proposal must be approved by the faculty member as well as the student's scheduling advisor. When approvals have been received, the school registrar will schedule the course and notify the department student coordinator.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5655 - INTERNAL MEDICINE SUBSPECIALTY

Minimum Credits: 0

Maximum Credits: 0

This elective will be divided into two (2) periods for two (2) weeks each. Students taking this elective will chose any two of the subspecialties listed: rheumatology & immunology; pulmonary medicine; gastroenterology & nutrition; endocrinology & nutrition; cardiology, infectious disease;

palliative/hospice care; geriatric medicine; renal disease and hematology/oncology.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5710 - CLINICAL PHARMACOLOGY (ILS)

Minimum Credits: 0

Maximum Credits: 0

The integrated course program consists of four overlapping components; general clinical pharmacology; disease-specific clinical topics; workshops; and four sessions on recently developed drugs. The format of the course includes traditional lectures, case discussions, and discussions of current articles, problem-based learning, and workshops. Computer assisted techniques will be utilized.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5715 - NEOPLASIA & NEOPLASTIC DISEASE

Minimum Credits: 0

Maximum Credits: 0

Selective will emphasize principles of neoplastic and neoplastic disease. There will be an emphasis on interactive participation in a variety of clinical and basic activities. Format will include traditional as well as interactive lectures, case discussions, discussion of current articles, problem-based learning, workshops and clinical/basic science experiences.

Academic Career: Medical School

Course Component: Lecture

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5750 - GET READY FOR RESIDENCY INTERNAL MEDICINE

Minimum Credits: 0

Maximum Credits: 0

This elective is an intensive preparation for students who are about to enter residency. Students will be provided with a combination of general and specialty-specific, clinically relevant content in a variety of modalities. The focus will be on content that will prepare the student to function at the starting level of an intern (and meet the expected intern-level milestones) after graduation. Teaching modalities will include simulation, small group sessions, skills workshops, standardized patient cases, and a limited number of high-yield lectures.

Academic Career: Medical School

Course Component: Clinical

Grade Component: S/U Basis

MED 5765 - PRECLERKSHIP COURSE

Minimum Credits: 0

Maximum Credits: 0

The course is an introduction and transition for rising third year medical students to provide necessary skills and information. The daily sessions include large and small group formats. Topics include: an introduction to the combined clinical years, industry relations, communication skills, roundsmanship, honor council, infection control, clinical logs, general rules for a successful clerkship, and using the electronic patient record training. Clerkship directors will meet the students in skills workshops to and instruct in writing prescriptions, order writing, history and physical write-up reviews, and soap (subjective data, objective data, assessment, and plan) notes. Exercises will include a hands-on hospital simulation on pandemic and disaster preparedness, patient assessment workshops and interdisciplinary teamwork presentations (allied health professional presentation and panel, and a clinical presentation on resident team/nursing support). All students will participate in a CPR recertification course, with respiratory n95 mask fit testing. There will also be a lecture on professionalism followed by humanism honor society group read vignettes presented by student members of the Watson humanism honor society. Faculty facilitators will then conduct humanism in medicine small group sessions. Attendance at all sessions is required to satisfactorily complete the course. Grades will be based on attendance, course participation, and

completion of homework assignments.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5771 - ASSESSMENT WEEK

Minimum Credits: 0

Maximum Credits: 0

The overall goal of this course is for students, who are entering the fourth year of the first professional medicine program, to complete a series of structured assessments and participate in focused review sessions designed to enhance preparation for the National Board of Medical Examiners (NBME) United States Medical Licensing Examination (USMLE), step 2 clinical knowledge and clinical skills exams. Specific objectives include: reviewing common important dermatological conditions and how to describe skin lesions. Reviewing common radiologic findings that every graduating student should know how to identify. Reviewing targeted areas in obstetrics and gynecology in preparation for step 2 CK. Interpreting clinical pathological lab values to provide better patient care. Interpreting common and life-threatening EKG findings. Practicing with step 2 CK exam questions to better understand content and timing of the exam. Practicing common clinical procedures often performed in acting internships.

Academic Career: Medical School

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Attributes: School of Medicine Year 4

MED 5777 - GERIATRICS AND ONCOLOGY

Minimum Credits: 0

Maximum Credits: 0

This one week course provides an update for clerkship students in the related areas of cancer diagnosis and treatment and in the recognition and approach to common problems in older adults in various environments. Updates on specific advances in both fields are presented as well as several sessions on the intersection of cancer diagnosis and care as specifically relevant to aging populations. Teaching modalities include lecture, small group sessions and interactive skill sessions.

Academic Career: Medical School

Course Component: Workshop

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5778 - CLINICAL FOCUS COURSE: GERIATRICS AND ONCOLOGY

Minimum Credits: 0

Maximum Credits: 0

The week-long geriatrics and oncology course focuses on the critical issues of aging and cancer. This course is placed in the curriculum at the mid-point of the third year, which is a unique teachable moment where students can benefit from focused instruction on key topics which are commonly encountered during the core clerkships. The coverage of both topics is designed to build on the clinical exposure that students have had; both to the impact of the aging population on clinical practice as well as the pervasiveness of cancer as a medical challenge. Both topics address practical issues related to care of these patients, recent advances in clinical care, and also have an experiential component. Students visit with patients at the Hillman Cancer Center during the oncology segment and visit one of three local nursing homes to meet with the patients and the people who care for them during the geriatrics section. Conferences follow these experiences to allow faculty-guided discussions of the experience.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5779 - CLINICAL FOCUS: GERIATRICS

Minimum Credits: 0

Maximum Credits: 0

The week-long geriatric course focuses on an interprofessional team approach to complex issues related to aging, which span the basic sciences,

clinical acumen, and profound socioeconomic issues for our society. The course is intended to help medical students, as well as selected nursing and pharmacy students, understand the critical issues of aging, and the importance of team-based health care for geriatric patients in long term care facilities. The course is placed in the curriculum at the mid-point of the third year, which is a unique teachable moment where students can benefit from focused instruction on key topics which are commonly encountered during the core clerkships. The course is designed to provide students with the knowledge, skills, and experience to recognize and approach common problems in older adults in inpatient and outpatient settings as well as in the nursing home.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5810 - MEDICAL RESEARCH

Minimum Credits: 0

Maximum Credits: 0

A number of pure research opportunities are available to interested students and such arrangements should be made with individual members of the department. Research elective experiences may be intellectually rewarding and afford the opportunity to determine their aptitude for research and teach them a life-long way of thinking about the approach to biological problems whether or not they intend to make research a career. A few that are available are research in renal electrolyte physiology, investigative gastroenterology and research in hematology/oncology.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5815 - RESEARCH IN CLINICAL PHARMACOLOGY

Minimum Credits: 0

Maximum Credits: 0

This elective offers participation in research activities within the center for clinical pharmacology. The student will be integrated into an ongoing research project being conducted at the center, with the type and degree of participation appropriately adjusted for prior research experience. The objective of the course is to acquaint students with career opportunities in clinical pharmacology; introduce students to modern biomedical research and increase student's knowledge of a specific area in clinical pharmacology.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5830 - INVESTIGATIVE GASTROENTEROLOGY

Minimum Credits: 0

Maximum Credits: 0

Areas of investigation include clinical studies of constipation and defecatory disorders, fecal incontinence, gastric emptying, lab studies of changes in bile and liver chemistry occurring during liver regeneration, partial obstruction of common bile duct, or biliary lithotripsy. This 4 week elective is conducted at Montefiore hospital.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5831 - MEDICAL ONCOLOGY RESEARCH

Minimum Credits: 0

Maximum Credits: 0

This 8 week elective is available to students interested in laboratory and/or clinical research experience in medical oncology. An approved prospectus must be prepared prior to the start of project.

Academic Career: Medical School

Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MED 5833 - RENAL PHYSIOLOGY RESEARCH

Minimum Credits: 0

Maximum Credits: 0

Intended for the student with special interest in renal physiology especially as it applies to human medicine. Exposure to techniques employed in the study of human and animal renal physiology and body fluid metabolism, including standard clearance techniques, total balance study and renal micro puncture. Assistance with and direct involvement in an ongoing research project and in certain cases, the student may initiate a related project. Adequate time will be reserved for literature research and data analysis. Optimum time for this elective is 16 weeks.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5835 - RHEUM & CLINICAL IMMUNO RESEARCH

Minimum Credits: 0

Maximum Credits: 0

Students may participate in either clinical or laboratory based research projects. Student will complete background reading on selected area of concentration. Goal is for student to present findings at a research seminar, a regional or national meeting or as a publication in a professional journal.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MED 5900 - EXTRAMURAL INTERNAL MEDICINE

Minimum Credits: 0

Maximum Credits: 0

This pertains to all senior electives taken at other schools.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

MED 5901 - INDEPENDENT STUDY

Minimum Credits: 0

Maximum Credits: 0

The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience. This course is for students outside the school of medicine and will be specifically titled to define content of experience.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

MED 5902 - ADVANCED GENERAL MEDICINE

Minimum Credits: 0

Maximum Credits: 0

This 4 week elective will introduce medical students to a wide variety of health care experiences in general internal medicine. This will include opportunities to evaluate patients in the in- and out-patient settings, review physical diagnosis skills, improve interviewing skills, evaluate and

analyze laboratory, radiology and pathology data, attend a variety of didactic lectures and participate in case presentations. Settings will include a community medicine program, a veteran's health care system and a tertiary care medical center.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

MED 5910 - NARATV, LIT & EXPRN OF ILLNESS

Minimum Credits: 0

Maximum Credits: 0

Will explore culture and practice of medicine from perspective of an outside observer through use of various types of medical literature (poetry, fiction, non-fiction and essays). Clinical experiences traditionally considered to lie outside physician's role designed to complement exploration of perceptions patients have of hospitals and doctors. Sessions focus on assigned readings, with attention to journal entries and weekly short essays. Clinical experiences, for two half days per week, complement participant's interests, seminar readings, and goals of experiencing clinical setting through a non-medical lens.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

MED 5911 - TEACHING MEDICAL STUDENTS HOW TO TEACH

Minimum Credits: 0

Maximum Credits: 0

Those who go on to post-graduate education (residency) at teaching hospitals will be responsible for teaching medical students. This elective is designed to help our graduates acquire the teaching skills necessary to effectively teach medical students. This fourth-year level course has two primary objectives: 1) introducing fourth year students to the skills of teaching; and 2) enhancing physical diagnosis skills while practicing the skills of effective teaching. This fourth-year level course will consist of didactic instruction, small group exercises, and working with standardized patients. Topics to be covered include: giving an effective lecture; precepting a medical student; giving feedback; evaluating students; dealing with problem learners; teaching clinical reasoning and just plain teaching. Physical diagnosis instruction will highlight core information and more advanced skills. Small group exercises will include giving a mini lecture; running a PBL; teaching about oral presentations/writing up h & PS; and teaching at the bedside. The students will alternate being teacher and student. Other practical teaching experiences working with current third year students may be possible depending on interest and availability. These opportunities could include: running a student-teaching attending session in medicine; working with current students participating in an outpatient setting; facilitating a small group (e.g. Ethics). Students will also learn how to critique teaching sessions by evaluating faculty lectures and sitting in on small groups and evaluating the facilitator. To successfully complete this course you must attend all scheduled sessions, give one presentation of a mini-lecture to the group, and critique assigned educational experiences.

Academic Career: Medical School

Course Component: Practicum

Grade Component: H/HS/S/LS/U

MED 5915 - SCIENTIFIC LITERACY, NUMERACY, & CLINICAL DECISION-MAKING

Minimum Credits: 0

Maximum Credits: 0

This elective explores the common sources of human cognitive errors and fundamental concepts of numeracy to permit comprehension of scientific literature and allow sound clinical decision making. Students will learn how to critically appraise and systematically review randomized controlled trials applying the knowledge to decision making process as well as learn how cognitive biases, conflicts of interest, group dynamics, financial and other incentives can adversely influence clinical decisions.

Academic Career: Medical School

Course Component: Seminar

Grade Component: H/HS/S/LS/U

MED 5920 - GLOBAL HEALTH PREPARATORY SEMINAR

Minimum Credits: 0

Maximum Credits: 0

This is a four (4) week seminar designed to prepare a student or resident for an international clinical experience and to provide a foundation for future

global health advocacy and activism. The seminar will consist of 1/3 didactic instructions, 1/3 team-based learning and 1/3 practical experiential learning. It is organized into 4 tracks: 1) global health public policy 2) ethics & human rights 3) evidence based medicine for developing countries and clinical skills and 4) tropical infections. Faculty from GSPIA will provide guest lectures on selected topics regarding NGOs, global actors, development, policy analysis, corruption and transnational governance. Dr. Barnard will coordinate the bioethics and human rights track which highlights important documents regarding the right to health, policy and system factors contributing to health inequalities, social determinants of health and research ethics through case studies. Dr. Veldkamp coordinates the tropical medicine track that provides in-depth exploration of the diagnosis and treatment of common parasitic diseases, HIV, TB, and malaria according to international guidelines and local context. Participants will be exposed to hands-on sessions in basic microscopic examination. Lastly, Dr. Bui will cover EBM in developing countries reviewing existing literature, physical exam skills/tools including ultrasound, low cost/bedside diagnostics, algorithms and clinical procedures relevant for the general practitioners in developing countries.

Academic Career: Medical School

Course Component: Seminar

Grade Component: H/HS/S/LS/U

MED 5925 - STREET MEDICINE - OPERATION SAFETY NET

Minimum Credits: 0

Maximum Credits: 0

This one month clinical elective will focus on the health care of those sleeping on the streets of Pittsburgh. This group presents significant challenges in terms of access to care, continuity of care, cultural barriers, as well as a variety of medical issues. By working directly with the street homeless in their environment, students will see the health care system "from the outside" and learn to partner with a largely alienated population to improve their health. Operation safety net (OSN) is a unique program of the Pittsburgh mercy health system, located at UPMC Mercy, in which walking teams visit the unsheltered homeless in the alleys, under the bridges and along the river banks where they live. Follow-up care, including medical, psychiatric, social and housing services are provided by a dedicated case management team. An inpatient consult service specializes in the interface of the street homeless with the medical system.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

MED 5991 - FRESHMAN YEAR

Minimum Credits: 0

Maximum Credits: 0

Academic Career: Medical School

Course Component: Clinical

Grade Component: No Grade Required

Course Attributes: School of Medicine Year 1

MED 5992 - SOPHOMORE YEAR

Minimum Credits: 0

Maximum Credits: 0

Academic Career: Medical School

Course Component: Clinical

Grade Component: No Grade Required

Course Attributes: School of Medicine Year 2

MED 5993 - JUNIOR YEAR

Minimum Credits: 0

Maximum Credits: 0

Academic Career: Medical School

Course Component: Clinical

Grade Component: No Grade Required

Course Attributes: School of Medicine Year 3

MED 5994 - SENIOR YEAR

Minimum Credits: 0

Maximum Credits: 0

Academic Career: Medical School

Course Component: Clinical

Grade Component: No Grade Required

Course Attributes: School of Medicine Year 4

MED 5996 - PROLOGUE TO MEDICINE PROGRAM

Minimum Credits: 0

Maximum Credits: 0

The five week prologue to medicine program promotes academic achievement and retention by introducing students to the courses that they will take during the first year of medical school. The program features a non-graded instruction in the following areas: introduction to medical gross anatomy, cell biology, and introduction to professionalism. Problem-based learning (PBL) exercises and learning/study strategies instruction supplement the curriculum. All classes are designed to model the content and pace of the actual courses. The courses are taught by the same medical school faculty who teach the courses during the school year.

Academic Career: Medical School

Course Component: Lecture

Grade Component: No Grade Required

MED 5999 - FULL TIME RESEARCH

Minimum Credits: 0

Maximum Credits: 0

Students may participate in a research fellowship with a basic science or clinical researcher at the University of Pittsburgh or at another University for a period of one year. The fellowship must be competitive (open to other students with the best qualified student chosen) and must be approved by the associate dean for student affairs in the medical school.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: No Grade Required

Medicine - Pharmacology

MSMPHL 2300 - MS THESIS RESEARCH

Minimum Credits: 1

Maximum Credits: 14

A directed research project which results in a thesis for a master's degree

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: Molecular Biophy & Struct Bio (MS)

MSMPHL 2310 - PRINCIPLES OF PHARMACOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course consists of a series of lectures and tutorial sessions that focus on the general principles of pharmacology. Major topics are principles of pharmacokinetics (including drug absorption, distribution, and metabolism), pharmacodynamics (quantitation of drug-receptor interactions) and mechanisms of action of cardiovascular and autonomic drugs. In addition, this course will include both animal laboratory and human simulator demonstrations that illustrate important pharmacological principles discussed in class.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSMPHL 2350 - RESEARCH SEMINAR

Minimum Credits: 1
Maximum Credits: 1

Beginning in the second year of the program students will be required to attend the departmental seminar series. These seminars are held approximately once a week throughout the fall and spring semesters and include presentations by nationally and internationally recognized visiting researchers in pharmacology and related fields. In order to receive credit for the course, students must attend a minimum of 80% of the seminars.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

MSMPHL 2355 - PHARMACOLOGY SUMMER SEMINAR

Minimum Credits: 1
Maximum Credits: 1

Beginning in the second year of the program students will be required to attend the departmental seminar series. These seminars are held approximately once a week throughout the fall and spring semesters and include presentations by nationally and internationally recognized visiting researchers in pharmacology and related fields. In order to receive credit for the course, students must attend a minimum of 80% of the seminars.

Present once each summer and attend a minimum of 80% of the summer seminars in order to receive credit for the course.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis

MSMPHL 2360 - BIOLOGY OF SIGNAL TRANSDUCTION

Minimum Credits: 3
Maximum Credits: 3

This course will explore different types of signaling pathways activated by receptor-ligand interactions. Topics to be covered include, but are not limited to: g-protein linked receptors, adenylate cyclases, small gtpases, kinases and phosphatases, nitric oxide, phospholipases, steroid hormone signaling, and pharmacological applications of signaling pathways.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MSMPHL 2370 - DRUG DISCOVERY

Minimum Credits: 3
Maximum Credits: 3

Drug discovery is an interdisciplinary science that seeks to identify small molecular and/or biologic probes and to understand at the molecular level how these probes affect macromolecular processes. This course will discuss various topics that are relevant to current approaches and principles in drug discovery including target validation, drug origins, cell based screening, high throughput screening, proteomic approaches to drug discovery, computational biological aspects of drug discovery, and pharmacoinformatics, as well as topics in preclinical drug development and intellectual property. The course will include case studies intended to aid students in a full understanding of the drug discovery process.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSMPHL 2390 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 9

This course provides an opportunity for students to carry out a specific laboratory project in any area of interest in pharmacology.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

Course Requirements: PLAN: Molecular Pharmacology (PHD) or Interdis Biomedical (UNK)

MSMPHL 3300 - PHD DISSERTATION RESEARCH

Minimum Credits: 1

Maximum Credits: 14

After advancement to candidacy for the Ph.D. degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation. A minimum of 40 credits of this course are required for the Ph.D. degree in the school of medicine.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: Molecular Pharmacology (PHD)

MSMPHL 3310 - CANCER BIOLOGY AND THERAPEUTICS

Minimum Credits: 3

Maximum Credits: 3

This course presents biochemical and clinical aspects of cancer biology and therapy, and is designed for graduate students training in the basic sciences or medicine. The lectures cover: the biology of normal and neoplastic cells, mechanisms of neoplastic transformation, chemical and environmental carcinogenesis, viral oncogenesis, breast and prostate cancer, radiotherapy, tumor immunology chemotherapy and chemoprevention.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSMPHL 3320 - JOURNAL CLUB

Minimum Credits: 1

Maximum Credits: 1

Beginning in the second year of the program students will participate in the departmental Journal Club. Presentations will be held each week that the department hosts a seminar speaker (i.e. 2-3 times/month) during the fall and spring semester. Students entering their fifth year of study may petition the program director to be excused from the spring session of the Journal Club. Sixth year students and beyond are not required to enroll in Journal Club although their attendance is encouraged. A log-in sheet will be available at all Journal Club meetings. All students in attendance will complete an anonymous peer-evaluation sheet that will be provided to the presenter. Students must inform the program director in advance if they are unable to attend a specific Journal Club. Excusable absences from Journal Club include individual or family illness or presentation (i.e. poster, platform talk) at a major scientific conference. Students are allowed two unexcused absence/semester.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

MSMPHL 3330 - GENOME INSTABILITY AND HUMAN DISEASE

Minimum Credits: 3

Maximum Credits: 3

Mechanisms that maintain genome stability allowed the origin of species. DNA damage is omnipresent and DNA repair and DNA damage tolerance mechanisms are interwoven in systems that control transcription, replication, cell division, signal transduction, cell death and evolution. More than 40 distinct human diseases are caused by defects in DNA repair, including syndromes of impaired development, immunodeficiency, cancer predisposition, neurodegeneration, and premature aging. This course will emphasize the molecular biology and biochemistry of DNA repair, placing these mechanisms into the context of other cellular processes as they pertain to health and disease. Environmental, clinical and endogenous sources of DNA damage will be discussed. An understanding of the fundamental role of DNA repair mechanisms in immunology, oncology, neurology, and aging will be central to all lectures.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSMPHL 3335 - DNA REPAIR JOURNAL

Minimum Credits: 1

Maximum Credits: 1

The course is a journal club on current topics in DNA repair as it relates to human disease, DNA damage processing, genome stability, telomere biology, cancer and aging. Primarily designed for students in the second year of their graduate program and beyond. Presentations will be held twice per month during the fall and spring semester. In order to receive credit for the course, students must attend a minimum of 80% of the sessions, present once per semester, participate in class discussion and complete anonymous peer-evaluations for each presenter. One week prior to presentation, presenters will identify a recent publication in the field and distribute it to their classmates. Presenters must define the hypothesis of the paper, provide background and significance, describe experimental methods used, interpret the data, conclude whether the data support the authors' conclusions and propose future experiments. Grades will be determined by attendance (10%), class participation (20%) and quality of presentation (70%).

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

MSMPHL 3340 - FOUNDATIONS OF SUCCESSFUL CAREER PLANNING AND DEVELOPMENT PART 1

Minimum Credits: 1

Maximum Credits: 1

The goals of the fall and spring consecutive courses are to enhance the career development capacity and foster the life-long career management habits of graduate students and postdocs to maximize their scholarly training success and facilitate personal career outcomes. The courses will provide foundational background through experiential learning and small-group discussions, while facilitating peer mentoring. These approaches support the self-construction of individually relevant understandings of career development that is consistent with similar independence in scholarly expertise. The areas of focus include self-assessments, career exploration, goal setting, professional development, career planning and management, career adaptability, and additional topics identified by students. Participation in the subsequent spring course is expected for those enrolled in the fall prerequisite course.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

MSMPHL 3341 - FOUNDATIONS OF SUCCESSFUL CAREER PLANNING AND DEVELOPMENT PART 2

Minimum Credits: 1

Maximum Credits: 1

The goals of the fall and spring consecutive courses are to enhance the career development capacity and foster the life-long career management habits of graduate students and postdocs to maximize their scholarly training success and facilitate personal career outcomes. The courses will provide foundational background through experiential learning and small-group discussions, while facilitating peer mentoring. These approaches support the self-construction of individually relevant understandings of career development that is consistent with similar independence in scholarly expertise. The areas of focus include self-assessments, career exploration, goal setting, professional development, career planning and management, career adaptability, and additional topics identified by students. Participation in the subsequent spring course is expected for those enrolled in the fall prerequisite course.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: PREQ: MSMPHL 3340

MSMPHL 3360 - MOLECULAR PHARMACOLOGY

Minimum Credits: 2

Maximum Credits: 2

This course examines molecular mechanisms of drug interactions with an emphasis on drugs that modulate cell signaling, cellular responses to drugs, and drug discovery. The course will include student participation through presentations and discussion of relevant contemporary scientific literature. Topics include: cell cycle checkpoints and anti-cancer drugs, therapeutic control of ion channels, and blood glucose, anti-inflammatory agents and nuclear receptor signaling, and molecular mechanisms of drugs used for the treatment of cardiovascular diseases.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSMPHL 3375 - NEUROPHARMACOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course will broadly review neuropharmacology and neurobiology, study monoamine, cholinergic and GPCR biology, and explore the blood-brain barrier and its significance to neuropharmacology. The course will focus on the molecular mechanisms of drug action for different classes of compounds including, but not limited to, antidepressants, antipsychotics, anti-epileptics, anesthetics, weight loss, stimulants, and neuroprotective, addiction, pain and migraine drugs. In addition to the formal lectures the course will emphasize critical reading of the primary literature through journal-club style discussions and cover the most recent treatment and therapeutic avenues being developed for a broad range of neurologic and psychiatric disorders. The course is ideally suited for molecular pharmacology and neuroscience graduates students or any other graduate student with interest in neurological diseases and their treatments. The course is also appropriate for pre-professional undergraduates who have completed 4 semesters of chemistry and 2 semesters of biology.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSMPHL 3750 - ANGIOGENESIS

Minimum Credits: 3

Maximum Credits: 3

Angiogenesis/vasculogenesis is one of the important research areas in biomedical sciences. This course will provide extensive basic knowledge of the developmental, cellular, and molecular biology of angiogenesis and most recent advances in its clinical applications. Topics include: 1. Angiogenesis in physiological and pathological process; 2. Molecular and cellular regulation of angiogenesis; 3. Current advances in angiogenic therapies. Recent outstanding research publications will also be discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MSMPHL 5833 - ADVANCED PHARMACOLOGY

Minimum Credits: 0

Maximum Credits: 0

Opportunities for application of advanced experimental methods in areas of special interest to the student are available in the fields of neuropharmacology and biochemical pharmacology. Experimental projects, preferably based on a problem or an observation that arose from the student's activity in the clinic, can be designed in consultation with the faculty.

Academic Career: Medical School

Course Component: Practicum

Grade Component: Grad HSU Basis

Course Attributes: School of Medicine Year 4

Medicine Anesthesiology

MSANE 5372 - ANESTHESIA CLERKSHIP

Minimum Credits: 0

Maximum Credits: 0

Two-week rotation in anesthesia runs in tandem with general surgery (SURG 5372). Goals of clerkship include developing skills to evaluate patients in the perioperative period and optimize their medical conditions in preparation for surgery. Instructional focus on airway management (intraoperative), post-operative recovery and pain management. Registration must be accompanied by registration in SURG 5372.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

MSANE 5381 - PAIN EVALUATION AND TREATMENT

Minimum Credits: 0

Maximum Credits: 0

This junior elective will be located at the pain evaluation and treatment institute (PETI). Students will observe and participate in the clinical evaluation of chronic and acute pain patients as well as help to formulate treatment plans.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

MSANE 5382 - RESEARCH OR INDIVIDUAL STUDY

Minimum Credits: 0

Maximum Credits: 0

This junior elective will provide an opportunity for students to learn basic research methodology; including conceiving hypotheses, experimental design, protocol development, data analysis, and statistical evaluation of research results. The student may participate in ongoing research, either in the laboratory or in the clinical setting.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

MSANE 5420 - ANESTHESIOLOGY

Minimum Credits: 0

Maximum Credits: 0

Four week elective designed to provide information and skills required to care for patients in the perioperative period. At the end of this elective, student should have sufficient knowledge and skill to plan and administer anesthesia in a straightforward case under the direct supervision of faculty. Core content of the third year, but material covered in greater depth. Specific material varies depending upon selected institution. Teaching is on a one-to-one basis in the operating room and during rounds. The course can be tailored to satisfy the needs and goals of the individual.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSANE 5440 - SUBSPECIALTIES ANESTHESIOLOGY

Minimum Credits: 0

Maximum Credits: 0

This course is being offered for two types of medical students: 1) those who have completed a general anesthesia elective and who would like to develop expertise in an anesthesia sub-specialty and 2) those who have a special interest in non-anesthesia specialty areas such as internal medicine, pediatrics, cardiology, neurosurgery, otolaryngology, obstetrics, transplantation medicine, pain therapy or outpatient/preoperative consultation.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSANE 5445 - PAIN MEDICINE

Minimum Credits: 0

Maximum Credits: 0

The pain evaluation and treatment institute (PETI) staff physicians will introduce you to the interdisciplinary approach of dealing with patients with chronic pain of nonmalignant origin. You will interface with other PETI disciplines of occupational, physical, and psychological therapy as well as be exposed to nerve block techniques when appropriate. Examples of commonly seen problems are myofascial pain, headaches, and reflex sympathetic dystrophy. You will learn about post-op pain. Epidural and patient controlled analgesia will be highlighted.

Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSANE 5450 - MD/OMS ANESTHESIA SPECIALTIES

Minimum Credits: 0

Maximum Credits: 0

This four month rotation for third or fourth year medical students who are participants in the md/oral maxillofacial surgery program, provides exposure to patients undergoing a variety of procedures under general anesthetics and monitored anesthesia care. Clinical experience and didactics are under the supervision of the anesthesia attending physicians for an experience that includes basic principles of planning an anesthetic, pre-operative evaluation of risk, intra-operative techniques, and post-operative care including pain management. Graduated and supervised exposure is expected over the term of the course that includes care of trauma and neurosurgical patients with a particular emphasis on head and neck procedures. Cognitive objectives: 1) recognize and explain the pre-operative work-up for patients undergoing surgery requiring an anesthetic; 2) develop and explain the concept of an anesthetic plan; 3) recognize common complications of anesthesia and their management; 4) recognize and explain safe anesthesia practices and systems-based practice of care in a team environment; 5) evaluate and understand the use of various anesthetic agents and techniques; 6) recognize the issues present in difficult airways and their management techniques. Skill objectives: 1) demonstrate competency for iv placement; 2) demonstrate competency for intubation including experience with nasal intubations and fiber optic intubation for the difficult airway; 3) assist in the application of general anesthetic techniques and the overall anesthetic plan with the supervising attending.

Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSANE 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0

Maximum Credits: 0

Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSANE 5840 - ANESTHESIOLOGY RESEARCH

Minimum Credits: 0

Maximum Credits: 0

These electives provide opportunities to learn basic research methodology, including approach to experimental design, protocol development, data analysis and evaluation of results. Student participates in ongoing research in the lab and on patients. Opportunities for research in resuscitation, high frequency jet ventilation, patient monitoring, hemorheology, brain pathophysiology, and pharmacology of anesthesia-related drugs are available. Many other topics are also possible.

Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSANE 5900 - INDEPENDENT STUDY

Minimum Credits: 0

Maximum Credits: 0

The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.

Academic Career: Medical School
Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSANE 5901 - EXTRAMURAL ANESTHESIOLOGY

Minimum Credits: 0

Maximum Credits: 0

A clinical experience in anesthesiology may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the UPSOM course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Microbiology and Immunology

MSMI 1100 - COMPREHENSIVE MICROBIOLOGY: MOLECULAR VIROLOGY & MOLECULAR PATHOGENESIS

Minimum Credits: 4

Maximum Credits: 4

This course stresses basic concepts of animal virology and bacterial pathogenesis. Bacterial pathogenesis covers the subject of attachment, invasion, secretion, toxin activity, antibiotics, gene regulation and highlights infections in a range of host systems. The virology section covers attachment and entry, mechanisms of regulation at the RNA protein levels, viral nucleic acid replication, assembly and egress as well as antivirals and immune evasion.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MSMI 2000 - PRINCIPLES OF MICROBIOLOGY AND IMMUNOLOGY

Minimum Credits: 6

Maximum Credits: 6

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MSMI 2100 - FIRST PMI LABORATORY ROTATION

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Credit Laboratory

Grade Component: Grad Letter Grade

MSMI 2110 - SECOND PMI LABORATORY ROTATION

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Credit Laboratory

Grade Component: Grad Letter Grade

MSMI 2200 - COMPREHENSIVE MICROBIOLOGY: MOLECULAR VIROLOGY & MOLECULAR PATHOGENESIS

Minimum Credits: 4

Maximum Credits: 4

This course stresses basic concepts of animal virology and bacterial pathogenesis. Bacterial pathogenesis covers the subject of attachment, invasion, secretion, toxin activity, antibiotics, gene regulation and highlights infections in a range of host systems. The virology section covers attachment and entry, mechanisms of regulation at the RNA protein levels, viral nucleic acid replication, assembly and egress as well as antivirals and immune evasion.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MSMI 2210 - COMPREHENSIVE IMMUNOLOGY

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSMI 2230 - EXPERIMENTAL BASIS OF IMMUNOLOGY

Minimum Credits: 2

Maximum Credits: 2

This course will expose the students to classical and contemporary literature in modern immunology. Emphasis will be on paper analysis and critical evaluation of primary data. This course will parallel the topics presented in comprehensive immunology lecture course which must be taken before or simultaneously with experimental basis of immunology.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSMI 2240 - INTRODUCTION TO IMMUNOBIOTHERAPEUTICS

Minimum Credits: 2

Maximum Credits: 2

This course will provide a comprehensive overview of the principles and the technology upon which immunobiotherapeutics are based. The course will focus on the overall aims of using small molecules, antibodies, genes and cells as immunotherapeutic agents. It will cover the use of viral and non-viral agents as gene delivery vehicles, cells as therapeutic agents and small molecules as delivery and therapeutic vehicles. The course will also cover diseases and disorders in which immunobiotherapy has proven safety and demonstrated successful outcomes like cancer, Mendelian disorders and autoimmunity. Lectures and student presentations will cover: genes and cells as drugs, peptides, antibodies and small molecules as therapeutics and delivery vehicles, viral and non-viral vectors, stem cells, and specific diseases where immunotherapy has shown safety and efficacy. Students may also be educated on bioethical issues and existing laws governing biotechnology and molecular medicine approaches.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSMI 2250 - TA: MEDICAL MICROBIOLOGY

Minimum Credits: 1

Maximum Credits: 1

The course will provide PMI graduate students with the opportunity to serve as a teaching assistant in the undergraduate immunology course BIOSC 1760. The curriculum is designed to provide valuable teaching skills to the professional scientist. Students will attend all BIOSC 1760 lectures, prepare problem sets and session content for recitation period, conduct a one-hour recitation period each week, assist with the preparation and grading of exams, and proctor exams.

Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

MSMI 2290 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

This course provides the student an opportunity to carry out a specific laboratory project in any area of interest in immunology.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

MSMI 2300 - SCIENTIFIC WRITING IN MICROBIOLOGY AND IMMUNOLOGY

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad SN Basis

MSMI 2350 - INTRODUCTION TO BIOSTATISTICS FOR MICROBIOLOGY AND IMMUNOLOGY GRADUATE STUDENTS

Minimum Credits: 2

Maximum Credits: 2

This is a self-contained, three-credit course on basic principles and practices of statistical inference and data analysis for students whose primary work is in the laboratory. After completing the course, students will be able to perform basic statistical analyses, and be aware of the principles and limitations associated with those analyses. The course will also give them the background necessary to effectively use GraphPad software. The course meets twice a week for two hours, and classes will usually consist of a computer-based practicum sandwiched between two half-hour lectures. Topics include: discovery and validation in the laboratory; data management; graphics; probability concepts; probability distributions; one- and two-sample statistical tests; point estimates and confidence intervals; analysis of cross-tabulations; statistical modeling; other topics in which the class is interested. The prerequisite is proficiency with pre-calculus college algebra.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MSMI 2420 - EXPERIMENTAL PATHOGEN BIOLOGY

Minimum Credits: 2

Maximum Credits: 2

This course is designed for PhD graduate students training in microbiology research and is designed to provide a more in-depth study of bacteriology and virology through a critical analysis by the student of seminal research publications. The first half of the course deals with bacteriology, while the second concerns virology. Paper discussion format.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSMI 2450 - IMMUNOLOGY RESEARCH SEMINAR

Minimum Credits: 1

Maximum Credits: 1

Students present their research, or a recent research article from a broad range of topics selected by the student in consultation with a faculty advisor. The course meets weekly during which the student presents his/her research in progress or an article of his/her choice. Emphasis is placed on a careful analysis and critical evaluation of the manuscript as well as the development of teaching and speaking skills needed for scientific

presentation. The student is expected to elucidate issues relevant to the topic and to answer questions from other graduate students and faculty.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

MSMI 2460 - MICROBIOLOGY AND RELATED TOPICS SEMINAR SERIES

Minimum Credits: 1

Maximum Credits: 1

Beginning in the second year of the program, microbiology leaning students will be required to attend a seminar series and turn in at least two seminar summaries. Seminars are held approximately once a week throughout the fall and spring semesters and include presentations by nationally and internationally recognized visiting researchers, as well as internal researchers, in microbiology and related fields.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

MSMI 2480 - MECHANISMS OF MICROBIAL PERSISTENCE

Minimum Credits: 2

Maximum Credits: 2

Microorganisms have evolved a vast array of mechanisms to avoid detection or elimination by host defenses, and to establish persistent infections that can lead to chronic or recurrent disease. The ability to establish persistent infections often complicates the successful therapeutic treatment of disease caused by such microorganisms. This course is designed to familiarize students with the mechanisms by which select bacterial and viral pathogens establish persistence in their host cells and/or organisms, and the subsequent considerations for pathogenesis and therapy.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad SN Basis

MSMI 3200 - PHD DISSERTATION RESEARCH

Minimum Credits: 1

Maximum Credits: 14

After advancement to candidacy for the Ph.D. degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation. A minimum of 40 credits of this course are required for the Ph.D. degree in the school of medicine.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

MSMI 3220 - CONTEMPORARY TOPICS - IMMUNOLOGY

Minimum Credits: 1

Maximum Credits: 1

This is an advanced level course in which students will read, present and evaluate the primary literature in immunology. Each semester will feature an integrated set of papers addressing a current issue of interest to modern immunologists. The course may be taken more than once by each student, since the topic addressed will change each semester.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

MSMI 3230 - MICROBIOLOGY RESEARCH IN PROGRESS

Minimum Credits: 1

Maximum Credits: 1

Students present their research to date. The course meets weekly during which the student presents his/her research in progress. Emphasis is placed on the development of teaching and speaking skills needed for scientific presentation. The student is expected to answer questions from other

graduate students and faculty related to their research.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

MSMI 3270 - INNATE IMMUNITY

Minimum Credits: 2

Maximum Credits: 2

This course will focus on the several aspects of host innate immunity against infection. Topics will include the conceptual basis for innate versus adaptive immunity, induction of innate immunity by pathogens, signaling by innate immune receptors, effector cells of the innate immune system, secreted effectors of innate immune signaling, and subversion of innate immune signaling by pathogens. Courses like molecular virology and comprehensive immunology are highly recommended but not a prerequisite for the course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MSMI 3280 - IMMUNOLOGY OF INFECTIOUS DISEASE

Minimum Credits: 2

Maximum Credits: 2

This course examines the immune responses to pathogens, as well as on immune evasion of microbes. The organisms studied include bacteria, parasites, and viruses. Topics focus on host-pathogen interaction and include innate immunity, modulation of antigen processing and presentation, pathogenic strategies for subversion of immune responses, effector functions of immune cells, and immunopathology.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: MSMI 2210

MSMI 3290 - AUTOIMMUNITY & IMMUNPATHOLOGY

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: MSMI 2210 and 2230

MSMI 3410 - COMPREHENSIVE MICROBIOLOGY

Minimum Credits: 2

Maximum Credits: 2

This course is an introduction to the molecular basis of bacterial and parasitic pathogenesis. Topics include: 1) introduction to microbial pathogens, 2) molecular and classical Koch's postulates, 3) pathogen adhesion strategies, 4) molecular mechanisms of invasion 5) microbial strategies for immune evasion 6) genetics and action of bacterial toxins 7) coordinate regulation of virulence factors 8) antibiotics and antibiotic resistance 9) host responses to infection 10) vaccines.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSMI 3435 - TUMOR VIROLOGY

Minimum Credits: 2

Maximum Credits: 2

The purpose of the course is to introduce students to viruses known or suspected of causing tumors and with special emphasis on viruses causally linked to human cancer. Polyomaviruses, Epstein-Barr virus, Kaposi's sarcoma-associated herpesvirus, adenoviruses, papillomaviruses, hepatitis

viruses, human t-cell lymphotropic virus and their relevant gene products will be covered in detail during weekly two-hour lectures. Lectures will be given by experts in each virus. Criteria for establishing causal links between a virus and human cancer will be discussed. Focus will be on how viral mechanisms of transformation can provide key mechanistic insight on cellular pathways that drive tumorigenesis including in malignancies with non-viral etiology. Topics covered will include oncogenes, tumor suppressors, oncogenic cofactors, disruption of innate/ adaptive immune responses, latency, viral mimicry/ piracy of cellular regulatory genes, genomic instability and role of non-coding RNAs in viral pathogenesis. Techniques for novel tumor virus discovery will also be discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSMI 3475 - IMAGING HOST-PATHOGEN INTERACTIONS

Minimum Credits: 1

Maximum Credits: 1

This course will provide an introduction to fluorescence microscopy with an emphasis on the study of host-pathogen interactions. Experts in the fields of bacterial pathogenesis, viral entry, viral protein signaling, fungal pathogenesis, polymicrobial infections will present lectures on the use of imaging in their fields of research and lead a journal club discussion of relevant papers from the literature. The goal is to provide students with a basic understanding of fluorescence microscopy for the purpose of properly designing their own experiments and effectively evaluating the work of others.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad SN Basis

Molecular Biophysics

MOLBPH 2000 - LABORATORY RESEARCH ROTATIONS

Minimum Credits: 1

Maximum Credits: 1

These rotations serve three (3) purposes: 1. Encourage the student to experience different research environments and methods. 2. Provide the students opportunities to optimize their choice of research advisor/lab through direct experience in different laboratory environments. 3. Provide faculty advisors with a basis for informed judgment regarding prospective students. Academic advisors provide help in suggesting a choice of lab rotations if necessary.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

MOLBPH 2001 - MOLECULAR BIOPHYSICS 1: STRUCTURE

Minimum Credits: 3

Maximum Credits: 3

This is the first of three (3) courses, which together constitute the common core of the first year of the molecular biophysics graduate program. Here, the emphasis is on the structural foundation, especially that of proteins and nucleic acids. Fundamental results are covered together with experimental techniques (x-ray diffraction, NMR, EM/CryoEM, AFM, CD/ORD, Raman and fluorescence spectroscopy), as well as structural systematics and informatics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MOLBPH 2002 - MOLECULAR BIOPHYSICS 2: THEORY AND SIMULATION

Minimum Credits: 3

Maximum Credits: 3

Core course of the molecular biophysics & structural biology (MBSB) graduate program. Students learn about the integration of different techniques to elucidate molecular mechanisms of disease, through the study of biomolecular structure, interactions and dynamics. The course includes hands-on

demos of x-ray crystallography and other essential tools in structural biology. With the help of MBSB faculty experts, students prepare and present a research seminar on primary research. Students also gain experience in the writing of grant/fellowship applications to support their research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MOLBPH 2010 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

This course provides the student an opportunity to carry out a specific laboratory project in any area of interest in molecular biophysics.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

Course Requirements: PLAN: Molecular Biophy & Struct Bio (PHD)

MOLBPH 2012 - MOLECULAR BIOPHYSICS 2: MOLECULAR INTERACTIONS AND DYNAMICS

Minimum Credits: 4

Maximum Credits: 4

Core course of the molecular biophysics & structural biology (MBSB) graduate program. Students learn about the integration of different techniques to elucidate molecular mechanisms of disease, through the study of biomolecular structure, interactions and dynamics. The course includes hands-on demos of x-ray crystallography and other essential tools in structural biology. With the help of MBSB faculty experts, students prepare and present a research seminar on primary research. Students also gain experience in the writing of grant/fellowship applications to support their research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MOLBPH 2013 - MOLECULAR BIOPHYSICS 3: THEORY AND SIMULATION

Minimum Credits: 4

Maximum Credits: 4

This course will introduce students to computational structural biology, primarily relying on physical and chemical principles, as well as associated computational approaches. The course is a core class for both (a) the joint program in computational biology and (b) the molecular biophysics program. The course will cover biomolecular structure, statistical mechanical phenomenon in biophysics, simulation of biomolecular behavior, and key applications of computations in the field of structural biology. Specific topics: probability theory, statistical mechanics and thermodynamics, simulation methods, electrostatic phenomena, biochemical kinetics, binding, coarse-grained modeling, computations for structure determination, drug design.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MOLBPH 2020 - STRUCTURAL BIOLOGY/MOLECULAR BIOPHYSICS SEMINAR

Minimum Credits: 1

Maximum Credits: 1

This course comprises weekly lectures by nationally renowned guest speakers as well as faculty from the Pittsburgh schools engaged in the development and application of biophysical and structural techniques towards important biomedical questions.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

MOLBPH 2030 - DATA AND LITERATURE CLUB

Minimum Credits: 1

Maximum Credits: 1

This course, designed for students in the molecular biophysics graduate program, will alternate between 'data sessions' in which postdocs and students present research results for feedback and critique, and 'literature sessions' in which students will lead discussions and critiques of the current literature. The course is designed to give students experience in presentation and critical analysis skills, as well as to create opportunities for broader learning and interaction.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

MOLBPH 2040 - TA: MBSB

Minimum Credits: 1

Maximum Credits: 1

The course will provide graduate students in the molecular biophysics and structural biology graduate program with the opportunity to serve as a teaching assistant in the mb3 core course. The curriculum is designed to provide valuable teaching skills to the professional scientist.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

MOLBPH 2050 - SPECIAL TOPICS IN MBSB: CRYOEM

Minimum Credits: 3

Maximum Credits: 3

Students will focus on a selected topic in molecular biophysics and structural biology: cryoem. This course is designed to enable graduate level students to understand the theoretical and practical aspects of Cryo-Electron Microscopy (cryoem). The course covers the basic anatomy of electron microscopes, the principles of image formation, and major cryoem techniques including tomography, single particle analysis and 2-d crystallography. The course emphasizes concepts rather than mathematical details, and is ideal for anyone who needs an introduction to the cryoem field to be able to understand the literature, the talks at meetings/seminars and conversations they will have with collaborators.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Molecular Biophy & Struct Bio (PHD)

MOLBPH 2055 - PRINCIPLES AND PRACTICES OF SOLUTION-BASED BIOMOLECULAR NMR

Minimum Credits: 3

Maximum Credits: 3

This course is designed to provide students with a working knowledge of the basic underlying theory of modern pulsed Nuclear Magnetic Resonance methods used to study the structures and internal dynamics of biological macromolecules in solution. The theoretical concepts covered will include an overview of pulse excitation, digital sampling, and fourier transformation. The product operator formalism will be used to describe how modern multinuclear multidimensional pulse methods function to yield the desired signals. The practical concepts covered will include an overview of modern methods for obtaining sequential resonance assignments, determining high-resolution three-dimensional structures, and analyzing internal dynamics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MOLBPH 2090 - MS THESIS RESEARCH

Minimum Credits: 1

Maximum Credits: 14

A directed research project which results in a thesis for a master's degree.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

MOLBPH 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1

Maximum Credits: 14

After advancement to candidacy for the Ph.D. degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: Integrative Molecular Biology (PHD)

MSMBPH 2000 - LABORATORY RESEARCH ROTATIONS

Minimum Credits: 1

Maximum Credits: 1

These rotations serve three (3) purposes: 1. Encourage the student to experience different research environments and methods. 2. Provide the students opportunities to optimize their choice of research advisor/lab through direct experience in different environments. 3. Provide faculty advisors with a basis for informed judgment regarding prospective students. Academic advisors provide help in suggesting a choice of lab rotations if necessary.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

MSMBPH 2001 - MOLECULAR BIOPHYSICS 1: STRUCTURE

Minimum Credits: 3

Maximum Credits: 3

This is the first of three courses, which together constitute the common core of the first year of the molecular biophysics graduate program. Here the emphasis is on the structural foundations, especially that of proteins and nucleic acids. Fundamental results are covered together with experimental techniques (x-ray, diffraction, NMR, EM/CryoEM, AFM, CD/ORD, Raman and fluorescence spectroscopy), as well as structural systematics and informatics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSMBPH 2002 - MOLECULAR BIOPHYSICS 2: THEORY AND SIMULATION

Minimum Credits: 3

Maximum Credits: 3

Core course of the molecular biophysics & structural biology (MBSB) graduate program. Students learn about the integration of different techniques to elucidate molecular mechanisms of disease, through the study of biomolecular structure, interactions and dynamics. The course includes hands-on demos of x-ray crystallography and other essential tools in structural biology. With the help of MBSB faculty experts, students prepare and present a research seminar on primary research. Students also gain experience in the writing of grant/fellowship applications to support their research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MSMBPH 2010 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

This course provides the student an opportunity to carry out a specific laboratory project in any area of interest in molecular biophysics.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

Course Requirements: PLAN: Molecular Biophy & Struct Bio (PHD)

MSMBPH 2012 - MOLECULAR BIOPHYSICS 2: MOLECULAR INTERACTIONS AND DYNAMICS

Minimum Credits: 4

Maximum Credits: 4

Core course of the molecular biophysics & structural biology (MBSB) graduate program. Students learn about the integration of different techniques to elucidate molecular mechanisms of disease, through the study of biomolecular structure, interactions and dynamics. The course includes hands-on demos of x-ray crystallography and other essential tools in structural biology. With the help of MBSB faculty experts, students prepare and present a research seminar on primary research. Students also gain experience in the writing of grant/fellowship applications to support their research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSMBPH 2013 - MOLECULAR BIOPHYSICS 3: THEORY AND SIMULATION

Minimum Credits: 4

Maximum Credits: 4

This course will introduce students to computational structural biology, primarily relying on physical and chemical principles, as well as associated computational approaches. The course is a core class for both (a) the joint program in computational biology and (b) the molecular biophysics program. The course will cover biomolecular structure, statistical mechanical phenomenon in biophysics, simulation of biomolecular behavior, and key applications of computations in the field of structural biology. Specific topics: probability theory, statistical mechanics and thermodynamics, simulation methods, electrostatic phenomena, biochemical kinetics, binding, coarse-grained modeling, computations for structure determination, drug design.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSMBPH 2020 - STRUCTURAL BIOLOGY/MOLECULAR BIOLOGY SEMINAR

Minimum Credits: 1

Maximum Credits: 1

This course comprises weekly lectures by nationally renowned guest speakers as well as faculty from the Pittsburgh schools engaged in the development and application of biophysical and structural techniques towards important biomedical questions.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

MSMBPH 2030 - DATA AND LITERATURE CLUB

Minimum Credits: 1

Maximum Credits: 1

This course, designed for students in the molecular biophysics graduate program, will alternate between 'data sessions' in which postdocs and students present research results for feedback and critique, and 'literature sessions' in which students will lead discussions and critiques of the current literature. The course is designed to give students experience in presentation and critical analysis skills, as well as to create opportunities for broader learning and interaction.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

MSMBPH 2040 - TA: MBSB

Minimum Credits: 1

Maximum Credits: 1

The course will provide graduate students in the molecular biophysics and structural biology graduate program with the opportunity to serve as a teaching assistant in the mb3 core course. The curriculum is designed to provide valuable teaching skills to the professional scientist

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

MSMBPH 2050 - SPECIAL TOPICS IN MBSB: CRYOEM

Minimum Credits: 3

Maximum Credits: 3

Students will focus on a selected topic in molecular biophysics and structural biology: cryoem. This course is designed to enable graduate level students to understand the theoretical and practical aspects of Cryo-Electron Microscopy (cryoem). The course covers the basic anatomy of electron microscopes, the principles of image formation, and major cryoem techniques including tomography, single particle analysis and 2-d crystallography. The course emphasizes concepts rather than mathematical details, and is ideal for anyone who needs an introduction to the cryoem field to be able to understand the literature, the talks at meetings/seminars and conversations they will have with collaborators.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Molecular Biophy & Struct Bio (PHD)

MSMBPH 2055 - PRINCIPLES AND PRACTICES OF SOLUTION-BASED BIOMOLECULAR NMR

Minimum Credits: 3

Maximum Credits: 3

This course is designed to provide students with a working knowledge of the basic underlying theory of modern pulsed Nuclear Magnetic Resonance methods used to study the structures and internal dynamics of biological macromolecules in solution. The theoretical concepts covered will include an overview of pulse excitation, digital sampling, and fourier transformation. The product operator formalism will be used to describe how modern multinuclear multidimensional pulse methods function to yield the desired signals. The practical concepts covered will include an overview of modern methods for obtaining sequential resonance assignments, determining high-resolution three-dimensional structures, and analyzing internal dynamics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MSMBPH 2090 - MS THESIS RESEARCH

Minimum Credits: 1

Maximum Credits: 14

A directed research project which results in a thesis for a master's degree.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

MSMBPH 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1

Maximum Credits: 14

After advancement to candidacy for the Ph.D. degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: Molecular Biophy & Struct Bio (PHD)

Molecular Genetics & Biochemistry

MSMGDB 2500 - MS THESIS RESEARCH

Minimum Credits: 1

Maximum Credits: 14

A directed research project which results in a thesis for a master's degree.

Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

MSMGDB 2525 - DEVELOPMENTAL MECHANISMS OF HUMAN DISEASE

Minimum Credits: 2

Maximum Credits: 2

This course covers principles of developmental biology and how embryonic developmental pathways impinge on human disease. Topics include congenital organ related disease, stem cell based and reproductive events relating to disease.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSMGDB 2535 - MODEL ORGANISMS

Minimum Credits: 2

Maximum Credits: 2

This course covers the use of vertebrate and invertebrate model organisms in biomedical research. Topics include the use of several models including: mouse, rat, Zebrafish, Xenopus, c. Elegans, and Drosophila. Special emphasis will be placed on the strengths that specialized techniques of each organism provides the research community in understanding the etiology of disease.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSMGDB 2550 - RESEARCH SEMINAR

Minimum Credits: 1

Maximum Credits: 1

Students present their research, or a recent research article from a broad range of topics selected by the student in consultation with a faculty advisor. The course meets weekly during which the student presents his/her research in progress or an article of his/her choice. Emphasis is placed on a careful analysis and critical evaluation of the manuscript as well as the development of teaching and speaking skills needed for scientific presentation. The student is expected to elucidate issues relevant to the topic and to answer questions from other graduate students and faculty.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

MSMGDB 2560 - BIOLOGY OF SIGNAL TRANSDUCTION

Minimum Credits: 3

Maximum Credits: 3

This course will explore different types of signaling pathways activated by receptor-ligand interactions. Topics to be covered include, but are not limited to: g-protein linked receptors, adenylate cyclases, small GTPases, kinases and phosphatases, nitric oxide, phospholipases, steroid hormone signaling, and pharmacological applications of signaling pathways.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MSMGDB 2590 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

This course provides the student an opportunity to carry out a specific laboratory project in any area of interest in biochemistry and molecular genetics.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

Course Requirements: PLAN: Interdis Biomedical (INTBP-UNK) or Biochem & Molecular Genetics (MSBMG-PHD) or Mol Genetics & Dev Biology (MGDB-PHD)

MSMGDB 3500 - PHD DISSERTATION RESEARCH

Minimum Credits: 1

Maximum Credits: 14

After advancement to candidacy for the Ph.D. degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation. A minimum of 40 credits of this course are required for the Ph.D. degree in the school of medicine.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: Interdis Biomedical (INTBP-UNK) or Biochem & Molecular Genetics (MSBMG-PHD) or Mol Genetics & Dev Biology (MGDB-PHD)

MSMGDB 3510 - ADV TOPICS IN GENE EXPRESSION

Minimum Credits: 3

Maximum Credits: 3

This course consists of lectures and class presentations on recent advances in the molecular genetics. The emphasis of the course is on the regulation of gene expression at the DNA, RNA and protein levels. Regulation in eukaryotes is emphasized, including yeast, protozoan, and mammalian systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSMGDB 3530 - GENOME INSTABILITY AND HUMAN DISEASE

Minimum Credits: 3

Maximum Credits: 3

Mechanisms that maintain genome stability allowed the origin of species. DNA damage is omnipresent and DNA repair and DNA damage tolerance mechanisms are interwoven in systems that control transcription, replication, cell division, signal transduction, cell death and evolution. More than 40 distinct human diseases are caused by defects in DNA repair, including syndromes of impaired development, immunodeficiency, cancer predisposition, neurodegeneration, and premature aging. This course will emphasize the molecular biology and biochemistry of DNA repair, placing these mechanisms into the context of other cellular processes as they pertain to health and disease. Environmental, clinical and endogenous sources of DNA damage will be discussed. An understanding of the fundamental role of DNA repair mechanisms in immunology, oncology, neurology, and aging will be central to all lectures.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

MSMGDB 3535 - DNA REPAIR JOURNAL CLUB

Minimum Credits: 1

Maximum Credits: 1

The course is a journal club on current topics in DNA repair as it relates to human disease, DNA damage processing, genome stability, telomere biology, cancer and aging. Primarily designed for students in the second year of their graduate program and beyond. Presentations will be held twice per month during the fall and spring semester. In order to receive credit for the course, students must attend a minimum of 80% of the sessions, present once per semester, participate in class discussion and complete anonymous peer-evaluations for each presenter. One week prior to presentation, presenters will identify a recent publication in the field and distribute it to their classmates. Presenters must define the hypothesis of the paper, provide background and significance, describe experimental methods used, interpret the data, conclude whether the data support the authors' conclusions and propose future experiments. Grades will be determined by attendance (10%), class participation (20%) and quality of presentation (70%).

Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad HSU Basis

MSMGDB 3540 - REPRODUCTIVE DEVELOPMENT FROM MODEL ORGANISMS TO HUMANS

Minimum Credits: 2

Maximum Credits: 2

This course focuses on the molecular aspects of the transition from gamete to a reproductive organism. The course progresses through the building of germ cells, fertilization and stem cell participation to sex determination, gonad morphogenesis, puberty, menopause and pregnancy. This course highlights both human and model organisms to bring together diverse aspects of the cell and developmental biology of reproductive tissues and their impact on disease pathology.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: INTBP 2000

MSMGDB 3550 - STEM CELLS

Minimum Credits: 3

Maximum Credits: 3

This course will provide a comprehensive overview of stem cell biology - an intriguing and a most-debated research area. The course will focus on the biology of stem cells and their role in health & disease with emphasis on development and carcinogenesis. Trans-differentiation of stem cells for tissue engineering applications will also be discussed. Lectures and student presentations will cover: embryonic as well as fetal and adult stem cells in blood, liver, brain, muscle, kidney, pancreas and gut. Students will also be educated on bioethical issues and existing laws governing stem cell research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSMIC 5835 - MOLECLR GENETC & BIOCHMST RSRCH

Minimum Credits: 0

Maximum Credits: 0

Comprehensive laboratory research rotation in the department of molecular genetics and biochemistry with rotations available in biochemistry, immunology, molecular genetics, molecular pathogenesis, and virology.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSMVM 2400 - MS THESIS RESEARCH

Minimum Credits: 1

Maximum Credits: 14

A directed research project which results in a thesis for a master's degree.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

MSMVM 2410 - MOLECULAR VIROLOGY

Minimum Credits: 2

Maximum Credits: 2

This course stresses basic concepts of animal virology. Subjects include different viruses, the expression and regulation of viral genes, the mechanisms of viral-induced cytopathology, latency, and cell transformation, and the nature of viroids and prions. Supplementary reading assignments are required.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSMVM 2420 - EXPERIMENTAL VIROLOGY

Minimum Credits: 2

Maximum Credits: 2

This course is designed for graduate students training in molecular virology research and is designed to provide a more in-depth study of molecular virology through a critical analysis by the student of seminal research publications in various virus systems. Paper discussion format.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSMVM 2430 - TA: MEDICAL MICROBIOLOGY

Minimum Credits: 1

Maximum Credits: 1

The purpose of this course is to introduce graduate students of the interdisciplinary biomedical sciences graduate program to the principles of teaching. The students will be trained in basic teaching techniques as well as provided material for teaching students specific concepts. As a major part of this course, students will participate in teaching first-year medical students the fundamentals of microbiology, in conjunction with the laboratory and problem based learning sections of the molecular pathogenesis of infectious disease course of basic science medical school book.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

MSMVM 2450 - RESEARCH SEMINAR

Minimum Credits: 1

Maximum Credits: 1

Students present their research, or a recent research article from a broad range of topics selected by the student in consultation with a faculty advisor. The course meets weekly during which the student presents his/her research in progress or an article of his/her choice. Emphasis is placed on a careful analysis and critical evaluation of the manuscript as well as the development of teaching and speaking skills needed for scientific presentation. The student is expected to elucidate issues relevant to the topic and to answer questions from other graduate students and faculty.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

MSMVM 2470 - CONTEMPORARY TOPICS IN MOLECULAR VIROLOGY AND MICROBIOLOGY

Minimum Credits: 1

Maximum Credits: 1

This is a course in which students will read, present, and evaluate the primary literature in molecular virology and microbiology. Each semester will feature an integrated set of papers addressing a current issue of interest. The course may be taken more than once by each student, since the topics addressed will change each semester.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

MSMVM 2480 - MECHANISMS OF MICROBIAL PERSISTENCE

Minimum Credits: 2

Maximum Credits: 2

Microorganisms have evolved a vast array of mechanisms to avoid detection or elimination by host defenses, and to establish persistent infections that can lead to chronic or recurrent disease. The ability to establish persistent infections often complicates the successful therapeutic treatment of disease caused by such microorganisms. This course is designed to familiarize students with the mechanisms by which select bacterial and viral

pathogens establish persistence in their host cells and/or organisms, and the subsequent considerations for pathogenesis and therapy.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad SN Basis

MSMVM 2490 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

This course provides the student an opportunity to carry out a specific laboratory project in any area of interest in molecular virology and microbiology.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

Course Requirements: PLAN: Molecular Virology & Microbiol (PHD) or Interdis Biomedical (UNK)

MSMVM 3290 - AUTOIMMUNITY & IMMUNPATHOLOGY

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MSMVM 3400 - PHD DISSERTATION RESEARCH

Minimum Credits: 1

Maximum Credits: 14

After advancement to candidacy for the Ph.D. degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation. A minimum of 40 credits of this course are required for the Ph.D. degree in the school of medicine.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: Molecular Virology & Microbiol (PHD)

MSMVM 3410 - MICROBIAL PATHOGENESIS

Minimum Credits: 2

Maximum Credits: 2

This course is an introduction to the molecular basis of bacterial and parasitic pathogenesis. Topics include: 1) introduction to microbial pathogens, 2) molecular and classical Koch's postulates, 3) pathogen adhesion strategies, 4) molecular mechanisms of invasion 5) microbial strategies for immune evasion 6) genetics and action of bacterial toxins 7) coordinate regulation of virulence factors 8) antibiotics and antibiotic resistance 9) host responses to infection 10) vaccines.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSMVM 3420 - VIRAL PATHOGENESIS

Minimum Credits: 2

Maximum Credits: 2

The goal of this course is to integrate the lectures given on a particular virus in the comprehensive virology course with two additional lectures which expand the basic biology of the virus life cycle to the level of virus-host interactions. The first lecture will address the pathogenic properties of the virus from the perspective of disease manifestations, immunology, and the natural history of infection. This will be followed by a second lecture which will address the molecular basis of viral pathogenesis and current advances in antiviral research.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSMVM 3435 - TUMOR VIROLOGY

Minimum Credits: 2

Maximum Credits: 2

The purpose of the course is to introduce students to viruses known or suspected of causing tumors and with special emphasis on viruses causally linked to human cancer. Polyomaviruses, Epstein-Barr virus, Kaposi's sarcoma-associated herpesvirus, adenoviruses, papillomaviruses, hepatitis viruses, human t-cell lymphotropic virus and their relevant gene products will be covered in detail during weekly two-hour lectures. Lectures will be given by experts in each virus. Criteria for establishing causal links between a virus and human cancer will be discussed. Focus will be on how viral mechanisms of transformation can provide key mechanistic insight on cellular pathways that drive tumorigenesis including in malignancies with non-viral etiology. Topics covered will include oncogenes, tumor suppressors, oncogenic cofactors, disruption of innate/ adaptive immune responses, latency, viral mimicry/ piracy of cellular regulatory genes, genomic instability and role of non-coding RNAs in viral pathogenesis. Techniques for novel tumor virus discovery will also be discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: MSMVM 2410

MSMVM 3440 - VACCINES AND IMMUNITY

Minimum Credits: 2

Maximum Credits: 2

Vaccines are widely regarded as one of the major contributors to increased life expectancy. The purpose of this course is to (1) explore the history of vaccines; (2) underscore the successful role of current vaccines in the management of infectious diseases; (3) present strategies for a new generation of safe and effective molecular vaccines; and (4) discuss the ethical and economic realities of vaccine use and development.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSMVM 3445 - ACUTE VIRUS INFECTIONS

Minimum Credits: 2

Maximum Credits: 2

Acute virus infections are a leading cause of global morbidity and mortality. Viruses are obligate parasites that require host cells to propagate. Over time, viruses have evolved myriad mechanisms to ensure entry into host cells, propagation of their genomes, and release of progeny. Often, a consequence of infection is disease and death. Acute virus infections is designed to be an advanced graduate level course covering various aspects of virus infections between different virus families.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: MSMVM 2410 or IDM 2002

MSMVM 3455 - ANTIMICROBIAL THERAPEUTICS

Minimum Credits: 2

Maximum Credits: 2

The development and mechanism of action of antimicrobial drugs, including anti-bacterials, anti-fungals, anti-parasitics and antivirals will be described at the molecular level with some emphasis on diseases with significant public health impact (HIV, malaria, tuberculosis, etc.). Aspects of medicinal chemistry, biochemistry, and molecular biology will be considered in drug development. Primarily lecture format with student presentations of selected papers as warranted. Some emphasis on chemistry, but accessible to students without a strong chemistry background.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSMVM 3471 - INNATE IMMUNITY

Minimum Credits: 2

Maximum Credits: 2

This course will focus on the several aspects of host innate immunity against infection. Topics will include the conceptual basis for innate versus adaptive immunity, induction of innate immunity by pathogens, signaling by innate immune receptors, effector cells of the innate immune system, secreted effectors of innate immune signaling, and subversion of innate immune signaling by pathogens. Courses like molecular virology and comprehensive immunology are highly recommended but not a prerequisite for the course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MSMVM 3475 - IMAGING HOST-PATHOGEN INTERACTIONS

Minimum Credits: 1

Maximum Credits: 1

This course will provide an introduction to fluorescence microscopy with an emphasis on the study of host-pathogen interactions. Experts in the fields of bacterial pathogenesis, viral entry, viral protein signaling, fungal pathogenesis, polymicrobial infections will present lectures on the use of imaging in their fields of research and lead a journal club discussion of relevant papers from the literature. The goal is to provide students with a basic understanding of fluorescence microscopy for the purpose of properly designing their own experiments and effectively evaluating the work of others.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad SN Basis

MSMVM 3480 - IMMUNOLOGY OF INFECTIOUS DISEASE

Minimum Credits: 2

Maximum Credits: 2

General mechanisms of immunity to microbial pathogens and common strategies of immune evasion will be discussed with emphasis on detailed examples from viral, bacterial and parasitic systems. An in depth examination of survival strategies of pathogens in intracellular and extracellular host environments will be addressed, as well as the consequences of inadequate and inappropriate immune responses.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: MSIMM 2210

Music

MUSIC 2000 - MA THESIS

Minimum Credits: 3

Maximum Credits: 3

Research and writing of a thesis for an MA degree in music.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

MUSIC 2020 - COLLEGIATE CHORALE

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Credit Laboratory

Grade Component: Grad LG/SNC Basis

MUSIC 2038 - MUSIC, CULTURE & TECHNOLOGY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MUSIC 2039 - THE SOUNDS OF ROMANTIC COMEDY

Minimum Credits: 3

Maximum Credits: 3

Sometime between Ernst Lubitsch's *The Shop Around the Corner* (1940) and Nora Ephron's *You've Got Mail* (1998), romance changed in the United States. Where class and wealth used to be deciding factors for romantic love, there now emerged the concept of the soulmate, who could be anyone. In this course, we will watch American romantic comedies of the last 100 years, paying particular attention to how the development of the soundtrack has changed what love sounds and feels like. Students will develop skills in closely analyzing sound and image in film, critically interpreting popular culture in relation to broader events in society, and thinking about the relation between music, identity, and politics. In particular, we will together develop answers to the following questions: how did capitalism, social justice movements, the changing nature of work, and other cultural transformations affect what people expected from intimate union? What aesthetic norms for representing romance changed alongside cultural norms? How is the narrative of love inflected by race, gender, ethnicity, sexuality, religious difference, ability difference, and/or economic disparity?

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MUSIC 2041 - MUSIC IN AFRICA

Minimum Credits: 3

Maximum Credits: 3

This course examines the historical social and cultural background of music in Africa with particular reference to music in community life, performing groups, the training of musicians, instrument structures in African music, and the interrelations of music and dance.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2042 - MUSIC IN LATIN AMERICA

Minimum Credits: 3

Maximum Credits: 3

Mexico, Venezuela, Columbia, Panama, and Peru will be the major countries represented in this general survey of the music of Latin America. The course will be taught in a lecture-discussion format with extensive use made of recordings, slides, and films. Some actual performance of drumming traditions will be included.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2044 - MUSIC IN SOUTHEAST ASIA

Minimum Credits: 3

Maximum Credits: 3

This course introduces students to the musical cultures of SouthEast Asia; historical, social and cultural background of music, music theory, instruments, and selected musical genres from different countries.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2045 - MUSIC IN SOUTH ASIA

Minimum Credits: 3

Maximum Credits: 3

This course introduces students to the musical cultures of South Asia; historical, social and cultural background of music, music theory, instruments, and selected musical genres from different countries.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MUSIC 2046 - AFRICAN-AMERICAN MUSIC IN U.S.

Minimum Credits: 3

Maximum Credits: 3

This course is designed to familiarize the student with various phases of African-American music existing in North America; blues, gospel-spirituals, work songs, children's games songs, and classical compositions of ragtime composers Scott Jobin, JP Johnson, etc. Students will conduct field projects centered around "street recordings, locations, interviews of local and visiting artists, etc." A detailed study of great Pittsburgh performers present and past will constitute a major portion of this course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2047 - WOMEN AND MUSIC IN CROSS CULTURAL PERSPECTIVES

Minimum Credits: 3

Maximum Credits: 3

This course is concerned with music of, by, and about women from a cross-cultural perspective. Topics include, but are not limited to, traditional and ritual music, music as empowerment, sexual aesthetics, women as composers and performers, and feminist music criticism.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2048 - INSTRUMENTATION AND ORCHESTRATION

Minimum Credits: 3

Maximum Credits: 3

A survey of different styles of instrumentation and orchestration in the European art music tradition. Focus of the course may change from year to year.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2049 - LATE ROMANTIC AND EARLY 20TH CENTURY

Minimum Credits: 3

Maximum Credits: 3

This course will begin with the more revolutionary nineteenth-century composers who worked in Paris--Chopin, Berlioz, Liszt--and trace the breakdown of tonality and the emergence of new styles and structural principles in the late nineteenth and twentieth centuries.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Russian & East European Studies

MUSIC 2051 - JAZZ COMPOSITION AND ARRANGING 1

Minimum Credits: 3

Maximum Credits: 3

This course develops the students' knowledge of the techniques of jazz-rock composition and arranging. The distinctive features of jazz-rock harmony are studied, and students write arrangements for various instrumental combinations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2052 - JAZZ COMPOSITION AND ARRANGING 2

Minimum Credits: 3

Maximum Credits: 3

A continuation of music 2051. The course develops the student's knowledge of the techniques of jazz-rock composition and arranging. The distinctive features of jazz-rock harmony are studied, and students write arrangements for various instrument combinations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2054 - GLOBAL HIP HOP

Minimum Credits: 3

Maximum Credits: 3

This seminar analyzes how diverse groups of musicians and listeners use hip-hop to express local and transnational claims of belonging through the appropriation of musical genres identified with the West and with African Americans in particular. A closer reading of global hip-hop practices offers insights into the genre's artistic goals and its social profile in a variety of contexts. Through analyses of locally distinct musical expressions, marketing trends within national and global music industries, and state-sponsored policies relating to hip-hop, this course sheds light on hip-hop's role in constituting cultural and political identities among diverse groups of people in the U.S. and abroad.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: African Studies

MUSIC 2057 - MUSIC IN CENTRAL ASIA

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MUSIC 2061 - JAZZ IMPROV 1

Minimum Credits: 3

Maximum Credits: 3

This course provides an analysis of the techniques of jazz-rock-pop improvisation. Students develop a repertoire of current standards and compose and analyze pieces in several styles.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2062 - JAZZ IMPROV 2

Minimum Credits: 3

Maximum Credits: 3

A continuation of music 2061. The course provides an analysis of the techniques of jazz-rock-pop improvisation. Students develop a repertoire of current standards and compose and analyze pieces in several styles.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2071 - ELECTRONIC AND COMPUTER MUSIC 1

Minimum Credits: 3

Maximum Credits: 3

This course provides an introduction to composing music in the university of Pittsburgh electroacoustic music studio. Instruction in midi sequencing, introduction to synthesis, sampling, and other digital audio technology.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2072 - ELECTRONIC AND COMPUTER MUSIC 2

Minimum Credits: 3

Maximum Credits: 3

This course is a continuation of music 2071. It provides further experience in composing music in the university of Pittsburgh computer and electronic music studio, instruction in the advanced digital audio applications, and hard disk recording and editing.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2073 - PROGRAMMING ENVIRONMENTS IN MUSIC - AN INTRODUCTION TO MAX/MSP

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MUSIC 2074 - JAZZ AND FILM

Minimum Credits: 3

Maximum Credits: 3

Ralph Ellison, the author of the American classic Invisible Man, asserted that all of American life was "jazz-shaped."

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MUSIC 2099 - MUSIC & QUEER IDENTITY

Minimum Credits: 3

Maximum Credits: 3

In this course, we will explore critical perspectives on topics such as non-normative music history, queer modes of expression, subcultural music-making, and the implications of mainstream visibility. Along the way we will survey some notable lesbian/gay/bisexual/ transgender/queer composers and musicians in both art music and popular music.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MUSIC 2111 - PRINCIPLES OF RESEARCH AND BIBLIOGRAPHY

Minimum Credits: 3

Maximum Credits: 3

This course is for all first-year graduate students, and introduces them systematically to the significant research and reference methods and their resulting tools within all major categories and formats of music research and publication. It treats music research as a unified field in which the major disciplines--historical musicology, ethnomusicology, theory/analysis and composition--necessarily interact to inform the most productive and significant results, even for narrowly defined research topics.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2121 - INTRODUCTION TO ETHNOMUSICOLOGY

Minimum Credits: 3

Maximum Credits: 3

The course is designed for all first graduate students in music and aims to give them an overall understanding of the discipline through a survey of its history, theory, and methodology, and of the writings of major scholars in the field. A series of specific research projects will be integrated with the theoretical discussions, and technical aspects of research such as field work, transcription, and analysis will be covered.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Music (MA or PHD)

Course Attributes: Asian Studies, Global Studies

MUSIC 2131 - INTRODUCTION TO MUSICOLOGY

Minimum Credits: 3

Maximum Credits: 3

The course is designed for all first year graduate students in music and aims to give them an overall understanding of the discipline through a survey of its history, theory, and methodology, and of the writings of major scholars in the field. A series of specific research projects will be integrated with the theoretical discussions, and technical aspects of research such as notation, source studies, sketch studies, criticism, performance problems, and analysis will be covered.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Music (MA or PHD)

Course Attributes: Medieval & Renaissance Studies

MUSIC 2141 - MUSICAL ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

Examination of issues in the invention and description of musical structures and the relation of these activities to each other, with attention given to such special problems as intersubjectivity, contextuality, the role of inference in perception, and introspection as a mode of empirical inquiry; examples will be drawn from a wide range of literature.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2151 - INTRODUCTION TO JAZZ STUDIES

Minimum Credits: 3

Maximum Credits: 3

This proseminar provides a critical review of writings on jazz, by analyzing and evaluating the development of the scholarly literature on jazz, focusing on the writings of some of the most influential critics and historians who have shaped the field. The writers will include Nat Hentoff, Ira Gitler, Leonard Feather, Mike Hennessey (England), Gunther Schuler, Andre Hodier (France) etc.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2230 - SEMINAR IN TWENTIETH CENTURY MUSIC

Minimum Credits: 3

Maximum Credits: 3

The contents of this course change from year to year, but will consist either of an intensive survey of a limited chronological period, or of the exploration of a special Twentieth-Century topic.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

MUSIC 2232 - SEMINAR IN MUSIC SINCE 1945

Minimum Credits: 3

Maximum Credits: 3

The course studies postwar masterpieces and examines the modes of thought that produced them. Sessions, Berio, Boulez, Lutoslawski, Stockhausen, Babbitt, and Carter. The scope and method of the course will be determined in part by the interests of the participants.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Music (MA or PHD)

Course Attributes: West European Studies

MUSIC 2244 - RACE AND TRANSNATIONAL PERFORMANCE

Minimum Credits: 3

Maximum Credits: 3

How might an analysis of performance lead us toward new epistemologies of race? This is course explores contemporary criticism, archival sources, and multimedia materials in order to ask questions about race and the politics of performance in the 20th and 21st century. We will engage recent works in black and latinx performance studies and sound studies alongside poetry, fiction, video, sound, and live events. We will consider writing and performance as interfacing mediums, not merely defined by influence but by mutual transformation. Our lens is decidedly transnational: we chart the ways that performance travels, buoyed by historical events, social movements, and developments in technology.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

MUSIC 2306 - MUSIC

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MUSIC 2321 - MUSIC, GENDER AND SEXUALITY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MUSIC 2341 - MUSIC IN AFRICA

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MUSIC 2396 - MUSIC IN SOCIETY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MUSIC 2397 - MUSIC AND RACE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

MUSIC 2431 - INSTRUMENTATION & ORCHESTRATION

Minimum Credits: 3
Maximum Credits: 3
A survey of different styles of instrumentation and orchestration in the European art music tradition. Focus of the course may change from year to year.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MUSIC 2442 - FIELD AND LAB METHODS

Minimum Credits: 3
Maximum Credits: 3
A study of research designs, field procedures, recording and photographic possibilities, as well as some laboratory procedures will be related to actual field work conducted as a part of this course.
Academic Career: Graduate
Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2494 - MUSIC AND COMMUNICATION

Minimum Credits: 3

Maximum Credits: 3

Music and communication is a team-taught, interdisciplinary graduate-level seminar on cultural studies approaches to music and communication. The course will be divided into two parts: the beginning of the course will map out some of the key intellectual and methodological issues arising at the intersection of music and communication studies. After this theoretical introduction, the second part of the course will consider recent scholarship that has attempted to address these concerns.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

MUSIC 2517 - MAJOR COMPOSER

Minimum Credits: 3

Maximum Credits: 3

This course examines the life and works of a major figure in Western art music. The content of the course changes, but it emphasizes music in its historical and cultural contexts, as well as individual genres and styles.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2611 - MUSICOLOGY SEMINAR

Minimum Credits: 3

Maximum Credits: 3

The seminar focuses on selected research problems or theoretical issues for intensive study and discussion with students taking a major role in class presentation. Past topics have included American music before the Civil War, and source study of the Bach passions.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2621 - ETHNOMUSICOLOGY SEMINAR

Minimum Credits: 3

Maximum Credits: 3

The seminar focuses on selected research problems or theoretical issues for intensive study and discussion with students taking a major role in class presentation. Past topics have included the writings of Charles Seeger.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Music (MA or PHD)

Course Attributes: Asian Studies, Global Studies

MUSIC 2631 - COMPOSITION & ANALYSIS TUTORIAL

Minimum Credits: 3

Maximum Credits: 3

Tutorial instruction in composition and analysis; students in composition and theory normally enroll every semester.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2632 - COMPOSITION SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Issues of collective interest to composers; student's examination of one another's work; reading and performance of students' (and others') work.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2700 - JAZZ MUSICIAN AS COMPOSER

Minimum Credits: 3

Maximum Credits: 3

This course will consider the language of jazz through the study of jazz composition and form. Using works by master composer/performers of the jazz canon, we will explore some of the concepts and relationships between compositional structure, improvisation, and spontaneous composition.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

MUSIC 2710 - JAZZ STYLES AND ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

This seminar will be an analytical examination of musical transcripts and composers' manuscripts of works by some of the most innovative jazz composers. Many of these manuscripts and transcriptions are held by the university of Pittsburgh jazz archives, which houses the music and recordings of jazz innovators who have participated in the university of Pittsburgh jazz seminar beginning in 1970. The course will also draw on the archival services of the Klaus Kuhnke-Archiv, in Bremen, Germany; and the Rutgers University Institute of Jazz Studies, Dan Morgenstern, director. (Morgenstern is a frequent participant in the Pitt annual jazz seminar and a contributor to Pitt's international jazz archive journal.) This course is primarily theory-based analysis, and will require that students understand and develop a thorough knowledge of accepted analytical techniques. It will examine works by major innovators such as Art Tatum, Bud Powell, Charlie Parker, Dizzy Gillespie, Sonny Stitt, Sonny Rollins, Wes Montgomery, Jim Hall, and Dodo Marmarosa in detail.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MUSIC 2720 - ADVANCED JAZZ COMPOSITION AND ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

This course offers tutorial instruction in jazz composition, orchestration and analysis to graduate students in music.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Music (MA or PHD)

MUSIC 2721 - JAZZ STUDIES SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

MUSIC 2725 - JAZZ AND PROTEST

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MUSIC 2731 - JAZZ SALON

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Workshop

Grade Component: Grad Letter Grade

MUSIC 2740 - SMALL ENSEMBLE

Minimum Credits: 3

Maximum Credits: 3

This course is designed as a performance course that focuses on the repertoire of the small jazz ensemble from 1940 through 1960. The student will be expected to learn the repertoire of such major jazz innovators as Charlie Parker, Dizzy Gillespie, Art Blakey and the jazz messengers, Thelonious Monk, John Coltrane, Bill Evans, Oscar Peterson, Miles Davis, Sonny Rollins, Stan Getz, etc. Grades in this course will be based solely on the student's ability to perform from memory in a concert setting, works from the major artists listed above.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Music (MA or PhD)

MUSIC 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 9

Independent study is used only to allow time in the student's schedule to prepare for the comprehensive examination or prospectus meeting. It is not appropriate to register for independent study to complete the requirements for any other course; nor, as a rule, is independent study an appropriate option for first- or second-year students (or any other student having many outstanding course requirements). Grading: s/n. Note: for students in composition and theory and historical musicology, no more than six credits of independent study may be counted toward the 72 credits required for the Ph.D. Degree; for students in ethnomusicology, no credits earned in courses of independent study may be counted toward the 72 credits required for the Ph.D. Degree.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

MUSIC 3000 - PHD DISSERTATION

Minimum Credits: 1

Maximum Credits: 9

Research for and writing of the doctoral dissertation in music.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

MUSIC 3902 - DIRECTED STUDY FOR PHD STUDENT

Minimum Credits: 3

Maximum Credits: 3

Directed study on musical topics for students in the Ph.D. program.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

Neurobiology

MSNBIO 2008 - PRO-SEMINAR

Minimum Credits: 1

Maximum Credits: 1

Each member of the program faculty presents an overview of the topic on which s/he works and then leads a discussion of a research article in that area. Critical analysis of experiments and of research is emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad SN Basis

MSNBIO 2010 - SCIENTIFIC ETHICS

Minimum Credits: 1

Maximum Credits: 1

The course is an introduction to basic ethical issues that arise in the course of conducting scientific research. It is intended for graduate students in the center for neuroscience who have completed at least one year of graduate work. The course will be composed of informal lecture presentations followed by class discussion of issues.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MSNBIO 2014 - SPEAKING OF SCIENCE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MSNBIO 2041 - DEVELOPMENTAL NEUROSCIENCE

Minimum Credits: 3

Maximum Credits: 3

This course is designed to provide an overview of principles that govern the developmental assembly of a complex nervous system. Topics covered include formation of neural tube and neural crest, birth and proliferation of neurons, cell migration, neuronal differentiation, synapse formation, synaptic plasticity, development of CNS circuits, and behavior. These topics will be discussed in the context of experimental results obtained by anatomical, biochemical and electrophysiological techniques using vertebrate and invertebrate animals.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MSNBIO 2070 - HUMAN PHYSIOLOGY

Minimum Credits: 4

Maximum Credits: 4

Lectures and reading on the following: (1) functions of the cardiovascular system; (2) respiration; (3) digestion and absorption in the gut; (4) kidney

function and the regulation of body fluids; (5) the regulation of metabolism; and (6) reproduction.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSNBIO 2072 - INTRODUCTION TO NEURAL ENGINEERING

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

MSNBIO 2100 - CELLULAR AND MOLECULAR NEUROBIOLOGY 1

Minimum Credits: 5

Maximum Credits: 5

This course is the first component of the introductory graduate sequence designed to provide an overview of cellular and molecular aspects of neuroscience. This course covers nerve cell biology, protein chemistry, regulation of gene expression, receptor function, and second messenger signaling in a lecture format. A background in basic biology is required.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Neurobiology (PHD) or Neuroscience (PHD or MS)

MSNBIO 2101 - CELLULAR & MOLECULAR NEUROBIOLOGY 2

Minimum Credits: 3

Maximum Credits: 3

This course is the second component of the introductory graduate sequence designed to provide an overview of cellular and molecular aspects of neuroscience. This course covers the electrical properties of neurons, synaptic transmission, and neural development. A background in basic biology is required.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Neurobiology (PHD) or Neuroscience (PHD or MS)

MSNBIO 2102 - SYSTEMS NEUROBIOLOGY

Minimum Credits: 6

Maximum Credits: 6

This course is a component of the introductory graduate sequence designed to provide an overview of neuroscience. This course provides an introduction to the structure of the mammalian nervous system and to the functional organization of sensory systems, motor systems, regulatory systems, and systems involved in higher brain functions. It is taught primarily in a lecture format with some laboratory work.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Neurobiology (PHD)

MSNBIO 2112 - NEUROBIOLOGY OF DISEASE

Minimum Credits: 2

Maximum Credits: 2

This course is designed to provide a survey of some of the major neurological and psychiatric disorders for the non-clinician. Each session will focus on a particular disorder and will include a patient presentation (live or by video tape), and a discussion of the etiology, epidemiology, pathophysiology, and treatment of that disorder. Participants will be asked to do some background reading each week, to prepare a short grant

application on a topic of relevance to the neurobiology of disease, and to then participate in the peer review of an application of another course participant. Reading will consist of reviews and recent research articles.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSNBIO 2135 - HISTORICAL PERSPECTV IN NEUROSCI

Minimum Credits: 2

Maximum Credits: 2

This seminar course explores the origins and evolution of modern neuroscientific concepts from the 17th and mid-20th centuries. Discussions of primary and secondary source material will focus on understanding the role of contemporary philosophical, scientific, social and technological factors in the development of neuroscientific thought. Another goal is to develop an appreciation of their contributions to current neuroscientific dogma.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSNBIO 2600 - MS THESIS RESEARCH

Minimum Credits: 1

Maximum Credits: 14

A directed research project which results in a thesis for a master's degree.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

MSNBIO 2612 - ADVANCED DEVELOPMENTAL BIOLOGY

Minimum Credits: 2

Maximum Credits: 2

This course will examine selected topics in developmental biology at an advanced level. Topics may include pattern formation in insects, cell lineage analysis, cell-cell interactions and the specification of cell fates, cell adhesion molecules, genetic approaches to mammalian embryo genesis and the extracellular matrix in development. Emphasis will be placed on the critical reading of papers and classroom discussion.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSNBIO 2614 - NEUROPHARMACOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course will broadly review neuropharmacology and neurobiology, study monoamine, cholinergic, and GPCR biology, and explore the blood-brain barrier and its significance to neuropharmacology. The course will focus on the molecular mechanisms of a drug action for different classes of compounds including, but not limited to, antidepressants, antipsychotics, anti-epileptics, anesthetics, weight loss, stimulants, neuroprotective, addiction, pain, and migraine drugs. In addition to the formal lectures the course will emphasize critical reading of the primary literature through journal-club style discussions and cover the most recent treatment and therapeutic avenues being developed for a broad range of neurologic and psychiatric disorders. The course is ideally suited for Molecular Pharmacology and Neuroscience graduate students or any other graduate student with an interest in neurological diseases and their treatments. The course is also appropriate for pre-professional undergraduates who have completed 4 semesters of chemistry and 2 semesters of biology.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

MSNBIO 2616 - METALS, GASES, FATS, IN NEUROTRANSMISSION

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

MSNBIO 2622 - MECHANISMS AND CLINICAL PRESENTATION OF PAIN

Minimum Credits: 2
Maximum Credits: 2

This course provides attendees with vocabulary and knowledge about anatomy, physiology, mechanisms, and modulation of pain. This fundamental knowledge is complemented by assigned readings from literature and clinical presentations about pain syndromes and pain management. The course is offered in the fall term.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

MSNBIO 2623 - PAIN MODELS: RATIONALE, TESTING AND INTEPRETATION

Minimum Credits: 1
Maximum Credits: 1

This course will focus on the design and analysis of animal and human pain models and will incorporate classroom presentations about various pain models (e.g. inflammatory, neuropathic, etc.). Classroom discussions will be based on assigned readings and include the relevant history and rationale for use of different tests/models, including critical assessment of strengths/weaknesses and limitations to interpretation of outcomes. Importantly, data acquisition, analysis and presentation will be included in evaluating the interpretability of outcomes.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSNBIO 2624 - GRANT WRITING

Minimum Credits: 3
Maximum Credits: 3

The course will cover the fundamentals of grant writing with a focus on NIH style pre-doctoral grants. Through a combination of lectures and student led critiques and discussions, students will work their way through the essential components of a fundable proposal starting with specific aims and ending with an introduction to a revised application. Students will generate each component of a grant application which will be critiqued by faculty and the other members of the class.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PLAN: Neurobiology (PhD) or Neuroscience (PhD)

MSNBIO 2632 - ADVANCED NEUROPHYSIOLOGY

Minimum Credits: 2
Maximum Credits: 2

The primary objective of this course is for students to develop critical scientific reasoning by learning to evaluate the essential components of classic research presented in well written papers. Secondly, students will gain a solid foundation in neurophysiology by examining, in detail, the underlying principles underlying current flow through a neuron's membrane, the generation and propagation of action potentials, synaptic transmission at the neural muscular junction, and sensory transduction. Course material will consist of papers from Hodgkin, Huxley, Katz, Fatt and others. Complementing the classic papers will be contemporary work on the same topic. Students will be expected to have had basic neurophysiology and be familiar with electrostatics, electric circuits and differential equations.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

MSNBIO 2650 - JOURNAL CLUB

Minimum Credits: 1

Maximum Credits: 1

Students present their research, or a recent research article from a broad range of topics selected by the student in consultation with a faculty advisor. The course meets weekly during which the student presents his/her research in progress or an article of his/her choice. Emphasis is placed on a careful analysis and critical evaluation of the manuscript as well as the development of teaching and speaking skills needed for scientific presentation. The student is expected to elucidate issues relevant to the topic and to answer questions from other graduate students and faculty.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

MSNBIO 2651 - PAIN JOURNAL CLUB

Minimum Credits: 1

Maximum Credits: 1

This discussion-based course uses assigned readings to examine pain mechanisms and management with an emphasis on critical literature evaluation and topical developments in the field of pain.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

MSNBIO 2652 - TOPICS IN NEUROLOGICAL DISORDERS

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

MSNBIO 2660 - NEUROBIOLOGY SEMINAR SERIES

Minimum Credits: 1

Maximum Credits: 1

Nationally and internationally recognized researchers in the field of neuroscience present scientific findings. Students meet informally with each speaker to discuss seminal topics.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

MSNBIO 2680 - SPECIAL TOPICS

Minimum Credits: 1

Maximum Credits: 9

A series of special topics courses are offered by individual members of the department or by small groups of the faculty. The general format involves the detailed analysis of a specific research area, exploring its development and current status by the presentation and discussion of research papers.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

MSNBIO 2681 - SEMINAR IN CORTICAL CIRCUITS

Minimum Credits: 1

Maximum Credits: 1

This discussion-based course uses current readings to examine cortical function with an emphasis on circuit analyses using electrophysiological,

computational, behavioral and/or developmental approaches.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

MSNBIO 2682 - CURRENT RESEARCH ON PAIN

Minimum Credits: 1

Maximum Credits: 1

An advanced graduate level course for students interested in current research on pain mechanisms, management and clinical presentation of pain. Presentations by course participants form the basis for class participation and discussion.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

MSNBIO 2683 - CURRENT TOPICS IN DEVELOPMENTAL NEUROBIOLOGY

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: [(MSNBIO 2100 or NROSCI 2100) and (MSNBIO 2101 or NROSCI 2101)] or INTBP 2000; Plan: Neuroscience (PHD) or Neurobiology (PHD)

MSNBIO 2690 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

This course provides the student an opportunity to carry out a specific laboratory project in any area of interest in neurobiology.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Neurobiology (PHD)

MSNBIO 3030 - SEMINARS IN SYNAPTIC FUNCTION

Minimum Credits: 1

Maximum Credits: 1

This discussion-based course uses recently published research articles to examine synaptic function, including neurotransmitter release, receptor regulation, and different forms of synaptic plasticity.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

MSNBIO 3600 - PHD DISSERTATION RESEARCH

Minimum Credits: 1

Maximum Credits: 14

After advancement to candidacy for the Ph.D. degree, students enroll in this course to pursue original experimental laboratory research, the results of which will provide the substance of their doctoral dissertation. A minimum of 40 credits of this course are required for the Ph.D. degree in the school of medicine.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: Neurobiology (PHD)

Neurological Surgery

NSURG 2907 - INDEPENDENT STUDY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

NSURG 5383 - INDIVIDUAL STUDY OR RESEARCH

Minimum Credits: 0

Maximum Credits: 0

The department of neurological surgery will arrange an individual study or research experience for third year medical students in an area of their interest.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

NSURG 5420 - NEUROSURGERY SUBINTERNSHIP

Minimum Credits: 0

Maximum Credits: 0

During this four-week elective the student will work as a subintern sharing in the operation of the neurosurgery service. Points of interest will be pathophysiology of neurological problems, neurological diagnosis and recognition and treatment of neurosurgical emergencies. The student will scrub at surgery and attend and participate in all conferences.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

NSURG 5422 - PEDIATRIC NEUROSURGERY

Minimum Credits: 0

Maximum Credits: 0

A four-week elective offering the student a sub internship sharing in the full operation of the neurosurgery service with the house staff. Points of emphasis will be pathophysiology of neurological problems, neurological diagnosis and recognition and treatment of neurosurgical emergencies. The student will scrub at surgery and attend and participate actively in all conferences. The elective objectives are: to perform a careful, problem-oriented, neurological examination; to recognize, evaluate and direct the diagnostic work up of common neurosurgical problems such as lumbar and cervical disc herniation, brain tumor, head trauma, intracranial aneurysm, etc.; to recognize and manage increased intracranial pressure, brain herniation, and electrolyte and metabolic disturbances, peculiar to neurological patients; and the basic principles of neurosurgical techniques as well as basic neurosurgical topographic anatomy.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

NSURG 5430 - INTRO CLINICAL NEUROPHYSIOLOGY

Minimum Credits: 0

Maximum Credits: 0

During this four-week elective the student will be exposed to the use of electrodiagnostic tools with particular emphasis on the utilization of auditory, visual and somatosensory evoked potentials in the study of clinical neurological disorders in man. Computational analysis of ongoing EEG will also

be utilized. Diagnostic assessment both intraoperative and ICU monitoring will be performed. Opportunities are available to participate in research in electrophysiology and computational analysis of data.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

NSURG 5435 - INTRODUCTION TO CLINICAL NEUROSURGERY

Minimum Credits: 0

Maximum Credits: 0

This introductory clinical elective will provide students with experiences in the care of neurosurgical patients. A student will work as a member of the clinical team, sharing in the full operation of the neurosurgery service with the house staff. Points of emphasis will be pathophysiology of neurological/neurosurgical problems, neurological diagnosis, and recognition and treatment of neurosurgical emergencies. The student will scrub at surgery and attend and participate actively in all conferences. Students will have the opportunity to be exposed to cutting edge specialized areas of neurosurgery including gamma knife radiosurgery, neuroendoscopy, and endovascular neurosurgery. In selected cases, students may elect to participate in ongoing research projects in neuro-oncology, neuro-trauma, spine biomechanics, functional neurosurgery, and neurophysiology.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

NSURG 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0

Maximum Credits: 0

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

NSURG 5705 - HEAD AND NECK DISSECTION (ILS)

Minimum Credits: 0

Maximum Credits: 0

This course fulfills the integrated life science (ILS) graduation requirement. The course is a four-week selective combining precepted anatomic dissection, various imaging modalities, lectures, operating room exposure, and clinical pathology in a systematic manner. The areas to be covered include anatomy of the head and neck. The course will include lectures in anatomy, pathology and imaging modalities; precepted anatomical dissections and clinical experiences. Clinical experiences will include, but are not limited to, exposure to neurosurgical and otorhinolaryngological procedures in the operating rooms, shadowing time in clinic, as well as assisting in neuropathological examinations. All students will be exposed to the diagnostic modalities appropriate for each anatomic area. They will also have the opportunity to see patients and follow their evaluations and management. To fulfill course requirements, each student will be expected to prepare a formal case presentation correlating the clinical findings, anatomy, diagnostic modalities, pathology and treatment plan.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

NSURG 5810 - INJURY RESEARCH AND CONTROL

Minimum Credits: 0

Maximum Credits: 0

Students in four-week elective may join basic research projects or initiate their own research projects at center for injury research and control (circl). Center conducts injury control research, gathers and disseminates information on injuries, provides training for healthcare professionals and informs public and community leaders on injury control measures. Students work with epidemiologists to identify risk factors associated with specific injury types. Designed for those interested in gaining residency experience in epidemiologic methods with emphasis on surveillance and/or descriptive

injury evaluation..

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

NSURG 5880 - NEUROSURGICAL RESEARCH

Minimum Credits: 0

Maximum Credits: 0

Student will participate in an ongoing research project in the department of neurosurgery under the supervision of an advisor. Objectives include training in basic neurosurgical research techniques and procedures as well as the opportunity to gain in-depth knowledge in the basic neurosciences. This elective is offered in four-week blocks and two blocks must be elected.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

NSURG 5899 - INDEPENDENT STUDY IN NEUROLOGICAL SURGERY

Minimum Credits: 0

Maximum Credits: 0

The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

NSURG 5900 - EXTRAMURAL NEUROSURGERY

Minimum Credits: 0

Maximum Credits: 0

A clinical experience in neurological surgery may be arranged at an institution other than the university of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Neurology

NEURO 5366 - NEUROLOGY CORE CLERKSHIP

Minimum Credits: 0

Maximum Credits: 0

The (3-week) neurology clerkship focuses on common neurological problems: presentation, diagnosis and treatment. NSURG, neuropath and neurorad experiences are also provided. Clinical teaching includes INPT and OPT settings. Exposure to NSURG or neuropath Brain cutting are required. Integrated teaching on two afternoons utilizes interactive lectures, case conferences, neurorad rounds, and critical reviews of literature. Performance-based evaluations and NBME shelf exam are main modes of student evaluation. Must accompany registration in PSYCH 5366.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

NEURO 5389 - CLINICAL NEUROLOGY ELECTIVE

Minimum Credits: 0

Maximum Credits: 0

This four week elective will provide a broad exposure to neurological disorders in an inpatient and outpatient setting. Students may rotate on the inpatient neurology ward, the neurology consult service, or the pediatric neurology service. Students will do initial patient evaluations and will follow patients daily. They will be involved in diagnostic and therapeutic decision making. An emphasis will be placed on neuroanatomical correlation.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

NEURO 5393 - INDEPENDENT STUDY IN NEUROLOGY

Minimum Credits: 0

Maximum Credits: 0

This is a third-year level elective. This course may be arranged as a research or a special clinical period of time. All electives are four weeks in duration and will be more specifically identified as to content on the student's transcript at the time credit is given.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

NEURO 5410 - NEUROLOGY ACTING INTERNSHIP

Minimum Credits: 0

Maximum Credits: 0

A four week acting internship is offered on the clinical neurology service. Students will be the primary person responsible for initial patient evaluations and will follow patients daily, order tests and perform procedures including lumbar puncture. They will assimilate test and treatment results for discussion with the attending neurologist during daily rounds. Students will be directly involved with diagnostic and therapeutic decision making. An emphasis will be placed on neuroanatomical correlation.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

NEURO 5420 - CLINICAL NEUROLOGY

Minimum Credits: 0

Maximum Credits: 0

Four week elective on consult service at health center hospitals and outlying hospitals; participation in investigation and management of patients; discussion of cases and basic mechanisms pertinent to understanding neural function and pathogenesis of neurological diseases. History taking, detailed physical and neurological examination, and recording information on patients will be required.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

NEURO 5421 - STROKE SERVICE

Minimum Credits: 0

Maximum Credits: 0

This four week clinical neurology elective will place an emphasis on the evaluation and treatment of patients with cerebrovascular disease including ischemic cerebral infarction and intracerebral hemorrhage. Patients will be seen in the inpatient ward and in an outpatient stroke clinic. Students may participate in ongoing acute stroke trials. They will observe carotid and transcranial doppler ultrasound studies.

Academic Career: Medical School

Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

NEURO 5425 - OUTPATIENT CLINICAL NEUROLOGY

Minimum Credits: 0

Maximum Credits: 0

This four week elective is a closely supervised clinical clerkship providing a broad exposure to common and unusual outpatient neurologic conditions. Initial manifestations of disease, physical exam findings, effective diagnostic evaluation and treatment options are emphasized. Students will actively participate in initial and follow visits of patients with faculty. Students will also work in neurology subspecialty clinics including stroke, epilepsy, multiple sclerosis, neuromuscular disease, aphasia and neurological rehabilitation.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

NEURO 5430 - NEONATAL NEUROLOGY

Minimum Credits: 0

Maximum Credits: 0

A four week elective consists of a closely supervised clinical clerkship in neonatal neurology. Students will participate in the diagnostic investigation and management of neonates and young infants with neurologic disorders in both inpatient and outpatient settings. Students, with attending supervision, will learn the neurologic examination of the newborn and evaluation of children with suspected neural disorders. The understanding of neural function and development with its relationship to brain disorders will be emphasized.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

NEURO 5435 - PEDIATRIC NEUROMUSCULAR DISEASE

Minimum Credits: 0

Maximum Credits: 0

This four week elective is a closely supervised clinical clerkship which will provide an opportunity to study a variety of pediatric neuromuscular disorders. Students will participate in the diagnostic evaluation and management of patients in the muscular dystrophy association clinic and have an opportunity to observe electromyographic examinations. Students will perform new patient evaluations and participate in the planning and interpretation of diagnostic studies.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

NEURO 5440 - PEDIATRIC NEUROLOGY

Minimum Credits: 0

Maximum Credits: 0

Four week elective on consult service; participation in investigation and management of patients; discussion of cases and basic mechanisms pertinent to understanding neural function and pathogenesis of neurological diseases. History taking, detailed physical and neurological examination, and recording information on patients will be required.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

NEURO 5441 - CHILD NEUROLOGY/EPILEPSY

Minimum Credits: 0

Maximum Credits: 0

A four week elective at Childrens' Hospital will provide the student with the opportunity to see inpatients and outpatients with seizures. Students will participate in the evaluation, diagnosis and treatment of these patients and will help to evaluate patients undergoing surgical consideration. Students will learn to identify certain seizure patterns by review of seizures and EEGs recorded on video tape. They will review neuroimaging studies and be involved in discussions about antiepileptic drug management.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

NEURO 5445 - BEHAVIORAL NEUROLOGY

Minimum Credits: 0

Maximum Credits: 0

A four to twelve week elective is offered at highland drive VA Medical Center for students who have an interest in cognitive and psychiatric manifestations of neurological disease. Typical clinical problems include cognitive and personality changes after stroke, head trauma, epilepsy, dementia, neurodegenerative disorders, movement disorders, amnesic syndromes, confusional states and patients with obsessive compulsive presentations. Teaching will include neuropsychological assessments, case conferences and clinical bedside attending rounds.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

NEURO 5450 - NEUROLOGY BOOT CAMP

Minimum Credits: 0

Maximum Credits: 0

Students who are entering the field of neurology or with strong interest in neurology and related fields require a solid foundation of knowledge and skills before embarking on internship and assuming the duties of an intern. This intensive course addresses relevant knowledge and skill building activities by educators deeply involved in postgraduate training.

Academic Career: Medical School

Course Component: Practicum

Grade Component: S/U Basis

Course Attributes: School of Medicine Year 4

NEURO 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0

Maximum Credits: 0

An individualized course of study may be arranged with the department to fit the student's needs. The student will meet with a department faculty person to design a clinical course of study for a four-week period of time. A written proposal must be approved by the faculty members, as well as the student's scheduling advisor. When approvals have been received, the course will be scheduled and department notified.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

NEURO 5730 - CLINICAL NEUROSCIENCES (ILS)

Minimum Credits: 0

Maximum Credits: 0

This 4 week elective will satisfy the requirement of the integrated life science course of the senior year. The course objectives are: introduce students to clinical academic medicine; educate students in the conduct, design and interpretation of clinical trials; illustrate how basic science findings lead to clinical research advances; and provide additional subspecialty experience. The course will consist of seminars illustrating how basic scientific observations lead to clinical research, internships with a clinical neuroscience residency mentor and a pbl where a clinical research project is

designed.

Academic Career: Medical School

Course Component: Lecture

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

NEURO 5875 - INDEPENDENT STUDY IN NEUROLOGY

Minimum Credits: 0

Maximum Credits: 0

A research project can be arranged with a faculty person on or off-site. Approval of all projects must be secured at the departmental and student affairs level. These independent study opportunities will be more specifically identified as to content on the student's transcript at the time credit is given.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

NEURO 5876 - BASIC RESEARCH IN NEUROLOGY

Minimum Credits: 0

Maximum Credits: 0

In this elective the student will be involved in the study of the molecular mechanisms that underly neuronal injury in ischemic stroke and the physiological repair mechanisms that injury triggers. One major focus is how prior ischemia induces the expression of neuroprotective gene products, such as stress proteins and death suppressor genes. Another interest is the role of neural stem cells in neural plasticity after injury. Techniques include animal surgery, cell culture, immunohistochemistry, in situ hybridization, Northern analysis and fluorescence detection of calcium.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

NEURO 5877 - COGNITIVE NEUROSCIENCE RESEARCH

Minimum Credits: 0

Maximum Credits: 0

This four week elective involves research in cognitive neuroscience. Students can participate in one of several research projects including: computer modeling of human language, computer modeling of the somatosensory cortex, behavioral studies of patients with language disorders and functional neuroimaging of language function. Emphasis will be placed on the relationship between cognitive structures of the mind and the neurobiologic implementation of mental structures in the cellular and molecular hardware of the brain.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

NEURO 5878 - ALZHEIMER'S DISEASE RESEARCH

Minimum Credits: 0

Maximum Credits: 0

An eight week elective places a special emphasis on memory and cognitive problems associated with aging and dementia. Emphasis is placed on clinical diagnosis and the use of neuropsychological testing, laboratory and neuroimaging studies in the diagnosis of dementia. There will be an opportunity to be involved in experimental therapeutic trial being carried out in patients with Alzheimer's disease.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

NEURO 5879 - MOLECULAR NEURO-BIOLOGY/GENETICS

Minimum Credits: 0

Maximum Credits: 0

This neurology elective will provide exposure to research directed at identifying molecules expressed during critical phases of neuronal differentiation using rat cerebellum as a model system. This tissue is studied using molecular biological methods to clone genes in granule cells to study their regulation. Methods used include standard cloning techniques, preparation of RNA from rat tissues, Northern blot analysis, in situ hybridization and histochemistry.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

NEURO 5900 - EXTRAMURAL NEUROLOGY

Minimum Credits: 0

Maximum Credits: 0

A clinical experience in neurology may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Neuroscience

NROSCI 2000 - RESEARCH AND THESIS MS DEGREE

Minimum Credits: 1

Maximum Credits: 12

Students working on their early research requirement may (but are not required to) register for NROSCI 2000.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: Neuroscience (MS, PHD)

NROSCI 2005 - COGNITIVE NEUROSCIENCE

Minimum Credits: 3

Maximum Credits: 3

This course will cover fundamental findings & approaches in cognitive neuroscience, with the goal of providing an over view of the field at an advanced level. Topics will include high-level vision, spatial cognition, working memory, long term memory, learning, language, executive control, and emotion. Each topic will be approached from a variety of methodological directions, i.e. Computational modeling, cognitive assessment in brain-damaged humans, non-invasive brain monitoring in humans and single-neuron recording in animals. Lectures will alternate with sessions in seminar format.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Neuroscience (MS or PHD)

NROSCI 2007 - JOURNAL CLUB

Minimum Credits: 1

Maximum Credits: 1

This course is intended for all graduate students and faculty members. Papers will be selected from current periodicals in neuroscience for

presentation. Emphasis is placed on a critical evaluation of experimental procedure and interpretation of data.

Academic Career: Graduate

Course Component: Colloquium

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Neuroscience (MS, PHD)

NROSCI 2008 - PRO SEMINAR

Minimum Credits: 1

Maximum Credits: 1

Each member of the program faculty presents an overview of the topic on which s/he works and then leads a discussion of a research article in that area. Critical analysis of experiments and of research is emphasized.

Academic Career: Graduate

Course Component: Colloquium

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Neuroscience (PHD)

NROSCI 2010 - SCIENTIFIC ETHICS

Minimum Credits: 1

Maximum Credits: 1

The course is an introduction to basic ethical issues that arise in the course of conducting scientific research. It is intended for graduate students in the center for neuro science who have completed at least one year of graduate work. The course will be composed of informal lecture presentations followed by class discussion of issues.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

NROSCI 2011 - FUNCTIONAL NEUROANATOMY

Minimum Credits: 3

Maximum Credits: 3

This course deals with human neuroanatomy and covers the basic structure of the central nervous system from spinal cord to cerebral cortex. Emphasis is placed on major systems and subsystems within the brain, and on their functional significance. The basic structure and morphology of nerve cells will be covered.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Neuroscience (MS or PHD)

NROSCI 2012 - NEUROPHYSIOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course examines the electrical properties of nerve cells and the mechanisms by which nerve cells communicate. The following topics will be covered: electrical principles used by nerve cells, the basis of the resting potential, the function of voltage-dependent ionic channels, the mechanisms by which action potentials are generated, neurotransmitter receptor function, and the physiology of fast synaptic communication.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Neuroscience (MS, PHD) or Neurobiology (PHD)

NROSCI 2014 - SPEAKING OF SCIENCE

Minimum Credits: 3

Maximum Credits: 3

Fulfills neuroscience advanced elective requirement. You will learn strategies for giving presentations about science to both a scientific audience and a public audience. Topics covered will include (1) how to engage your audience, (2) the art of breaking down your message, (3) tips for how to make clear, interesting slides, and (4) pointers on presentation style. All audiences want to learn interesting new scientific information, and have it delivered as a good story in an understandable manner by a personable, easy to approach person. You want to emphasize your message, stay focused, and convey the importance of your message while being interesting, maintaining the attention of the audience and making the learning process enjoyable. Guest speakers will provide background information about various uses of scientific information in the public domain. Communication skills, including knowing your audience and why they are interested in the information you are speaking about, how to translate scientific jargon into understandable concepts for the public, and how to keep the audience engaged will be discussed. Pointers will be given on answering questions, being conversational, and conveying the "big picture". Students will give a number of presentations in this course and learn to receive and give feedback effectively.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Neuroscience (PhD) or Neurobiology (PhD)

NROSCI 2017 - SYNAPTIC TRANSMISSION

Minimum Credits: 3

Maximum Credits: 3

This course examines the mechanisms by which neurotransmitters are synthesized and released and the biochemistry of synaptic responses. Basic physiological, biochemical, and morphological characteristics of neural transmission will be discussed. An emphasis will be placed on the experimental approaches used to examine these processes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Neuroscience (MS, PHD) or Neurobiology (PHD)

NROSCI 2018 - COMMUNICATING SCIENCE

Minimum Credits: 1

Maximum Credits: 2

This course is intended to foster skills in scientific communication and outreach by engaging students in the CNUP brain program. The brain program consists of a number of CNUP faculty and students who regularly visit area middle and high schools to introduce students to topics in neuroscience and develop interest through presentations and demonstrations in various areas of study (past presentations have included brain anatomy, memory and learning, traumatic brain injury, and basic neurophysiology). All students enrolled will be required to attend school visits throughout the semester. Students in the 1-credit option may use existing presentation materials. Students enrolled in the 2-credit option are expected to develop their own 10-15 minute topical presentation to be improved throughout the semester (usually consisting of a powerpoint presentation, a brief hands-on demonstration of some kind, and a handout for students) which will be evaluated by the instructor at the end of the semester.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad HSU Basis

NROSCI 2039 - PROCESSING IN NEURAL CIRCUITS

Minimum Credits: 3

Maximum Credits: 3

Sensory information flows from the periphery through different stages of processing in the central nervous system, to the thalamus and cerebral cortex. Within the cerebral cortex, feedforward processing is strongly modulated by top-down "feedback", with impacts on perception and decision making. The computations performed by individual neurons and networks of neurons within each region transform incoming information to produce an output that is projected to other targets in the brain. This course explores the local circuit mechanisms underlying the representation and refinement of sensory information at successive stages of the feedforward processing pathways. We will focus on the formation of receptive field properties within individual neurons, including contributions of feedforward circuitry and interactions between neurons within local circuits, and on how populations of neurons work together to encode information. An important theme of the course will also be to learn about current methodology in systems neuroscience research to study and perturb circuits. Descriptions of such experiments will be incorporated into lectures, and we will also read several primary research articles relevant to the major themes of the course.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

NROSCI 2041 - DEVELOPMENTAL NEUROSCIENCE

Minimum Credits: 3
Maximum Credits: 3

This course is designed to provide an overview of principles that govern the developmental assembly of a complex nervous system. Topics covered include formation of neural tube and neural crest, birth and proliferation of neurons, cell migration, neuronal differentiation, synapse formation, synaptic plasticity, development of CNS circuits, and behavior. These topics will be discussed in the context of experimental results obtained by anatomical, biochemical and electrophysiological techniques using vertebrate and invertebrate animals.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Neuroscience (PHD) or Neurobiology (PHD)

NROSCI 2043 - NEURAL PLASTICITY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NROSCI 2070 - HUMAN PHYSIOLOGY

Minimum Credits: 4
Maximum Credits: 4
Lectures and reading on the following: (1) functions of the cardiovascular system; (2) respiration; (3) digestion and absorption in the gut; (4) kidney function and the regulation of body fluids; (5) the regulation of metabolism; and (6) reproduction.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Neuroscience (PHD) or Neurobiology (PHD)

NROSCI 2100 - CELLULAR AND MOLECULAR NEUROBIOLOGY 1

Minimum Credits: 5
Maximum Credits: 5
This course is the first component of the introductory graduate sequence designed to provide an overview of cellular and molecular aspects of neuroscience. This course covers nerve cell biology, protein chemistry, regulation of gene expression, receptor function, and second messenger signaling in a lecture format. A background in basic biology is required.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Neuroscience (PHD) or Neurobiology (PHD)

NROSCI 2101 - CELLULAR & MOLECULAR NEUROBIOLOGY 2

Minimum Credits: 3
Maximum Credits: 3
This course is the second component of the introductory graduate sequence designed to provide an overview of cellular and molecular aspects of neuroscience. This course covers the electrical properties of neurons, synaptic transmission, and neural development. A background in basic biology is required.
Academic Career: Graduate
Course Component: Practicum

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Neuroscience (PHD) or Neurobiology (PHD)

NROSCI 2102 - SYSTEMS NEUROBIOLOGY

Minimum Credits: 6

Maximum Credits: 6

This course is a component of the introductory graduate sequence designed to provide an overview of neuroscience. This course provides an introduction to the structure of the mammalian nervous system and to the functional organization of sensory systems, motor systems, regulatory systems, and systems involved in higher brain functions. It is taught primarily in a lecture format with some laboratory work.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Neuroscience (MS, PHD)

NROSCI 2106 - NEUROSCIENCE SEMINAR SERIES

Minimum Credits: 1

Maximum Credits: 1

Nationally and internationally recognized neuroscience researchers present scientific findings. Students meet with speakers to discuss seminar topics.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Neuroscience (MS, PHD)

NROSCI 2107 - CUR RES NEURAL BASIS COGNITION

Minimum Credits: 1

Maximum Credits: 1

Presentations of current research by students and faculty of the center for the neural basis of cognition, and by visiting researchers from other universities. Areas of cognition covered include perception, memory, language, attention, motor control, and executive functions. Disorders of cognition as well as developmental issues are considered. Methodologies include single neuron recording studies, functional brain imaging studies, computational modeling studies, and behavioral investigations using normal populations and individuals with cognitive disorders.

Academic Career: Graduate

Course Component: Colloquium

Grade Component: Grad SN Basis

Course Requirements: PLAN: Neuroscience (PHD) or Neurobiology (PHD)

NROSCI 2112 - NEUROBIOLOGY OF DISEASE

Minimum Credits: 2

Maximum Credits: 2

This course is designed to provide a survey of some of the major neurological and psychiatric disorders for the non-clinician. Each session will focus on a particular disorder and will include a patient presentation (live or by video tape), and a discussion of the etiology, epidemiology, pathophysiology, and treatment of that disorder. Participants will be asked to do some background reading each week, to prepare an essay on a topic of relevance to the neurobiology of disease. Reading will consist of reviews and recent research articles.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Neuroscience (PHD) or Neurobiology (PHD)

NROSCI 2200 - NEUROPHARMACOLOGY OF ADDICTION

Minimum Credits: 3

Maximum Credits: 3

This course is designed to provide an overview of the biological basis of addiction and the neuropharmacology of drugs of abuse and dependence,

including basic principles of drug action as well as comprehensive coverage of the major classes of drugs (opioids, stimulants, nicotine, alcohol, sedatives, cannabis, hallucinogens). Students will study mechanisms of action, effects, pharmacokinetics as well as tolerance and dependence for each of these drugs/drug classes. The reasons for addiction including biological, genetic, cultural and other determinants will be discussed. Students will learn about laboratory-based methods used in addiction research, common pharmacotherapies used to manage alcohol and drug addiction, and consider public health issues associated with addiction.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

NROSCI 2410 - TRANSLATING SCIENCE

Minimum Credits: 3

Maximum Credits: 3

Students will work in creative teams of 2-3 students/team to develop creative new outreach tools for communication of science to the public (new lectures, laboratories, videos, films, activities). At the beginning of the semester, didactic lectures will cover background information about how to effectively communicate scientific information, how to break down a message, production of effective, engaging slides, animations and videos, and the use of hands-on activities to engage the audience. Guest speakers with expertise in film, video and use of museum exhibits will be included.

Students will then choose a topic area they wish to create an outreach lecture/video/etc. In, and with the assistance of dr. Cameron you will choose a scientific advisor with specific expertise on the topic you will develop an outreach tool for. Students will do background reading for the development of their outreach tool and have discussions with their advisor. If developing a lecture, students will develop a set of PowerPoint slides for the lecture, the lecture text with background references, and hands-on activities to complement the lecture for both a junior high and a high school version of the lecture. They will present the lecture at one of the grade levels it was designed for. For other activities, the activity will be developed along with background information regarding the use of the activity. The activity will be presented to a public group.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

NROSCI 2902 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 12

Students doing laboratory research with a neuroscience faculty member should register for this course.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Neuroscience (MS, PHD)

NROSCI 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 12

Students doing laboratory research with a neuroscience faculty member should register for this course.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Neuroscience (MS, PHD)

NROSCI 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1

Maximum Credits: 12

Students working on their dissertation may register for this course.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: Neuroscience (PHD)

NROSCI 3001 - APPRENTICESHIP

Minimum Credits: 1

Maximum Credits: 3

Students doing laboratory research with a faculty member who is not their mentor may register for this course.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Neuroscience (PHD)

NROSCI 3019 - SEMINAR IN AUTONOMIC FUNCTION

Minimum Credits: 1

Maximum Credits: 3

Students discuss research articles published recently in the general area of autonomic function. The goal of the course for the students is to gain perspective on this ongoing research, and more generally to receive instruction on how to critically evaluate the scientific literature.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Neuroscience (MS, PHD)

NROSCI 3030 - SEMINARS IN SYNAPTIC FUNCTION

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

Course Requirements: PLAN: Neuroscience (MS, PHD)

Nurse Anesthesia

NURSAN 2633 - NURSE ANESTHESIA CARE DELIVERY IN CAMBODIA: STUDY ABROAD

Minimum Credits: 1

Maximum Credits: 1

This course is designed to provide the undergraduate nursing student with exposure to the culture and health care delivery system in a foreign country. Emphasis will be placed on exploring health issues and risk factors, the impact of cultural characteristics on health care delivery and utilization, and the achievement of health-related goals in Cambodia. Students will compare the health care systems, nursing education and nursing practice in Cambodia and the United States.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

Course Attributes: Study Abroad

NURSAN 2700 - BASIC PRINCIPLES OF ANESTHESIA

Minimum Credits: 5

Maximum Credits: 5

This course prepares the student for entry into the clinical setting using classroom lecture and workshops. Basic concepts of anesthesia practice, techniques, monitoring, pharmacology, and responsibilities of the nurse anesthetist are presented. Students are introduced to anesthesia management strategies for common problems and situations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Nurse Anesthesia (DNP, MSN)

NURSAN 2701 - CHEMISTRY AND PHYSICS OF ANESTHESIA

Minimum Credits: 3

Maximum Credits: 3

Provides a detailed study of chemical and physical principles which apply to physiology, pharmacology and anesthesia equipment.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Nurse Anesthesia (DNP, MSN)

NURSAN 2715 - ADVANCED PRACTICE INITIATIVES FOR THE CRNA

Minimum Credits: 3

Maximum Credits: 3

Course focuses on the expansion of the knowledge base and refinement of practice skills of experienced CRNA's. Students identify an area of study in the field of nurse anesthesia in which they wish to improve knowledge and clinical expertise. Students develop and implement a comprehensive plan which includes establishing specific goals, developing a program of independent study, negotiation of a clinical practice site and completion of a defined clinical practicum. Objectives are met thru a learning contract, an oral and poster presentation and a written scholarly paper.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Nurse Anesthesia (DNP, MSN)

NURSAN 2720 - APPLD PHYSLGY & PATHOPHYSIOLOGY

Minimum Credits: 4

Maximum Credits: 4

Integrates basic physiologic principles with clinical anesthesia management regimes. Designed to formulate approaches to anesthesia nursing management in the presence of various common pathophysiologic conditions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NURSAN 2700; PLAN: Nurse Anesthesia (DNP, MSN)

NURSAN 2730 - ADV PRINCIPLES OF ANESTHESIA 1

Minimum Credits: 4

Maximum Credits: 4

Provides in-depth study of specialized areas of nurse anesthesia practice. Lectures concentrate on the theoretical basis for specific anesthesia nursing interventions and the rationale for their use in each of the areas of sub specialization. These areas encompass pediatric, obstetric, and regional anesthesia management as well as acute and chronic pain management.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NURSAN 2700; PLAN: Nurse Anesthesia (DNP, MSN)

NURSAN 2731 - APPLIED PHARMACOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course provides the basis for an in-depth understanding of the pharmacology of clinical anesthesia practice. Specific properties of anesthetic agents and commonly used adjunctive drugs are discussed and critically analyzed for appropriate application in clinical situations. Development of a comprehensive knowledge base with respect to drugs used by the nurse anesthetist in the clinical setting will be achieved through lecture,

presentation, situational examples, and case analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Nurse Anesthesia (DNP, MSN)

NURSAN 2740 - ADV PRINCIPLES OF ANESTHESIA 2

Minimum Credits: 3

Maximum Credits: 3

The course provides in-depth study of specialized areas of nurse anesthesia practice. Lectures concentrate on the theoretical basis for specific anesthesia nursing interventions and relevant research-based rationale for their use in each of the areas of sub specialization. The focus is on anesthetic care for patients with diseases requiring cardiac, thoracic, vascular, pulmonary cardiac/lung transplant procedures.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Nurse Anesthesia (DNP, MSN)

NURSAN 2750 - ADV PRINCIPLES OF ANESTHESIA 3

Minimum Credits: 3

Maximum Credits: 3

Provides an in-depth study of specialized areas of nurse anesthesia practice. The concentration is on the theoretical basis for specific anesthesia nursing interventions and the rationale for these interventions in each area of sub-specialization. Course will focus on anesthesia for neurologic, trauma, renal, respiratory, hepatic and hematologic disorders.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NURSAN 2700; CREQ: NURSAN 2794 or 2795; PLAN: Nurse Anesthesia (DNP, MSN)

NURSAN 2751 - TEAM TRAINING IN PATIENT SAFETY

Minimum Credits: 1

Maximum Credits: 1

This course is designed to provide the student with a theoretical and practical foundation relating to human factors, crew resource management and team performance issues that impact patient safety. Information and skills gained in this course will prepare the student to function as a patient advocate in a multidisciplinary environment and implement team-based strategies designed to promote patient safety. Crisis management protocols and communication algorithms e.g., Situation-background-assessment-recommendation (SBAR) will be used as examples.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Nurse Anesthesia (DNP, MSN)

NURSAN 2760 - CRNA ROLE SEMINAR

Minimum Credits: 3

Maximum Credits: 3

This course prepares the nurse anesthetist for new areas of responsibility as a professional contributing to education, research, and advanced practice roles. Students gain experience in developing and implementing a community service project designed to promote a positive image of nurse anesthetists. Current legislative, legal and ethical issues are presented. Professional opportunities and issues are explored.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NURSAN 2700; PLAN: Nurse Anesthesia(DNP, MSN)

NURSAN 2780 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 3

Allows individual student to pursue a specific problem or area of study with faculty guidance. Examples of individual projects which may be pursued include library study focused on a specific area relevant to anesthesia nursing or clinical work in a health care delivery setting.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Nurse Anesthesia (DNP, MSN)

NURSAN 2785 - THESIS

Minimum Credits: 1

Maximum Credits: 3

Individual instruction provides guidance in the preparation of a scholarly written report relating to anesthesia nursing. This report synthesizes the components of a research project; review of literature, methodology, presentation and discussion of findings, application of appropriate statistical measures, and conclusion.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: Nurse Anesthesia (DNP, MSN)

NURSAN 2787 - SEDATION PHARMACOLOGY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

NURSAN 2788 - SEDATION SKILL DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NUR 2004 and 2031; CREQ: NURSAN 2787 and NUR 2034

NURSAN 2789 - SEDATION PRACTICUM

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NUR 2004 and 2031; CREQ: NUR 2034 and NURSAN 2787 and 2788

NURSAN 2791 - CLINICAL PRACTICUM

Minimum Credits: 0

Maximum Credits: 0

This initial clinical course is designed to integrate with basic didactic coursework. Students will be assigned to affiliated clinical sites and anesthesia related specialty areas. Students will be introduced to anesthesia equipment, procedures, medications and the perioperative environment. Students will be required to meet or exceed level specific objectives and experiences will build from simple cases and techniques to the more complex.

Clinical experience will be guided by certified registered nurse anesthetists and anesthesiologists.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: CREQ: NURSAN 2700; PLAN: Nurse Anesthesia (DNP, MSN)

NURSAN 2792 - CLINICAL PRACTICUM

Minimum Credits: 0

Maximum Credits: 0

This second clinical course is designed to integrate with more advanced didactic coursework with focus on physiology and pathophysiology applied in anesthesia practice. Students will be assigned to affiliated clinical sites and anesthesia related specialty areas. Students will be assigned to more complicated cases and will be required to meet or exceed level specific objectives. Clinical experiences will be guided by certified registered nurse anesthetists and anesthesiologists.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PREQ: NURSAN 2700; PLAN: Nurse Anesthesia (DNP, MSN)

NURSAN 2793 - CLINICAL PRACTICUM

Minimum Credits: 0

Maximum Credits: 0

This third clinical course is designed to build on more advanced didactic coursework including focus on pathophysiology, applied pharmacology and specialty case management. Students will be assigned to affiliated clinical sites and anesthesia related specialty areas. Students will be assigned to increasingly complicated cases and will be required to meet or exceed level specific objectives. Clinical experiences will be guided by certified registered nurse anesthetists and anesthesiologists.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PREQ: NURSAN 2700; PLAN: Nurse Anesthesia (DNP, MSN)

NURSAN 2794 - CLINICAL PRACTICUM

Minimum Credits: 0

Maximum Credits: 0

This fourth clinical course is designed to assist the nurse anesthesia student to apply concepts from didactic coursework including focus on cardiovascular, thoracic, and vascular anesthesia. Advanced airway techniques and sophisticated laboratory analysis will be included. Students will be assigned to affiliated clinical sites and anesthesia related specialty areas. Students will be assigned to increasingly complicated and specialty cases and will be required to meet or exceed level specific objectives. Clinical experiences will be guided by certified registered nurse anesthetists and/or anesthesiologists.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PREQ: NURSAN 2700; PLAN: Nurse Anesthesia (DNP, MSN)

NURSAN 2795 - CLINICAL PRACTICUM

Minimum Credits: 0

Maximum Credits: 0

This fifth clinical course is designed to assist the nurse anesthesia student to apply concepts from didactic coursework including focus on neurosurgical, trauma, orthopedic, renal transplant and hepatic transplant anesthesia. Students will apply advanced principles of fluid and blood management and demonstrate the ability to treat perioperative hematologic disorders. Students will be assigned to affiliated clinical sites and anesthesia related specialty areas. Students will be assigned to increasingly complicated and specialty cases and will be required to meet or exceed level specific objectives. Clinical experiences will be guided by certified registered nurse anesthetists and/or anesthesiologists.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PREQ: NURSAN 2700; PLAN: Nurse Anesthesia (DNP, MSN)

NURSAN 2796 - CLINICAL PRACTICUM

Minimum Credits: 0

Maximum Credits: 0

This sixth clinical course is designed to assist the nurse anesthesia student to synthesize content from all advanced principles courses and to become increasingly independent in their clinical practice. Students will be assigned to affiliated clinical sites and anesthesia related specialty areas. Students will be assigned to increasingly complicated and specialty cases and will be required to meet or exceed level specific objectives. Clinical experiences will be guided by certified registered nurse anesthetists and/or anesthesiologists.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PREQ: NURSAN 2700; PLAN: Nurse Anesthesia (DNP, MSN)

NURSAN 2797 - CLINICAL PRACTICUM

Minimum Credits: 0

Maximum Credits: 0

This seventh clinical course is designed to assist the nurse anesthesia student to synthesize all didactic content and to demonstrate their ability to meet all program outcome criteria for clinical practice. Students will be assigned to affiliated clinical sites and anesthesia related specialty areas. Students will be assigned to all types of cases for patients across the acuity spectrum. Students will be expected to manage anesthesia with a high degree of autonomy in this clinical rotation. Clinical experiences will be guided by certified registered nurse anesthetists and/or anesthesiologists.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PREQ: NURSAN 2700; PLAN: Nurse Anesthesia (DNP, MSN)

NURSAN 3282 - DIRECTED SEMINARS IN NURSE ANESTHESIA PRACTICE

Minimum Credits: 1

Maximum Credits: 3

This seminar based course series is designed to provide the nurse anesthesia program DNP student with a strong theoretical and practical foundation grounded in nurse anesthesia science. In consultation with their faculty advisor, students will choose from among four different areas of focus including nurse anesthesia education, nurse anesthesia simulation methods, clinical research for the nurse anesthetist and nurse anesthesia administration, and nurse anesthesia policy. The seminar series focus and content will change according to current state of-the-art practice in nurse anesthesia with consideration given to faculty and student areas of interest, to include international practice in developing countries.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

NURSAN 3751 - TEAM TRAINING IN PATIENT SAFETY

Minimum Credits: 2

Maximum Credits: 2

This course is designed to provide the student with a theoretical and practical foundation relating to human factors, crew resource management and team performance issues that impact patient safety. Information and skills gained in this course will prepare the student to function as a patient advocate in a multidisciplinary environment and implement team-based strategies designed to promote patient safety. Crisis management protocols and communication algorithms e.g., Situation-background-assessment-recommendation (SBAR) will be used as examples.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

NURSAN 3782 - DIRECTED SEMINARS IN NURSE ANESTHESIA PRACTICE

Minimum Credits: 1

Maximum Credits: 3

This seminar based course series is designed to provide the nurse anesthesia program DNP student with a strong theoretical and practical foundation grounded in nurse anesthesia science. In consultation with their faculty advisor, students will choose from among four different areas of focus including nurse anesthesia education, nurse anesthesia simulation methods, clinical research for the nurse anesthetist, and nurse anesthesia administration. The seminar series focus and content will change according to current state of-the-art practice in nurse anesthesia with consideration given to faculty and student areas of interest.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Nurse Anesthesia (DNP, MSN)

NURSAN 3783 - REGULATION AND REIMBURSEMENT IN NURSE ANESTHESIA PRACTICE

Minimum Credits: 3

Maximum Credits: 3

This course examines the current regulatory requirements of governmental and non-governmental entities that impact and control nurse anesthesia practice. Approaches to influence positive changes in this practice discipline are explored. The generation of revenue in the specialty of anesthesia, including billing procedures and requirements of governmental and private health insurance providers, effective departmental organizational structure, and fraud are discussed. Current legal and advanced professional issues are included

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Attributes: Hybrid

NURSAN 3784 - CURRICULUM, INSTRUCTION AND EVALUATION IN NURSE ANESTHESIA EDUCATION

Minimum Credits: 3

Maximum Credits: 3

This course will prepare CRNAs for the various roles of an educator within a nurse anesthesia program. Concepts of academic and clinical curriculum development specific to nurse anesthesia programs, best practice methodologies for clinical and didactic instruction, and evaluation approaches for academic and clinical performance will be included.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Attributes: Hybrid

NURSAN 3785 - INTRODUCTION TO THE NURSE ANESTHETIST ROLE

Minimum Credits: 2

Maximum Credits: 2

This introductory course will provide student socialization into the role of nurse anesthesia practice and prepares the student for more advanced content within curriculum. This course provides fundamental concepts related to the professional role, anesthesia types and anesthesia processes. Safety principles essential to preventing negative outcomes for both patients and providers will be emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Nurse Anesthesia; CREQ: NURSAN 3099

NURSAN 3786 - BASIC PRINCIPLES OF ANESTHESIA

Minimum Credits: 3

Maximum Credits: 3

This course prepares the student for entry into the clinical practice setting by presenting fundamental concepts of general, regional, pain management, and sedation anesthesia. Airway management techniques, positioning, and an introduction to anesthetic pharmacology are emphasized. Anesthetic

management strategies for patients with common diseases and perioperative problems are examined.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Letter Grade

Course Requirements: PLAN: Nurse Anesthesia; PREQ: NURSAN 3785 ; CREQ: NURSAN 3790

NURSAN 3787 - BASIC PRINCIPLES OF ANESTHESIA LAB

Minimum Credits: 1

Maximum Credits: 1

This course provides students with necessary skills to enter clinical practice. Psychomotor, critical thinking and affective skills will be developed using a variety of experiential learning approaches. Best practices in simulation educational methods will be used and will include a variety of approaches. Students will demonstrate attainment of entry level skills required for clinical practice.

Academic Career: Graduate

Course Component: Credit Laboratory

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Nurse Anesthesia; PREQ: NURSAN 3785; CREQ: NURSAN 3790

NURSAN 3788 - CHEMISTRY AND PHYSICS IN ANESTHESIA

Minimum Credits: 2

Maximum Credits: 2

This course provides the nurse anesthesia student with a fundamental understanding of chemical, biochemical and physics principles as they relate to physiology, pharmacology and the practice of anesthesia. Essential concepts related to chemistry and physics principles necessary to provide safe and effective anesthesia care are emphasized. Chemistry and physics concepts will be related to anesthesia equipment and processes in order to illustrate their importance to practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Nurse Anesthesia; PREQ: NURSAN 3785; CREQ: NURSAN 3790

NURSAN 3789 - PHYSICAL DIAGNOSIS- ANESTHESIA

Minimum Credits: 1

Maximum Credits: 1

This course offers students the skills required for conducting a preoperative anesthesia history and physical (H&P) exam, identifying risk factors (anesthetic, patient, surgical), developing a relevant anesthetic management plan and writing appropriate post-operative orders. Students will gain skill in interpreting pre-operative diagnostic tests and lab values. Students will gain familiarity with the Electronic Medical Record and charting skills. Students in this course will also develop in the areas of enhancing patient and family relations as well as health screening and intervention. Students will participate in immersive educational approaches utilizing standardized patients and structured debriefing methods.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

Course Requirements: PREQ: (NUR 2004 or 2004D) and NUR 2031; CREQ: NURSAN 3790; PLAN: Nurse Anesthesia (DNP)

NURSAN 3790 - BASIC CLINICAL CARE 1: INTRO TO TECHNOLOGY, MONITORING, AND PRACTICE

Minimum Credits: 1

Maximum Credits: 1

This initial clinical course is designed to integrate with basic didactic coursework. Students will be assigned to affiliated clinical sites and anesthesia related specialty areas. Students will be introduced to basic level anesthesia technology and equipment, medications, monitoring procedures, and the perioperative environment. Experiences will begin with simple cases and techniques and build to more complex ones. Clinical experiences will be guided by Certified Registered Nurse Anesthetists and/or Anesthesiologists. Clinical case conferences and ongoing assessments will be conducted to evaluate the students' ability to apply basic didactic coursework into clinical anesthesia care.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Nurse Anesthesia; CREQ: NURSAN 3786

NURSAN 3791 - ADVANCED PRINCIPLES ANATOMY, PHYSIOLOGY & PATHOPHYSIOLOGY 1

Minimum Credits: 3

Maximum Credits: 3

This first course in a 2- course series is designed to help students understanding of advanced concepts in Anatomy, Physiology and Pathophysiology related to anesthesia care. Advanced principles of patient management supported by best evidence will be applied to the clinical practice of nurse anesthesia across a variety of body systems and surgical procedures. Students will formulate and evaluate approaches to anesthesia management in the presence of pathophysiologic conditions affecting the Central Nervous System (CNS), neuromuscular, cardiovascular, respiratory, skeletal, and immune systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Nurse Anesthesia; PREQ: NURSAN 3786; CREQ: NURSAN 3792

NURSAN 3792 - BASIC CLINICAL CARE 2: BASIC PRE-OPERATIVE, INTRAOPERATIVE, AND POST-OPERATIVE CARE

Minimum Credits: 1.5

Maximum Credits: 1.5

This second clinical course promotes development of skills gained in NURSAN 3790 and integrates prior basic didactic content with more advanced concepts. The primary focus will be on the application of physiology and pathophysiology into anesthetic practice. Students will be assigned to affiliated clinical sites and anesthesia related specialty areas as well as increasingly complicated cases. Clinical experiences will be guided by Certified Registered Nurse Anesthetists and Anesthesiologists. Clinical case conferences will be conducted to assess the students' ability to combine more advanced didactic content into patient specific perioperative anesthesia care.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Nurse Anesthesia; PREQ: NURSAN 3790; CREQ: NURSAN 3791

NURSAN 3793 - ADVANCED PRINCIPLES OF ANESTHESIA 1

Minimum Credits: 3

Maximum Credits: 3

This course is the first in the three-part Advanced Principles series which provides in-depth study of specialized areas of nurse anesthesia practice. Lectures will concentrate on the theoretical basis for specific anesthesia nursing interventions and the rationale for their use in the pediatric and obstetric specialties. Concepts related to regional anesthesia, acute pain management and chronic pain management will be reviewed. Plans of care for pediatrics, obstetrics, patients requiring regional anesthesia and pain patients will be developed and evaluated. Current techniques and technologies related to management of regional anesthesia and pain blocks will be reviewed and reinforced with a variety of simulation experiences (hands-on, screen based, virtual).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

NURSAN 3794 - EVIDENCE BASED NURSE ANESTHESIA PRACTICE

Minimum Credits: 1

Maximum Credits: 1

This course builds on knowledge and skills acquired in NUR 2000 and NUR 2011. Translation of research evidence to nurse anesthesia clinical practice is a focus. Students will critique research papers, quality improvement projects and programmatic evaluations. Students will gain an understanding of how clinical practice guidelines (e.g., American Society of Anesthesia, American Heart Association, World Health Organization, and Centers for Disease Control) are developed, evaluated and disseminated. Differences between research projects, quality improvement projects and program evaluation projects will be explored. Students will gain an understanding of methods for integrating clinical practice guidelines into capstone projects.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Nurse Anesthesia; PREQ: NUR 2034 and 2000

NURSAN 3795 - ADVANCED PRINCIPLES OF ANATOMY, PHYSIOLOGY, AND PATHOPHYSIOLOGY 2

Minimum Credits: 2

Maximum Credits: 2

This second course in the series is designed to review the relevant anatomy and physiology of the endocrine, renal, hepatic, gastrointestinal, (and other intraabdominal organ), immune, hematologic and genitourinary systems. Students will develop in-depth understanding of how pathophysiology involving these systems will influence anesthetic choices and management approaches. Referencing best-evidence and clinical protocols, students will describe management approaches for surgical and therapeutic procedures related to these systems. Additionally, the pathophysiology of psychiatric illness, infectious disease, cancer and obesity will be reviewed and approaches to anesthesia care in the presence of these conditions will be developed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Nurse Anesthesia; PREQ: NURSAN 3791; CREQ: NURSAN 3797

NURSAN 3796 - ADVANCED PHARMACOLOGY FOR NURSE ANESTHETISTS

Minimum Credits: 3

Maximum Credits: 3

This course provides the basis for in-depth understanding of the pharmacology of clinical anesthesia practice. Specific properties of anesthetic agents and commonly used adjunctive drugs are discussed and evaluated for appropriate application in clinical situations. Development of a comprehensive knowledge base with respect to drugs used by the Nurse Anesthetist in the clinical setting will be achieved through lecture, presentation, situational examples, and case analysis. Students will formulate specific pharmacologic plans through synthesis of a variety of concepts.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Nurse Anesthesia; PREQ: NUR 2034; CREQ: NURSAN 3797

NURSAN 3797 - ADVANCED CLINICAL CARE 1: PAIN MANAGEMENT, ULTRASOUND, REGIONAL ANESTHESIA, PEDIATRICS, & OBSTETRIC

Minimum Credits: 1.5

Maximum Credits: 1.5

This third clinical course is designed to begin integrating more advanced clinical concepts into the clinical experience. Primary focus will be on application of the principles of advanced physiology, pathophysiology and applied pharmacology to management of increasingly advanced clinical cases. Students will be assigned to affiliated clinical sites and anesthesia related specialty areas. Clinical experiences will be guided by Certified Registered Nurse Anesthetists and Anesthesiologists. Supplemental clinical case conferences will focus on the students' ability to integrate more advanced didactic content into patient specific clinical anesthesia care. Particular emphasis will be placed on discussion of approaches to pain management, regional anesthesia, obstetrics and pediatrics.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Nurse Anesthesia; PREQ: NURSAN 3792; CREQ: NURSAN 3793

NURSAN 3798 - ADVANCED PRINCIPLES OF ANESTHESIA 2

Minimum Credits: 3

Maximum Credits: 3

The second course in the Advanced Principles series provides in-depth study of specialized areas of Nurse Anesthesia Practice. Lectures concentrate on the theoretical basis for specific interventions and relevant research-based rationale for their use in each area of sub specialization. Planning for the anesthetic care of patients with diseases requiring cardiothoracic, pulmonary, vascular, gynecologic, genitourinary and transplant (heart and lung)

procedures is the focus. Current techniques and technology related to safe management of care for patients undergoing these procedures will be reviewed. Incorporated interactive workshops using models and mannequins will allow skill development in the areas of fiberoptic bronchoscopy, jet ventilation, Double Lumen Endobronchial Tube placement (DLEBT) and Central Venous Catheter insertion. Skills in scientific writing for publication in preparation for Capstone project completion will be developed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NURSAN 3795 and NURSAN 3793; COREQ: NURSAN 3801; PLAN: NURSAN BSN-DNP

NURSAN 3799 - DIRECTED SEMINAR: THE BSN TO DNP STUDENT ANESTHETIST

Minimum Credits: 1

Maximum Credits: 1

This seminar based course is designed to provide the Nurse Anesthesia Program DNP Student with a strong theoretical and practical foundation grounded in Nurse Anesthesia science. In consultation with their faculty advisor, students will choose from among four different areas of focus including Nurse Anesthesia Education, Nurse Anesthesia Simulation Methods, Clinical Research for the Nurse Anesthetist and Nurse Anesthesia Administration, and nurse anesthesia policy. The focus and content will change according to current state 'of-the-art practice in Nurse Anesthesia with consideration given to faculty and student areas of interest, to include international practice in developing countries.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Nurse Anesthesia; PREQ: NURSAN 3794; CREQ: NURSAN 3800

NURSAN 3800 - NURSE ANESTHETIST ROLE SEMINAR

Minimum Credits: 1.5

Maximum Credits: 1.5

This course prepares the nurse anesthesia student for their new role as a CRNA and Advanced Practice Registered Nurse. Areas of professional responsibility and potential professional roles will be addressed including APRN, educator, military member, consultant, self-employed practitioner, CRNA clinician, leader, change agent, organizational leadership position and administrator. Licensure, accreditation, certification and educational requirements for CRNAS as APRNS will be reviewed. Pathways to active involvement in community service and legislative advocacy will be discussed and analyzed. Legal, financial, malpractice and ethical issues related to nurse anesthesia practice will be addressed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Nurse Anesthesia; CREQ: NURSAN 3801

NURSAN 3801 - ADVANCED CLINICAL CARE 2: CARDIOTHORACIC, CARDIOVASCULAR AND VASCULAR

Minimum Credits: 1.5

Maximum Credits: 1.5

This fourth clinical course is designed to assist the nurse anesthesia student to integrate advanced clinical concepts being covered concurrently in the classroom with the clinical experience. Primary focus will be on specialty case management, including cardiovascular, thoracic, and vascular anesthesia. Advanced airway techniques and sophisticated laboratory analysis will be included. Students will be assigned to affiliated clinical sites and anesthesia related specialty areas to manage increasingly complicated and specialty cases. Clinical experiences will be guided by Certified Registered Nurse Anesthetists and/or Anesthesiologists. Supplemental clinical case conferences will be conducted with focus on these specialty populations. These conferences will correspond to current didactic courses.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Nurse Anesthesia; PREQ: NURSAN 3797; CREQ: NURSAN 3798

NURSAN 3802 - ADVANCED PRINCIPLES OF ANESTHESIA 3

Minimum Credits: 3

Maximum Credits: 3

The third course in the Advanced Principles series provides in-depth study of specialized areas of Nurse Anesthesia Practice. Lectures concentrate on the evidence base for specific anesthetic and surgical interventions. Anesthetic approaches and management plans for patients with traumatic injuries, burns (across the lifespan), alterations of hemostasis, hematologic disorders and neuropathology and pulmonary conditions will be reviewed. Neurosurgical, diagnostic radiology, solid organ transplant (renal, hepatic etc.) trauma, reconstructive and plastic surgery procedures will be reviewed. Current techniques and technology related to safe management of care for patients undergoing procedures involving these areas will be examined. Interactive workshops in managing trauma and performing invasive and non-invasive procedures will allow development of psychomotor skills in caring for burn and trauma patients. This course will also focus on principles of scientific writing for publication.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

NURSAN 3803 - ADVANCED CLINICAL CARE 3: NEUROSURGICAL, TRAUMA, AND EMERGENCY

Minimum Credits: 1.5

Maximum Credits: 1.5

This fifth clinical course builds upon experiences gained in NURSAN- 3801 and prior courses. The focus will be on demonstration and refinement of more advanced skills as well as incorporating content from concurrent didactic coursework into patient care. Students will demonstrate the ability to implement patient specific plans of care for neurosurgical, neurovascular, and trauma, renal, hepatic and emergency procedures. Students will also demonstrate the ability to manage complex pathophysiology. Students will gain an awareness of the broader professional roles and responsibilities of the CRNA (administrative, patient advocacy, process and patient safety evaluator). Supplemental clinical case conferences will be conducted with focus on these specialty populations and the CRNA role.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Nurse Anesthesia; PREQ: NURSAN 3801; CREQ: NURSAN 2750

NURSAN 3804 - ADVANCED CLINICAL CARE 4: SYNTHESIS OF PERIOPERATIVE CARE

Minimum Credits: 2

Maximum Credits: 2

This sixth clinical course builds upon experiences gained in NURSAN- 3803 and prior courses and is designed to help the student refine their knowledge base and develop increasing sophistication in practice. Students will be able to provide care for any combination of patient acuity level and complexity of procedure across the lifespan. Clinical experiences will be guided by Certified Registered Nurse Anesthetists and/or Anesthesiologists. Integrated clinical case conferences will require students to present their patients and defend their plan of care with rationale based on best practices.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Nurse Anesthesia; PREQ: NURSAN 3803

NURSAN 3805 - COMPREHENSIVE ANESTHESIA REVIEW SEMINAR

Minimum Credits: 2

Maximum Credits: 2

This course is designed to comprehensively review the body of knowledge necessary to enter Nurse Anesthesia practice. Nurse Anesthesia student preparation for both the DNP Comprehensive Examination and the National Board of Certified Registered Nurse Anesthetist National Certification Examination will be enhanced. Review topics will include: Basic Sciences, Equipment, Instrumentation, Technology, Basic Principles of Anesthesia and Advanced Principles of Anesthesia. A series of seminars and presentations interspersed with comprehensive, computerized examinations will be administered to allow students to evaluate their knowledge level and their test taking skills.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Nurse Anesthesia; PREQ: NURSAN 2750

NURSAN 3806 - TRANSITION TO CLINICAL PRACTIC

Minimum Credits: 2

Maximum Credits: 2

This final clinical course is designed to help the student transition from the student role to clinical practice. Students will be expected to create sophisticated patient and case specific management plans. Clinical experiences will be guided by Certified Registered Nurse Anesthetists and/or Anesthesiologists, but students will be expected to practice with little or no prompting from their clinical supervisors and understand their limitations. Clinical experiences will include specialty cases and experiences in all areas of practice as assigned. Clinical case conferences will be held that challenge the breadth of the students' knowledge base across the full scope of the clinical and professional role of the CRNA.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Nurse Anesthesia; PREQ: NURSAN 3804

Nurse Midwife

NURNM 3500 - AMBULATORY ROLE PRACTICUM

Minimum Credits: 3

Maximum Credits: 3

This course targets the implementation of evidence-based practices and interventions that serve as the basis for the nurse midwifery care of health conditions associated with pregnant and non-pregnant women within ambulatory healthcare settings. The implementation of culturally sensitive and appropriate gynecological, antepartal, and postpartum care drawn from diverse theoretical frameworks is also a primary focus of the course.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NURNM 3507 and NURNM 3513; CREQ: NURNM 3511; PLAN: Nurse Midwife (NURSMW-DNP)

NURNM 3501 - GLOBAL/COMMUNITY ROLE PRACTICUM

Minimum Credits: 1

Maximum Credits: 1

This practicum focuses on nurse midwifery assessment of various community level women's and maternal-child health issues and planning for intervention. Public health, epidemiologic, ethical and legal considerations are applied to critiquing proposed projects.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NURNM 3508 and NURNM 3509; PLAN: Nurse Midwife (NURSMW-DNP)

NURNM 3502 - HIGH RISK CHILDBEARING FAMILY

Minimum Credits: 4

Maximum Credits: 4

This course targets evidence based-practices and interventions that serve as the basis for family-centered nurse midwifery care of high risk conditions associated with pregnancy, labor and delivery, postpartum, and the neonatal period. Theories related to the woman's and family's experience associated with a high risk pregnancy are discussed and examined.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NURNM 3500; CREQ: 3504; PLAN: Nurse Midwife (NURSMW-DNP)

NURNM 3503 - INTEGRATION ROLE PRACTICUM

Minimum Credits: 7

Maximum Credits: 7

This course is the culminating nurse midwifery practicum with the student focusing on the practice of full scope nurse midwifery under the guidance and supervision of a Certified Nurse Midwife preceptor. Full scope nurse midwifery care encompasses counseling and management during the preconception, pregnancy, labor and birth, postpartum, neonatal period, and across the reproductive life cycle within the family.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NURNM 3504; CREQ: NURNM 3510; PLAN: Nurse Midwife (NURSMW-DNP)

NURNM 3504 - LABOR & BIRTH ROLE PRACTICUM

Minimum Credits: 4

Maximum Credits: 4

This practicum targets the nurse midwifery model of care in implementation of evidence-based practices and interventions that serve as the basis for the management of health conditions associated with family-centered pregnancy, labor and birth, postpartum, and the neonatal period. The implementation of culturally sensitive and appropriate antepartal to postpartal to neonatal care drawn from diverse theoretical frameworks is also a primary focus of the course.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NURNM 3500; CREQ: NURNM 3502; PLAN: Nurse Midwife (NURSMW-DNP)

NURNM 3505 - MANAGEMENT FETUS/NEONATE IN DYAD

Minimum Credits: 2

Maximum Credits: 2

This course focuses on nurse midwifery management of the fetus/neonate within the mother-newborn dyad and family. Emphasis is on selected theories, principles, and techniques from the physical and behavioral sciences central to the nurse midwifery model of care for the fetus/neonate. The NM DNP scope of practice with interprofessional collaboration and referral is incorporated.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NURNM 3512; CREQ: NURNM 3507; PLAN: Nurse Midwife (NURSMW-DNP)

NURNM 3506 - MANAGEMENT WOMEN'S COMPLEX HEALTH ISSUES

Minimum Credits: 2

Maximum Credits: 2

This course focuses on nurse midwifery model of care with women experiencing complex reproductive health issues. Emphasis is on selected theories, principles and techniques from the physical and behavioral sciences central to the nurse midwifery management of women, women's issues, health promotion for women, and diagnosing and managing complicated reproductive health problems. The NM DNP scope of practice with interprofessional collaboration and referral is incorporated.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NURNP 2523 and 2515 and 2505; CREQ: NURNM 3513; PLAN: Nurse Midwife (NURSMW-DNP)

NURNM 3507 - NEONATAL ROLE PRACTICUM

Minimum Credits: 1

Maximum Credits: 1

This practicum focuses on the nurse midwifery model of care for the neonate within the mother-newborn dyad and family. Examination, assessment and management of the neonate from birth through the first 28 days of life are applied in practice.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NURNM 3512; CREQ: NURNM 3505 and NURNM 3513; PLAN: Nurse Midwife (NURSMW-DNP)

NURNM 3508 - NURSE MIDWIFE GLOBAL AND COMMUNITY HEALTH

Minimum Credits: 1

Maximum Credits: 1

This course is concerned with the role of nurse midwives in population-based health. Public health, epidemiologic, ethical and legal issues applicable to women, newborns, and childbearing families in diverse settings at local, national and international levels will be emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NURNM 3509; PLAN: Nurse Midwife (NURSMW-DNP)

NURNM 3509 - ROLE SEMINAR 1: PROFESSIONAL NURSE MIDWIFE

Minimum Credits: 1

Maximum Credits: 1

This introductory seminar is designed for enculturation to the art and science of the nurse midwifery profession for care of women, newborns, and families in diverse settings. Articulation of nurse midwife (NM) role with the Doctor of Nursing Practice (DNP) will be developed. Midwifery history, philosophy of care, ethics, standards, and competencies will be emphasized in developing the role and scope of NM DNP practice.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: CREQ: NUR 2010 and NUR 3099; PLAN: Nurse Midwife (NURSMW-DNP)

NURNM 3510 - NURSE MIDWIFE ROLE SEMINAR 2

Minimum Credits: 1

Maximum Credits: 1

This is a culminating seminar emphasizing issues unique to the implementation of the role of the Nurse Midwife (NM) in various practice settings. This course is designed to analyze factors that have an impact on advanced nursing practice with emphasis on the scope of practice for then DNP care trends, health care needs of women, maternal-infant dyads and childbearing families in diverse environments, and legislative and professional practice issues. Professional, inter-professional, economic, cultural, and legal issues related to NM practice will be emphasized. Identification, assessment, and advanced management of common and complex health problems in specific populations will be addressed.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NURNM 3513; CREQ: 3503; PLAN: Nurse Midwife (NURSMW-DNP)

NURNM 3511 - NORMAL CHILDBEARING FAMILY

Minimum Credits: 4

Maximum Credits: 4

This course targets evidence-based practices and interventions that serve as the basis for nurse midwife (NM) management of normal and common health conditions associated with pregnancy, labor and delivery, postpartum, and the neonatal period. Theories related to the woman's experience of pregnancy, childbirth, and the taking-on of the maternal identity/role in context of family are also examined.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NURNM 3505 and NURNM 3506; CREQ: NURNM 3500; PLAN: Nurse Midwife (NURSMW-DNP)

NURNM 3512 - WOMEN'S HEALTH ROLE PRACTICUM 1

Minimum Credits: 1

Maximum Credits: 1

This is an entry level clinical practicum focused on well-woman care and includes intermediate level seminars that emphasize issues unique to the implementation of the role of the Nurse Midwife (NM) as provider of primary care for women in various settings. This course is designed to develop assessment skills and differential diagnoses with beginning management skills, and to analyze factors that have an impact on advanced nursing

practice, emphasizing the scope of practice in NM and DNP health care trends, health care needs in diverse environments, and professional practice issues. Professional, inter-professional, economic, cultural, and legal issues related to NM DNP practice experiences will be emphasized.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NURNM 3509 and NURNP 2523; CREQ: NURNP 2515 and 2505; PLAN: Nurse Midwife (NURSMW-DNP)

NURNM 3513 - WOMEN'S HEALTH ROLE PRACTICUM 2

Minimum Credits: 1

Maximum Credits: 1

This practicum focuses on implementing the nurse midwife (NM) model of care with non-pregnant woman. Examination, assessment, and management of the woman from puberty through menopause will be the focus of this course.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NURNM 3512; CREQ: NURNM 3506 and 3507; PLAN: Nurse Midwife (NURSMW-DNP)

Nurse Practitioner

NURNP 2026 - ROLE SEMINAR 1

Minimum Credits: 1

Maximum Credits: 1

This is an introductory seminar emphasizing issues unique to the implementation of the role of the nurse practitioner in various practice settings. This course is designed to analyze factors that have an impact on advanced nursing practice with emphasis on the scope of practice of the nurse practitioner, health care trends, health care needs in diverse environments, and professional practice issues. Professional, economic, cultural, and legal issues related to nurse practitioner practice will be emphasized.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

NURNP 2026D - ROLE SEMINAR 1

Minimum Credits: 1

Maximum Credits: 1

This is an introductory seminar emphasizing issues unique to the implementation of the role of the nurse practitioner in various practice settings. This course is designed to analyze factors that have an impact on advanced nursing practice with emphasis on the scope of practice of the nurse practitioner, health care trends, health care needs in diverse environments, and professional practice issues. Professional, economic, cultural, and legal issues related to nurse practitioner practice will be emphasized.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Attributes: Distance Education

NURNP 2028 - ROLE PRACTICUM

Minimum Credits: 1

Maximum Credits: 6

This course is designed to provide each student with a practicum experience in role development for the nurse practitioner. Experiences emphasize clinical decision making in an interprofessional environment with a focus on the nurse practitioner as a principal provider of care for individuals with population specific health care needs and conditions.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PROG: Graduate School of Nursing

NURNP 2029 - ROLE SEMINAR 2

Minimum Credits: 2

Maximum Credits: 2

This is a culminating seminar emphasizing issues unique to transitioning to the role of the nurse practitioner in various practice settings. This course is designed to analyze factors that have an impact on advanced nursing practice with emphasis on the scope of practice of the nurse practitioner, health care trends, and legislative and professional practice issues.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NURNP 2026 or 2406 or 2026D

NURNP 2029D - ROLE SEMINAR 2

Minimum Credits: 2

Maximum Credits: 2

This is a culminating seminar emphasizing issues unique to transitioning to the role of the nurse practitioner in various practice settings. This course is designed to analyze factors that have an impact on advanced nursing practice with emphasis on the scope of practice of the nurse practitioner, health care trends, and legislative and professional practice issues.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NURNP 2026 or 2426 or 2526D

Course Attributes: Distance Education

NURNP 2100 - MANAGEMENT OF ADULT EPISODIC/CHRONIC HEALTH PROBLEMS IN ACUTE CARE THEORY

Minimum Credits: 4

Maximum Credits: 4

This course is designed to develop a theoretical, practical, and evidence-based foundation for advanced nursing practice in the diagnosis and management of common episodic and complex chronic dysfunctions/alterations in the acutely ill adult-gerontology population. Through didactic information, students develop the knowledge base needed to apply advanced practice skills in patient/family assessment, develop and implement a management plan, and evaluate the plan's effectiveness when caring for adult-gerontology patients across the continuum of acute care services. Health promotion, health restoration, and health protection appropriate to these patients and families will be emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NUR 2033; CREQ: (NUR 2034 or 2434 or 2034D); PROG: Graduate School of Nursing

NURNP 2100D - MANAGEMENT OF ADULT WITH EPISODIC/CHRONIC HEALTH PROBLEMS IN ACUTE CARE THEORY

Minimum Credits: 4

Maximum Credits: 4

This course is designed to develop a theoretical, practical, and evidence-based foundation for advanced practice nursing in the diagnosis and management of common episodic and chronic dysfunctions/alterations. Through didactic information, students develop the knowledge base needed to apply advanced practice skills in patient/family assessment, develop and implement a management plan, and evaluate the plan's effectiveness when caring for patients across the continuum of acute care services. Health promotion, health restoration, and health protection appropriate to these patients and families will be emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: (NUR 2033 or 2433 or 2033D); CREQ: (NUR 2034 or 2434 or 2234 or 2034D)

Course Attributes: Distance Education

NURNP 2101 - MANAGEMENT OF ADULT EPISODIC/CHRONIC HEALTH PROBLEMS IN ACUTE CARE CLINICAL

Minimum Credits: 3

Maximum Credits: 3

This clinical course is designed to provide opportunities to apply a theoretical, practical and evidenced based foundation for advanced nursing practice in the diagnosis and management of common episodic and complex chronic dysfunctions/alterations in the acutely ill adult-gerontology population. Through clinical experience, students implement advanced practice skills in patient/family assessment, develop and implement a management plan and evaluate the plan's effectiveness when caring for adult-gerontology patients across the continuum of the acute care services. Health promotion, health protection, and health restoration appropriate to these patients and families will be emphasized.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

Course Requirements: CREQ: NURNP 2100 or 2100D

NURNP 2102 - MANAGEMENT OF COMPLEX HEALTH PROBLEMS OF THE ACUTELY AND CRITICALLY ILL ADULT 2

Minimum Credits: 3

Maximum Credits: 3

This course is designed to expand on the comprehensive theoretical and practical foundation for advanced nursing practice in the diagnosis and management of selected dysfunctions/alterations commonly seen in the critically ill adult-gerontology patient. Didactic content focuses on information central to planning, implementing and evaluating therapeutic regimens for patients with problems commonly seen in adult-gerontology patients who are acutely and/or critically ill. Aspects of health promotion and maintenance appropriate to these patients and families will also be emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NURNP 2104

NURNP 2102D - MANAGEMENT OF COMPLEX HEALTH PROBLEMS OF THE ACUTELY AND CRITICALLY ILL ADULT 2

Minimum Credits: 3

Maximum Credits: 3

This course is designed to expand on the comprehensive theoretical and practical foundation for advanced nursing practice in the diagnosis and management of selected dysfunctions/alterations commonly seen in the critically ill adult-gerontology patient. Didactic content focuses on information central to planning, implementing and evaluating therapeutic regimens for patients with problems commonly seen in adult-gerontology patients who are acutely and/or critically ill. Aspects of health promotion and maintenance appropriate to these patients and families will also be emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: Distance Education

NURNP 2104 - MANAGEMENT OF COMPLEX HEALTH PROBLEMS OF THE ACUTELY AND CRITICALLY ILL ADULT

Minimum Credits: 3

Maximum Credits: 3

This course is designed to develop a theoretical foundation for advanced nursing care of the acutely and critically ill adult-gerontology patient. Through didactic information, laboratory experience, and course assignments, students develop the knowledge base and psychomotor skills central to

planning, implementing and evaluating health care for adult-gerontology patients with complex health problems that are commonly seen across the continuum of acute care delivery systems. Health maintenance, health promotion, disease prevention and health protection appropriate to this patient population will also be emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NURNP 2101 and 2100

NURNP 2104D - MANAGEMENT OF COMPLEX HEALTH PROBLEMS OF THE ACUTELY AND CRITICALLY ILL ADULT

Minimum Credits: 3

Maximum Credits: 3

This course is designed to develop a theoretical foundation for advanced nursing care of the acutely and critically ill adult-gerontology patient. Through didactic information, laboratory experience, and course assignments, students develop the knowledge base and psychomotor skills central to planning, implementing and evaluating health care for adult-gerontology patients with complex health problems that are commonly seen across the continuum of acute care delivery systems. Health maintenance, health promotion, disease prevention and health protection appropriate to this patient population will also be emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NURNP 2101 or 2401 or 2100D

Course Attributes: Distance Education

NURNP 2105 - CLINICAL EMPHASIS - CARDIOPULMONARY

Minimum Credits: 3

Maximum Credits: 3

This course is designed to develop a comprehensive evidence-based practical foundation for clinical application of advanced nursing practice in the diagnosis and management of adult-gerontology patients with cardiopulmonary dysfunctions/alterations. The course integrates the pathophysiology of cardiopulmonary dysfunctions/alterations with appropriate diagnostic parameters and management strategies. Through ongoing clinical experience, students implement the nursing process when caring for patients who are acutely ill and apply the clinical decision-making process in the care of these patients. Health promotion, protection, and maintenance appropriate to these patients and families will also be emphasized.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

Course Requirements: CREQ: NURNP 2102

NURNP 2106 - CLINICAL EMPHASIS - CRITICAL CARE

Minimum Credits: 3

Maximum Credits: 3

This course is designed to develop a comprehensive evidence-based practical foundation for clinical application of advanced nursing practice in the diagnosis and management of selected dysfunctions/alterations commonly seen in the critically ill adult-gerontology patient. Through ongoing clinical experience, students implement the nursing process when caring for patients who are critically ill and apply the clinical decision-making process in care of patients. Aspects of health promotion and maintenance appropriate to these patients and families will also be emphasized.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

Course Requirements: CREQ: NURNP 2102 and NURNP 2102D

NURNP 2107 - CLINICAL EMPHASIS - ONCOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course is designed to develop a comprehensive, evidence-based practical foundation for clinical application of advanced nursing practice in the

diagnosis and management of adult-gerontology patients with cancer. The course integrates the pathophysiology of problems associated with cancer and its treatment with appropriate diagnostic parameters and management strategies. Through ongoing clinical experiences the student will implement the clinical decision-making in the care of the acutely ill adult-gerontology patient with cancer. Health promotion and maintenance appropriate to these patients and families will also be emphasized.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

Course Requirements: CREQ: NURNP 2102

NURNP 2109 - CLINICAL EMPHASIS - DIRECTED STUDY

Minimum Credits: 3

Maximum Credits: 3

This course is designed to develop a comprehensive evidence-based practical foundation for clinical application of advanced nursing practice in the diagnosis and management of adult-gerontology patients with dysfunctions/alterations in a selected area of clinical specialization. The course integrates the pathophysiology of dysfunctions/alterations in the selected area with appropriate diagnostic parameters and management strategies. Through ongoing clinical experience, students implement the nursing process when caring for patients who are acutely ill and apply the clinical decision-making process in the care of these patients. Health promotion and maintenance appropriate to these patients and families will also be emphasized.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

Course Requirements: CREQ: NURNP 2102

NURNP 2161 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 3

Students elect an area of interest and work with a specific faculty member to meet agreed upon objectives.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

Course Requirements: School of Nursing students only.

NURNP 2194 - CLINICAL EMPHASIS: TRAUMA EMERGENCY PREPAREDNESS

Minimum Credits: 3

Maximum Credits: 3

This course is designed to develop a comprehensive practical foundation for the clinical application of advanced nursing practice in the management of selected dysfunctions/alterations commonly seen in the traumatized adult-gerontology patient. Through ongoing clinical experience, students implement the nursing process when caring for adult-gerontology patients who are emergent, traumatized, or involved in disasters, and apply the clinical decision-making process in the care of these patients in all phases of the trauma cycle.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

Course Requirements: CREQ: NURNP 2102

NURNP 2218 - FAMILY THEORY FOR NPS: PRINCIPLES, IMPLICATIONS AND APPLICATION ACROSS THE LIFE SPAN

Minimum Credits: 3

Maximum Credits: 3

This theory course is concerned with the exploration and application of the various family health theories with respect to np practice. Focus is on the definition and development of the family, types of families, family assessment and care of the family with application of family health theories. Examination and analysis of cultural diversity within families, health care policies, and end-of-life issues are included. Ethical issues with regard to the care of the family are also addressed.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

NURNP 2246 - MANAGEMENT: ADOLESCENT HEALTH THEORY

Minimum Credits: 2

Maximum Credits: 2

The purpose of this course is to provide the student with an opportunity to learn about adolescent health care from a developmental and theoretical perspective. Emphasis is placed on the identification, assessment and management of health problems common to adolescents in primary care settings utilizing knowledge of adolescent developmental principles.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: (NUR 2034 or 2234 or 2434 or 2034D) and (NUR 2033 or 2433 or 2033D); CREQ: NURNP 2540

NURNP 2303 - MANAGEMENT AND PRACTICUM 1 PMH ADULT ACUTE AND CHRONIC

Minimum Credits: 2

Maximum Credits: 2

Students develop advanced practice skills in the clinical management of patients with common acute and chronic primary health care needs and problems. Emphasis is on the synthesis of diagnostic findings with the development, implementation and evaluation of general management strategies. Clinical practica enable students to integrate knowledge derived from courses and readings with that obtained from experiences which will include precepted clinical work in primary health care settings with adult medical patients.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NUR 2033 or 2433 or 2033D; CREQ: 2314 and 2515

NURNP 2314 - MANAGEMENT AND PRACTICUM 2 PMH ADULT ACUTE AND CHRONIC

Minimum Credits: 1

Maximum Credits: 1

This practicum focuses on diagnosis and management of primary health care needs and problems. Students are precepted in primary health care settings where they learn to plan, implement and evaluate therapeutic regimes for adult patients with acute and chronic illnesses commonly encountered.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

Course Requirements: PREQ: (NUR 2004 or 2204 or 2404 or 2004D) and (NUR 2033 or 2433 or 2033D); CREQ: (NUR 2034 or 2234 or 2434 or 2034D) and NURNP 2303

NURNP 2320 - NEUROBIOLOGY OF PSYCHIATRIC DISORDERS

Minimum Credits: 2

Maximum Credits: 2

This course builds upon the knowledge base developed in the pathophysiology course, extending and applying this content to psychiatric disorders. It is designed with a threefold purpose: (a) to transition students from general concepts utilized in advanced practice to specific theories that are unique to the role of the psychiatric/mental health nurse practitioner; (b) to develop an appreciation of current biological theories as a major dimension in understanding the etiology, course, and outcome of selected psychiatric disorders; and, (c) to prepare students to utilize research findings as the empirical basis for the advanced practice of nursing. Content will focus on the major biological theories of psychiatric disorders in relationship to their respective technologies, neuroanatomical structures, neurochemical pathways, specific behaviors and symptomatology. Current research findings will be presented to supplement theoretical content.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NUR 2004 or 2204 or 2404 or 2004D

NURNP 2325 - PSYCHOPHARMACOLOGY

Minimum Credits: 2

Maximum Credits: 2

This course builds upon the conceptual principles developed in NUR 2034 advanced pharmacology and is designed to prepare students to manage the pharmacological aspects of treatment in patients with psychiatric disorders.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: (NUR 2004 or 2204 or 2404 or 2004D) and (NUR 2034 or 2234 or 2434 or 2034D) and NURNP 2331; CREQ: NURNP 2320

NURNP 2325D - PSYCHOPHARMACOLOGY

Minimum Credits: 2

Maximum Credits: 2

This course builds upon the conceptual principles developed in NUR 2034 advanced pharmacology and is designed to prepare students to manage the pharmacological aspects of treatment in patients with psychiatric disorders.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: (NUR 2004 or 2204 or 2404 or 2004D) and (NUR 2034 or 2234 or 2434 or 2034D) and NURNP 2331; CREQ: NURNP 2320

Course Attributes: Distance Education

NURNP 2330 - PSYCHIATRIC DIAGNOSIS THEORY

Minimum Credits: 2

Maximum Credits: 2

This course builds upon the diagnostic reasoning skills developed in the diagnostic physical exam and differential diagnosis courses, theory and clinical. It is designed to prepare students to utilize these skills in conducting psychiatric evaluations and in the preparation of case formulations across the life span. A bio-psycho-social perspective will be used to conceptualize case formulation and the examination of differential diagnoses. This course is open to students in other graduate programs in the school of nursing.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NURNP 2314 and NURNP 2515 and NURNP 2320; CREQ: NURNP 2331; PROG: School of Nursing

NURNP 2330D - PSYCHIATRIC DIAGNOSIS THEORY

Minimum Credits: 2

Maximum Credits: 2

This course builds upon the diagnostic reasoning skills developed in the diagnostic physical exam and differential diagnosis courses, theory and clinical. It is designed to prepare students to utilize these skills in conducting psychiatric evaluations and in the preparation of case formulations. A biopsychosocial perspective will be used to conceptualize case formulation and the examination of differential diagnoses. This course is open to students in other graduate programs in the school of nursing.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NURNP 2314 and 2515 and 2320; CREQ: NURNP 2331

Course Attributes: Distance Education

NURNP 2331 - PSYCHIATRIC DIAGNOSIS PRACTICUM

Minimum Credits: 2

Maximum Credits: 2

This clinical course is designed to complement and expand on the application of diagnostic reasoning skills developed in diagnostic physical exam across the life span, differential diagnosis theory and differential diagnosis clinical. In addition to the diagnoses of common health problems, the student will develop advanced diagnostic skills in relation to psychiatric disorders across the life span. The focus is on the identification and synthesis of pertinent physical, biological, psychological, and social data in order to complete a comprehensive psychiatric evaluation. The students will refine their diagnostic skills in a psychiatric setting with psychiatric patients across the life span.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NURNP 2320; CREQ: 2330

NURNP 2340 - MANAGEMENT OF ACUTE HEALTH PROBLEMS OF PSYCHIATRIC PATIENTS

Minimum Credits: 2

Maximum Credits: 2

This course focuses on the theory and concepts relevant to management of the primary health care needs and problems of clients with a diagnosed psychiatric problem across the life span. The focus is on selected theories and principles from the physical and behavioral sciences central to planning, implementing, and evaluating therapeutic regimens for clients with acute psychiatric problems across the life span encountered in a primary care setting. Emphasis is also placed on understanding the unique contributions of social and cultural factors in the development of appropriate treatment plans. This course builds directly on the knowledge base developed in the physical diagnosis and primary health care courses, expanding that base to the care of clients who have a diagnosed psychiatric problem.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NURNP 2331; CREQ: NURNP 2325 and 2341; PROG: School of Nursing

NURNP 2340D - MANAGEMENT OF ACUTE HEALTH PROBLEMS OF PSYCHIATRIC PATIENTS

Minimum Credits: 2

Maximum Credits: 2

This course focuses on the theory and concepts relevant to management of the primary health care needs and problems of clients with a diagnosed psychiatric problem across the life span. The focus is on selected theories and principles from the physical and behavioral sciences central to planning, implementing, and evaluating therapeutic regimens for clients with acute psychiatric problems across the life span encountered in a primary care setting. Emphasis is also placed on understanding the unique contributions of social and cultural factors in the development of appropriate treatment plans. This course builds directly on the knowledge base developed in the physical diagnosis and primary health care courses, expanding that base to the care of clients who have a diagnosed psychiatric problem.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NURNP 2331; COREQ: NURNP 2325 and 2341

NURNP 2341 - MANAGEMENT PRACTICUM OF ACUTE HEALTH PROBLEMS OF PSYCHIATRIC PATIENTS

Minimum Credits: 2

Maximum Credits: 2

The goal of this practicum is to provide the student with an opportunity to refine advanced practice skills in the clinical management of the primary health care needs and psycho-biological problems of clients with psychiatric disorders across the life span. The practicum focuses on synthesizing relevant psycho-therapeutic modalities with the management of common health problems into the client's plan of care, and evaluating the effectiveness of these interventions.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NURNP 2331; CREQ: NURNP 2340 and 2325; PROG: School of Nursing

NURNP 2345 - MANAGEMENT OF CHRONIC HEALTH PROBLEMS OF PSYCHIATRIC PATIENTS

Minimum Credits: 2

Maximum Credits: 2

This course focuses on theory and concepts relevant to the management of chronic psychiatric and primary health care needs/problems of clients with long-term psychiatric disorders across the life span. The focus is on selected theories and principles from the physical and behavioral sciences central to planning, implementing, and evaluating therapeutic regimens for the client populations commonly encountered in psychiatric settings. Emphasis is also placed on understanding the unique contributions of social and cultural factors in the development of appropriate treatment plans for clients experiencing long-term psychiatric problems. This course builds on the scientific knowledge acquired in previous psychiatric mental health nurse practitioner core and theory courses. It offers a framework for integrating a primary care approach in the management of chronic and severe psychiatric problems across the life span.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NURNP 2341; CREQ: NURNP 2346; PROG: School of Nursing

NURNP 2346 - MANAGEMENT PRACTICUM CHRONIC HEALTH PROBLEMS OF PSYCHIATRIC PATIENTS

Minimum Credits: 2

Maximum Credits: 2

This clinical course is designed to provide the student with a culminating practicum experience in the role of the psychiatric mental health nurse practitioner (PMHNP). Experiences emphasize clinical decision-making in an interdisciplinary environment with focus on the PMHNP as a principal provider of care for clients with chronic and severe psychiatric disorders across the life span in a variety of psychiatric settings.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NURNP 2341; CREQ: NURNP 2345

NURNP 2361 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 3

An in-depth study in a particular area of interest by arrangement with a designated faculty member.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

NURNP 2401 - MGT ADLT EPISODIC/CHRONIC HLTH

Minimum Credits: 4

Maximum Credits: 4

This course is designed to develop a theoretical, practical, and evidence-based foundation for advanced practice nursing in the diagnosis and management of common episodic and chronic dysfunctions/alterations. Through didactic information, students develop the knowledge base needed to apply advanced practice skills in patient/family assessment, develop and implement a management plan, and evaluate the plan's effectiveness when caring for patients across the continuum of acute care services. Health promotion, health restoration, and health protection appropriate to these patients and families will be emphasized.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NUR 2033 or NUR 2433; CREQ: NUR 2034 or NUR 2434 or NUR 2234

Course Attributes: Distance Education

NURNP 2402 - MGT CMPLX HLT PROB ACU/CRIT 2

Minimum Credits: 3

Maximum Credits: 3

This course is designed to expand on the comprehensive theoretical and practical foundation for advanced nursing practice in the diagnosis and management of selected dysfunctions/alterations commonly seen in the critically ill adult-gerontology patient. Didactic content focuses on information central to planning, implementing and evaluating therapeutic regimens for patients with problems commonly seen in adult-gerontology patients who are acutely and/or critically ill. Aspects of health promotion and maintenance appropriate to these patients and families will also be emphasized

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: Distance Education

NURNP 2405 - MANAGEMENT: ADULT ACUTE/CHRONIC CLINICAL 1

Minimum Credits: 3

Maximum Credits: 4

This practicum is focused on the management of primary health care needs. Students are precepted in an ambulatory health care setting and carry out the diagnostic process as they provide primary health care services to adults with chronic primary health care needs and problems. Students learn to plan, implement and evaluate therapeutic regimens for patients with acute and chronic illnesses commonly encountered in primary health care settings.

Academic Career: GRAD

Course Component: Practicum

Grade Component: Grad Letter Grade

Course Requirements: CREQ: NURNP 2515 or NURNP 2415

Course Attributes: Distance Education

NURNP 2406 - ROLE SEMINAR 1

Minimum Credits: 1

Maximum Credits: 1

This is an introductory seminar emphasizing issues unique to the implementation of the role of the nurse practitioner in various practice settings. This course is designed to analyze factors that have an impact on advanced nursing practice with emphasis on the scope of practice of the nurse practitioner, health care trends, health care needs in diverse environments, and professional practice issues. Professional, economic, cultural, and legal issues related to nurse practitioner practice will be emphasized.

Academic Career: GRAD

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Attributes: Distance Education

NURNP 2414 - CPLX HLTH PROB ACTLY/CRIT ILL

Minimum Credits: 3

Maximum Credits: 3

This course is designed to develop a theoretical foundation for advanced nursing care of the acutely and critically ill adult-gerontology patient. Through didactic information, laboratory experience, and course assignments, students develop the knowledge base and psychomotor skills central to planning, implementing and evaluating health care for adult-gerontology patients with complex health problems that are commonly seen across the continuum of acute care delivery systems. Health maintenance, health promotion, disease prevention and health protection appropriate to this patient population will also be emphasized.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NURNP 2101 or NURNP 2401

Course Attributes: Distance Education

NURNP 2415 - MGT: ADLT ACUTE/CHRONIC THEORY

Minimum Credits: 4

Maximum Credits: 4

This theory course is concerned with management of primary health care needs. Focus is on selected theories and principles from the physical, medical, nursing, and behavioral sciences central to planning, implementing, and evaluating regimes for patients with acute and chronic illnesses commonly encountered in primary health care settings.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: (NUR 2033 or NUR 2433) and (NUR 2004 or NUR 2404 or NUR 2204); CREQ: NURNP 2505

Course Attributes: Distance Education

NURNP 2418 - FAMILY THEORY FOR NPS

Minimum Credits: 3

Maximum Credits: 3

This theory course is concerned with the exploration and application of the various family health theories with respect to np practice. Focus is on the definition and development of the family, types of families, family assessment and care of the family with application of family health theories. Examination and analysis of cultural diversity within families, health care policies, and end-of-life issues are included. Ethical issues with regard to the care of the family are also addressed.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: Distance Education

NURNP 2420 - MGT: PEDIATRIC HEALTH THEORY

Minimum Credits: 2

Maximum Credits: 2

This theory course taught concurrently with NURNP 2521: MGT: Pediatric Health Clinical deals with the management of health concerns and problems occurring in the pediatric age group (birth to 18 years). Focus is on selected theories and principles from the physical and behavioral sciences central to assisting children and their families in solving acute and chronic health problems commonly encountered in the primary health care setting. Physiologic & developmental variation is emphasized as well as the cultural, ethical and environmental context. This course encompasses lectures and readings on state-of-the art practice and current research that provides the evidence base for practice.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: (NURNP 2540 or NURNP 2440) and (NUR 2031 or NUR 2231) and (NUR 2034 or NUR 2234 or NUR 2434);

CREQ: NURNP 2521 or NURNP 2421

Course Attributes: Distance Education

NURNP 2421 - MGT: PEDIATRIC HEALTH CLINICAL

Minimum Credits: 2

Maximum Credits: 2

This clinical course focuses on the management of health issues occurring in the pediatric age group (birth to 21 years) with application of principles from the physical and behavioral sciences. Physiologic and developmental variations are emphasized as well as the cultural, ethical, and environmental context.

Academic Career: GRAD

Course Component: Clinical

Grade Component: Grad Letter Grade

Course Requirements: CREQ: NURNP 2520 or NURNP 2420

Course Attributes: Distance Education

NURNP 2423 - MANAGEMENT: WOMEN'S HEALTH 1

Minimum Credits: 2

Maximum Credits: 2

This course focuses on the health care of women. Emphasis is on selected theories, principles and techniques from the physical and behavioral sciences central to the assessment of women, women's issues, health promotion for women, and diagnosing and managing common gynecologic needs and problems

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NUR 2031 or NUR 2231; CREQ: NUR 2033 or NUR 2433

Course Attributes: Distance Education

NURNP 2426 - MANAGEMENT: GERIATRIC HEALTH

Minimum Credits: 2

Maximum Credits: 2

This theory course explores the evidence base for the evaluation, diagnosis and management of problems commonly encountered in the geriatric population. Emphasis is on the aging process, health promotion, and the diagnosis and management of common health problems of older adults in primary care settings.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NUR 2031 or NUR 2231

Course Attributes: Distance Education

NURNP 2429 - ROLE SEMINAR 2

Minimum Credits: 2

Maximum Credits: 2

This is a culminating seminar emphasizing issues unique to transitioning to the role of the nurse practitioner in various practice settings. This course is designed to analyze factors that have an impact on advanced nursing practice with emphasis on the scope of practice of the nurse practitioner, health care trends, and legislative and professional practice issues.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NURNP 2026 or NURNP 2426

Course Attributes: Distance Education

NURNP 2430 - PSYCHIATRIC DIAGNOSIS THEORY

Minimum Credits: 2

Maximum Credits: 2

This course builds upon the diagnostic reasoning skills developed in the diagnostic physical exam and differential diagnosis courses, theory and clinical. It is designed to prepare students to utilize these skills in conducting psychiatric evaluations and in the preparation of case formulations. A biopsychosocial perspective will be used to conceptualize case formulation and the examination of differential diagnoses. This course is open to students in other graduate programs in the school of nursing.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NURNP 2314 and NURNP 2515 and NURNP 2320; CREQ: NURNP 2331

Course Attributes: Distance Education

NURNP 2440 - PEDIATRIC WELL CHILD CARE THRY

Minimum Credits: 3

Maximum Credits: 3

This course provides students with an introduction to primary health care for children, where theories and concepts pertinent to the delivery of health

care to well children and adolescents are explored. Emphasis is placed on anticipatory guidance as well as the identification and management of developmental and behavioral issues in children. Child development theories and issues will be explored.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: Distance Education

NURNP 2446 - MGT: ADOLSCNT HEALTH THEORY

Minimum Credits: 2

Maximum Credits: 2

The purpose of this course is to provide the student with an opportunity to learn about adolescent health care from a developmental and theoretical perspective. Emphasis is placed on the identification, assessment and management of health problems common to adolescents in primary care settings utilizing knowledge of adolescent developmental principles.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: (NUR 2033 or NUR 2433) and (NUR 2034 or NUR 2434); CREQ: (NURNP 2440 or NURNP 2540)

Course Attributes: Distance Education

NURNP 2505 - MANAGEMENT: ADULT ACUTE/CHRONIC ILLNESS CLINICAL

Minimum Credits: 2

Maximum Credits: 5

This practicum is focused on the management of primary health care needs. Students are precepted in an ambulatory health care setting and carry out the diagnostic process as they provide primary health care services to adults with chronic primary health care needs and problems. Students learn to plan, implement and evaluate therapeutic regimens for patients with acute and chronic illnesses commonly encountered in primary health care settings.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

Course Requirements: CREQ: NURNP 2515

NURNP 2505D - MANAGEMENT: ADULT ACUTE/CHRONIC CLINICAL 1

Minimum Credits: 3

Maximum Credits: 4

This practicum is focused on the management of primary health care needs. Students are precepted in an ambulatory health care setting and carry out the diagnostic process as they provide primary health care services to adults with chronic primary health care needs and problems. Students learn to plan, implement and evaluate therapeutic regimens for patients with acute and chronic illnesses commonly encountered in primary health care settings.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

Course Requirements: CREQ: NURNP 2515 or 2415 or 2515D

Course Attributes: Distance Education

NURNP 2515 - MANAGEMENT: ADULT ACUTE/CHRONIC THEORY

Minimum Credits: 4

Maximum Credits: 4

This theory course is concerned with management of primary health care needs. Focus is on selected theories and principles from the physical, medical, nursing, and behavioral sciences central to planning, implementing, and evaluating regimes for patients with acute and chronic illnesses commonly encountered in primary health care settings.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: (NUR 2004 or 2404 or 2004D) and (NUR 2033 or 2433 or 2033D); CREQ: NURNP 2505; PROG: Graduate School of Nursing

NURNP 2515D - MANAGEMENT: ADULT ACUTE/CHRONIC THEORY

Minimum Credits: 4

Maximum Credits: 4

This theory course is concerned with management of primary health care needs. Focus is on selected theories and principles from the physical, medical, nursing, and behavioral sciences central to planning, implementing, and evaluating regimes for patients with acute and chronic illnesses commonly encountered in primary health care settings.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: (NUR 2033 or 2433 or 2033D) and (NUR 2004 or 2404 or 2204 or 2004D); CREQ: NURNP 2505

Course Attributes: Distance Education

NURNP 2518 - FAMILY THEORY FOR NPS: PRINCIPLES, IMPLICATIONS, AND APPLICATION ACROSS THE LIFE SPAN

Minimum Credits: 3

Maximum Credits: 3

This theory course is concerned with the exploration and application of the various family health theories with respect to np practice. Focus is on the definition and development of the family, types of families, family assessment and care of the family with application of family health theories. Examination and analysis of cultural diversity within families, health care policies, and end-of-life issues are included. Ethical issues with regard to the care of the family are also addressed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Nursing students only.

NURNP 2518D - FAMILY THEORY FOR NPS: PRINCIPLES, IMPLICATIONS, AND APPLICATION ACROSS THE LIFE SPAN

Minimum Credits: 3

Maximum Credits: 3

This theory course is concerned with the exploration and application of the various family health theories with respect to NP practice. Focus is on the definition and development of the family, types of families, family assessment and care of the family with application of family health theories. Examination and analysis of cultural diversity within families, health care policies, and end-of-life issues are included. Ethical issues with regard to the care of the family are also addressed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: Distance Education

NURNP 2520 - MGT: PEDIATRIC HEALTH THEORY

Minimum Credits: 2

Maximum Credits: 2

This theory course taught concurrently with NURNP 2521: mgt.: Pediatric health clinical deals with the management of health concerns and problems occurring in the pediatric age group (birth to 18 years). Focus is on selected theories and principles from the physical and behavioral sciences central to assisting children and their families in solving acute and chronic health problems commonly encountered in the primary health care setting. Physiologic & developmental variation is emphasized as well as the cultural, ethical and environmental context. This course encompasses lectures and readings on state-of-the art practice and current research that provides the evidence base for practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: (NURNP 2540 or 2440 or 2540D) and (NUR 2031 or 2231) and (NUR 2034 or 2234 or 2434 or 2034D); CREQ: (NURNP 2521 or 2421 or 2521D)

NURNP 2520D - MGT: PEDIATRIC HEALTH THEORY

Minimum Credits: 2

Maximum Credits: 2

This theory course taught concurrently with NURNP 2521: MGT: Pediatric Health Clinical deals with the management of health concerns and problems occurring in the pediatric age group (birth to 18 years). Focus is on selected theories and principles from the physical and behavioral sciences central to assisting children and their families in solving acute and chronic health problems commonly encountered in the primary health care setting. Physiologic & developmental variation is emphasized as well as the cultural, ethical and environmental context. This course encompasses lectures and readings on state-of-the art practice and current research that provides the evidence base for practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: (NURNP 2540 or 2440 or 2540D) and (NUR 2031 or 2231) and (NUR 2034 or 2234 or 2434 or 2034D); CREQ: (NURNP 2521 or 2421 or 2521D)

Course Attributes: Distance Education

NURNP 2521 - MANAGEMENT: PEDIATRIC HEALTH CLINICAL

Minimum Credits: 2

Maximum Credits: 4

This clinical course focuses on the management of health issues occurring in the pediatric age group (birth to 21 years) with application of principles from the physical and behavioral sciences. Physiologic and developmental variations are emphasized as well as the cultural, ethical, and environmental context. Clinical experiences focus on diagnosis and management of acute and chronic health problems in children using a family-centered approach. Health promotion, anticipatory guidance, health risk assessment, well child care, and community collaboration are incorporated. Clinical experiences focus on diagnosis and management of acute and chronic health problems in children using a family-centered approach. Health promotion, anticipatory guidance, health risk assessment, well child care, and community collaboration are incorporated.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

Course Requirements: CREQ: NURNP 2520 or 2420 or 2520D

NURNP 2521D - MANAGEMENT: PEDIATRIC HEALTH CLINICAL

Minimum Credits: 2

Maximum Credits: 4

This clinical course focuses on the management of health issues occurring in the pediatric age group (birth to 21 years) with application of principles from the physical and behavioral sciences. Physiologic and developmental variations are emphasized as well as the cultural, ethical, and environmental context. This clinical course focuses on the management of health issues occurring in the pediatric age group (birth to 21 years) with application of principles from the physical and behavioral sciences. Physiologic and developmental variations are emphasized as well as the cultural, ethical, and environmental context. Clinical experiences focus on diagnosis and management of acute and chronic health problems in children using a family-centered approach. Health promotion, anticipatory guidance, health risk assessment, well child care, and community collaboration are incorporated.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

Course Requirements: CREQ: NURNP 2520 or 2420 or 2520D

Course Attributes: Distance Education

NURNP 2523 - MANAGEMENT: WOMEN'S HEALTH 1

Minimum Credits: 2

Maximum Credits: 2

This course focuses on the health care of women. Emphasis is on selected theories, principles and techniques from the physical and behavioral sciences central to the assessment of women, women's issues, health promotion for women, and diagnosing and managing common gynecologic needs and problems

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NUR 2031 or 2231; CREQ: NUR 2033 or 2433 or 2033D

NURNP 2523D - MANAGEMENT: WOMEN'S HEALTH 1

Minimum Credits: 2

Maximum Credits: 2

This course focuses on the health care of women. Emphasis is on selected theories, principles and techniques from the physical and behavioral sciences central to the assessment of women, women's issues, health promotion for women, and diagnosing and managing common gynecologic needs and problems

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NUR 2031 or 2231; CREQ: NUR 2033 or 2433 or 2033D

Course Attributes: Distance Education

NURNP 2526 - MANAGEMENT: GERIATRIC HEALTH THEORY

Minimum Credits: 2

Maximum Credits: 2

This theory course explores the evidence base for the evaluation, diagnosis and management of problems commonly encountered in the geriatric population. Emphasis is on the aging process, health promotion, and the diagnosis and management of common health problems of older adults in primary care settings.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NUR 2031 or 2231

NURNP 2526D - MANAGEMENT: GERIATRIC HEALTH

Minimum Credits: 2

Maximum Credits: 2

This theory course explores the evidence base for the evaluation, diagnosis and management of problems commonly encountered in the geriatric population. Emphasis is on the aging process, health promotion, and the diagnosis and management of common health problems of older adults in primary care settings.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NUR 2031 or 2231

Course Attributes: Distance Education

NURNP 2527 - ADVANCED MANAGEMENT: COMPLEX GERIATRIC HEALTH ISSUES

Minimum Credits: 3

Maximum Credits: 3

The focus of this theory course is on advanced concepts related to current and complex geriatric management issues. The course builds on the foundation of geriatric care management presented in NURNP 2526. Utilization of health care resources, health care policies, and end-of-life care and caregiver issues will be presented. Primary care is the emphasis but the concepts will be applied across the continuum of care.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: NURNP 2526

NURNP 2527D - ADVANCED MANAGEMENT: COMPLEX GERIATRIC HEALTH ISSUES

Minimum Credits: 3

Maximum Credits: 3

The focus of this theory course is on advanced concepts related to current and complex geriatric management issues. The course builds on the foundation of geriatric care management presented in NURNP 2526. Utilization of health care resources, health care policies, and end-of-life care and caregiver issues will be presented. Primary care is the emphasis but the concepts will be applied across the continuum of care.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NURNP 2526

Course Attributes: Distance Education, Pitt Online Programs

NURNP 2528 - SEMINAR IN GERIATRIC CARE

Minimum Credits: 1

Maximum Credits: 1

This course will focus on the role of the intra-professional team in regard to geriatric syndromes, current research, pharmaceuticals, and timely geriatric issues related to health care delivery.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NURNP 2526

NURNP 2529 - GERONTOLOGY CLINICAL PRACTICUM

Minimum Credits: 1

Maximum Credits: 3

This clinical course is designed for students to gain experience in the assessment, diagnosis and management of older adults in a variety of settings. The application of evidence based protocols will be included in the prevention, early diagnosis and management of geriatric syndromes. An interdisciplinary team approach will be emphasized.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

NURNP 2540 - PEDIATRIC WELL CHILD CARE THEORY

Minimum Credits: 3

Maximum Credits: 3

This course provides students with an introduction to primary health care for children, where theories and concepts pertinent to the delivery of health care to well children and adolescents are explored. Emphasis is placed on anticipatory guidance as well as the identification and management of developmental and behavioral issues in children. Child development theories and issues will be explored.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

NURNP 2540D - PEDIATRIC WELL CHILD CARE THEORY

Minimum Credits: 3

Maximum Credits: 3

This course provides students with an introduction to primary health care for children, where theories and concepts pertinent to the delivery of health care to well children and adolescents are explored. Emphasis is placed on anticipatory guidance as well as the identification and management of developmental and behavioral issues in children. Child development theories and issues will be explored.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Attributes: Distance Education

NURNP 2546 - MANAGEMENT: ADOLESCENT HEALTH AND YOUNG ADULT THEORY

Minimum Credits: 2

Maximum Credits: 2

The purpose of this course is to provide the student with an opportunity to learn about adolescent health care from a developmental and theoretical perspective. Emphasis is placed on the identification, assessment and management of health problems common to adolescents in primary care settings utilizing knowledge of adolescent developmental principles.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: (NUR 2033 or 2433 or 2033D) and (NUR 2034 or 2434 or 2034D); CREQ: (NURNP 2440 or 2540 or 2540D)

NURNP 2546D - MGT: ADOLESCENT HEALTH THEORY

Minimum Credits: 2

Maximum Credits: 2

The purpose of this course is to provide the student with an opportunity to learn about adolescent health care from a developmental and theoretical perspective. Emphasis is placed on the identification, assessment and management of health problems common to adolescents in primary care settings utilizing knowledge of adolescent developmental principles.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: (NUR 2033 or 2433 or 2033D) and (NUR 2034 or 2434 or 2034D); CREQ: (NURNP 2440 or NURNP 2540 or 2540D)

Course Attributes: Distance Education

NURNP 2549 - MANAGEMENT: ADVANCED PEDIATRIC HEALTH PROBLEMS THEORY

Minimum Credits: 2

Maximum Credits: 2

The purpose of this course is to provide the student with an advanced study of children with primary, complex, and chronic health conditions and disabilities. Emphasis is placed on the identification, assessment, and management of chronic pediatric problems, neurodevelopmental disabilities, and behavioral issues. The influence that these conditions have on children and their families is also integrated. Emphasis is placed on understanding the physiologic rationale for treatment measures as well as the provision of physical and psychological care to children and families.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: (NURNP 2520 or 2420 or 2520D); CREQ: NURNP 2550

NURNP 2550 - MANAGEMENT: ADVANCED PEDIATRIC HEALTH PROBLEMS CLINICAL

Minimum Credits: 3

Maximum Credits: 3

The purpose of this clinical course is to provide students with an opportunity to provide comprehensive primary health care services to children with primary health care needs, developmental concerns, complex and chronic health problems. Concepts and content from NURNP 2549 will be applied in clinical practice.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

Course Requirements: PREQ: (NURNP 2521 or 2421 or 2521D); CREQ: NURNP 2549

NURNP 2561 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 3

Allows the student the opportunity to acquire knowledge and skill through independent experiences involving little or no formal interaction between the student and instructor. Typically selected when no formal course is available that meets the student's individual learning needs.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

NURNP 2570 - COMPREHENSIVE NEONATAL ASSESSMENT THEORY

Minimum Credits: 2

Maximum Credits: 2

This course addresses the complete neonatal assessment process. It includes a genetics overview, perinatal and neonatal physiology, neonatal pharmacology, common neonatal diagnostic and laboratory testing and invasive procedures. The comprehensive neonatal assessment, including prenatal through neonatal history and neonatal physical examination is reviewed. Family function, dynamics, crisis theory and the grieving process are also examined.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NUR 2004 or 2204 or 2404 or 2004D

NURNP 2571 - GENERAL MANAGEMENT OF THE SICK NEONATE - THEORY

Minimum Credits: 4

Maximum Credits: 4

This theory course builds on the neonatal assessment theory course and assists the students in developing the neonatal assessment skills necessary to function in the role of the NNP in the neonatal intensive care nursery (NICU), particularly in emergency situations. It focuses on the knowledge necessary to resuscitate and stabilize a sick newborn. In addition, the course discusses the physiology of pain and pain management. The course is taught with an accompanying clinical course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NURNP 2570; CREQ: NUR 2572

NURNP 2572 - GENERAL ASSESSMENT AND MANAGEMENT OF THE SICK NEONATE - CLINICAL

Minimum Credits: 5

Maximum Credits: 5

This clinical course builds on the physical diagnosis and the neonatal assessment and general management courses. The students master the neonatal assessment skills necessary to function in the role of the NNP in the neonatal intensive care nursery (NICU). The students will obtain and evaluate a complete neonatal patient database, including conducting a history and physical examination. The students will also learn stabilization and resuscitation in the delivery room and during transport. In addition, the course affords the students the opportunity to perform neonatal therapeutic and diagnostic procedures in the clinical setting.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NURNP 2570; CREQ: NURNP 2571

NURNP 2573 - NEONATAL DISEASE PROCESS 1 - THEORY

Minimum Credits: 4

Maximum Credits: 4

Clinical management of neonatal (preterm and term infants in the neonatal intensive care unit) patients requires a broad knowledge base. This theory course will provide a thorough understanding of the embryology, physiology, pathophysiology and management of common neonatal disease

processes. This is the first in a series of 2 consecutive courses and will focus on the cardiovascular, pulmonary, gastrointestinal/nutrition, renal/genitourinary and hematologic systems as well as fluids and electrolytes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NURNP 2571; CREQ: NURNP 2028

NURNP 2574 - NEONATAL DISEASE PROCESS 2 - THEORY

Minimum Credits: 4

Maximum Credits: 4

Clinical management of neonatal (preterm and term infants in the neonatal intensive care unit) patients requires a broad knowledge base. This theory course will provide a thorough understanding of the embryology, physiology, pathophysiology and management of common neonatal disease processes. This is the second in a series of 2 consecutive courses and will focus on the endocrine & metabolic, immune, neurobehavioral, musculoskeletal, eyes/ears/nose/throat and dermatologic systems. It also includes discharge planning and follow-up care for the high-risk neonate.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NURNP 2573; CREQ: NURNP 2028

NURNP 3025 - DIAGNOSIS AND MANAGEMENT OF PSYCHIATRIC CONDITIONS IN PRIMARY CARE

Minimum Credits: 4

Maximum Credits: 4

This didactic course explores the evidence base for the evaluation, diagnosis and management of common psychiatric-mental health issues across the lifespan. Emphasis is on (1) current understanding of the etiology, including the genetic basis, of psychiatric illnesses; (2) evaluation and diagnosis of individuals presenting with psychiatric-mental health symptoms; (3) recognizing problems that can be managed in a primary care setting and those that need to be referred for psychiatric evaluation and care; (4) ongoing management of psychiatric-mental health problems in primary care including management in collaboration with psychiatry; and (5) the impact of mental health problems from a family perspective.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Nursing students only.

NURNP 3025D - DIAGNOSIS AND MANAGEMENT OF PSYCHIATRIC CONDITIONS IN PRIMARY CARE

Minimum Credits: 4

Maximum Credits: 4

This didactic course explores the evidence base for the evaluation, diagnosis and management of common psychiatric-mental health issues across the lifespan. Emphasis is on (1) current understanding of the etiology, including the genetic basis, of psychiatric illnesses; (2) evaluation and diagnosis of individuals presenting with psychiatric-mental health symptoms; (3) recognizing problems that can be managed in a primary care setting and those that need to be referred for psychiatric evaluation and care; (4) ongoing management of psychiatric-mental health problems in primary care including management in collaboration with psychiatry; and (5) the impact of mental health problems from a family perspective.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Attributes: Distance Education

NURNP 3038 - DNP NP ROLE PRACTICUM

Minimum Credits: 1

Maximum Credits: 10

A culminating practicum experience in role development for the DNP np. Experiences emphasize clinical decision making in a multidisciplinary environment with focus on the nurse practitioner as a principal provider of care

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Nursing students only.

NURNP 3225 - DIAGNOSIS AND MANAGEMENT OF PSYCHIATRIC CONDITIONS IN PRIMARY CARE

Minimum Credits: 4

Maximum Credits: 4

This didactic course explores the evidence base for the evaluation, diagnosis and management of common psychiatric-mental health issues across the lifespan. Emphasis is on (1) current understanding of the etiology, including the genetic basis, of psychiatric illnesses; (2) evaluation and diagnosis of individuals presenting with psychiatric-mental health symptoms; (3) recognizing problems that can be managed in a primary care setting and those that need to be referred for psychiatric evaluation and care; (4) ongoing management of psychiatric-mental health problems in primary care including management in collaboration with psychiatry; and (5) the impact of mental health problems from a family perspective.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

NURNP 3425 - DIAGNOSIS AND MANAGEMENT OF PSYCHIATRIC CONDITIONS IN PRIMARY CARE

Minimum Credits: 4

Maximum Credits: 4

This didactic course explores the evidence base for the evaluation, diagnosis and management of common psychiatric-mental health issues across the lifespan. Emphasis is on (1) current understanding of the etiology, including the genetic basis, of psychiatric illnesses; (2) evaluation and diagnosis of individuals presenting with psychiatric-mental health symptoms; (3) recognizing problems that can be managed in a primary care setting and those that need to be referred for psychiatric evaluation and care; (4) ongoing management of psychiatric-mental health problems in primary care including management in collaboration with psychiatry; and (5) the impact of mental health problems from a family perspective.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Attributes: Distance Education

NURNP 3546 - MANAGEMENT: ADOLESCENT HEALTH CLINICAL

Minimum Credits: 1

Maximum Credits: 1

The purpose of this clinical course is to provide students with an opportunity to provide comprehensive health care services to adolescents and young adults with primary health care needs, developmental concerns, complex and chronic health problems common in adolescents in an inter-professional educational setting. Concepts and content from NURNP 2546 will be applied in clinical practice.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NURNP 2520 and NUR 2032; PLAN: DNP

Nurse Specialty Role

NURSP 2061 - ORGANIZTNL & MANAGEMENT THEORY

Minimum Credits: 3

Maximum Credits: 3

This graduate level course focuses on organizational, leadership, and management theories and how they apply to health service organizations, both today and in the future. Emphasis will be placed on leading the clinical discipline of nursing based on organizational and systems thinking as well as relevant political and cultural perspectives. Quality and performance improvement strategies, as well as creating and sustaining appropriate levels of change, are explored in order to facilitate the ability to create safe and effective care delivery environments.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Nursing students only.

NURSP 2061D - ORGANIZATION & MANAGEMENT THEORY

Minimum Credits: 3

Maximum Credits: 3

This graduate level course focuses on organizational, leadership, and management theories and how they apply to health service organizations, both today and in the future. Emphasis will be placed on leading the clinical discipline of nursing based on organizational and systems thinking as well as relevant political and cultural perspectives. Quality and performance improvement strategies, as well as creating and sustaining appropriate levels of change, are explored in order to facilitate the ability to create safe and effective care delivery environments.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Attributes: Distance Education

NURSP 2064 - NURSING ADMINISTRATION SEMINAR AND PRACTICUM

Minimum Credits: 3

Maximum Credits: 3

This course is designed for students enrolled in the Administration minor tract and serves as their clinical practicum. This course will provide students with opportunities to observe, apply, analyze and discuss selected administrative and managerial skills and processes which are relevant to the practice of nursing administration. Negotiated sites and experiences are tailored to enhance student's career goals. It is anticipated that students will be exposed to and involved in various experiences that nursing administrators face in today's health care environment

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NURSP 2061 and 2091 and 2092

NURSP 2070 - INFORMATION TECHNOLOGY PROJECT MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

This course provides students with an introduction to information technology project management. Students will learn how to create a comprehensive project management plan which includes: scope, integration, communication, time, cost, risk, quality and human resources management. This course also covers the following topics: system life cycles, messaging standards and procurement.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Nursing students only.

NURSP 2071 - DESIGN AND PROCESS OF INSTRUCTION

Minimum Credits: 3

Maximum Credits: 3

This course provides students with the conceptual knowledge base and practice experiences necessary for competent classroom and clinical instruction. Students synthesize a conceptual foundation for developing effective learning activities for individuals and groups to provide realistic problem solving opportunities. Instructional design principles and related educational technologies are applied to both classroom and clinical teaching. Traditional and innovative learning environments are analyzed in relationship to the advanced role of the nurse. Issues and research findings important to classroom and clinical teaching are addressed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: Hybrid

NURSP 2072 - MEASUREMENT AND EVALUATION

Minimum Credits: 3

Maximum Credits: 3

Concepts and methods for learning measurement and evaluation as they relate to teaching and learning in nursing and the health sciences are reviewed and assessed. Course activities offer the student opportunities to study and use a variety of measurement and evaluation techniques that are appropriate for classroom and clinical healthcare settings. Opportunities are provided for students to critique and evaluate ethical, legal and social issues involving measurement and evaluation as well as uses and limitations of evaluation methods in diverse healthcare settings and educator roles.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Nursing students only.

Course Attributes: Hybrid

NURSP 2073 - PRACTICUM 1 IN NURSING EDUCATION: TEACHING AND LEARNING ASSESSMENT

Minimum Credits: 3

Maximum Credits: 3

This course is designed to enable students to put into practice all the elements of clinical, didactic, simulation, research-focused, and laboratory instruction, under the supervision of an accomplished preceptor/mentor in diverse learning environments. Students have the opportunity to implement the role of nurse-educator through a guided, supportive, personally-designed practicum experience with one or more settings, populations, or roles, as determined by each student's learning needs.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NURSP 2071; PROG: School of Nursing

Course Attributes: Hybrid

NURSP 2074 - PRACTICUM 2 IN NURSING EDUCATION: EDUCATIONAL PROGRAM MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

This course builds on the principles of NURSP 2073 practicum 1 in nursing education: teaching and learning assessment. In this course students have the opportunity to further develop and implement the role of nurse educator through a guided, supportive practicum experience under the direct supervision of an accomplished preceptor. Students are able to choose the teaching environment that best meets his or her learning needs.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NURSP 2071 and NURSP 2072 and NURSP 2073; PROG: School of Nursing

Course Attributes: Hybrid

NURSP 2075 - INTRODUCTION TO HEALTH INFORMATICS

Minimum Credits: 3

Maximum Credits: 3

This course focuses on a conceptual foundation for understanding nursing informatics and includes analysis of various applications of information systems within the context of the health care system. This course introduces theoretical models of nursing informatics; healthcare computing; and systems design and analysis. Other topics include nursing vocabularies, nursing knowledge generation; ethical and social issues in healthcare informatics; and the impact of consumer health informatics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Nursing students only.

NURSP 2075D - INTRODUCTION TO HEALTH INFORMATICS

Minimum Credits: 3

Maximum Credits: 3

This course focuses on a conceptual foundation for understanding nursing informatics and includes analysis of various applications of information systems within the context of the health care system. This course introduces theoretical models of nursing informatics; healthcare computing; and systems design and analysis. Other topics include nursing vocabularies, nursing knowledge generation; ethical and social issues in healthcare informatics; and the impact of consumer health informatics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: Distance Education

NURSP 2076 - CLINICAL INFORMATION SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

This course focuses on an analysis of nursing information systems within the context of the health care system. Emphasis is placed on the use of computers for documentation in clinical settings.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NURSP 2075 or 2275 or 2475 or 2075D

NURSP 2082 - INFORMATICS THEORIES AND ISSUES

Minimum Credits: 3

Maximum Credits: 3

This course covers relevant theories and models from the fields of: nursing informatics, communication, information science and computer science. The foundations of behavioral theories, group dynamics and principles of adult learning will be introduced. Students will apply these theories and models to emerging issues in informatics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

NURSP 2083 - SYSTEM USABILITY AND EVALUATION METHODS

Minimum Credits: 3

Maximum Credits: 3

This course is designed to provide informatics students with the knowledge necessary to take an applied role in the design, implementation and evaluation of healthcare information systems. In this course, students will apply principles of usability and evaluation theory to informatics projects.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

NURSP 2085 - NURSING INFORMTCS PRACTICUM 1

Minimum Credits: 3

Maximum Credits: 4

This course provides an opportunity for the learner to synthesize previous nursing informatics coursework. The student will implement the theory learned in class in a real-world setting and demonstrate beginning competency as an informatics nurse.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NURSP 2076 or 2276

NURSP 2086 - NURSING INFORMTCS PRACTICUM 2

Minimum Credits: 3

Maximum Credits: 4

The course employs an application focus in which the learner demonstrates leadership, comprehension, critical thinking, and problem-solving abilities within the context of a real-world environment. The student will assume the role of a beginning nursing informatics specialist.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NURSP 2085

NURSP 2088 - INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

This course provides students with the conceptual knowledge base and practice experiences necessary to understand the design and function of a modern relational database management system. It will provide students with the historical and practical knowledge needed to design a relational database. The students will have hands on experience with databases and other software that interfaces with databases. Standards as they apply to the logical and physical design of databases will be stressed. The future of database design and remote access including mobile devices will be discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Nursing students only.

NURSP 2090 - HEALTHCARE OUTCOMES

Minimum Credits: 3

Maximum Credits: 3

Knowledge and understanding of healthcare outcomes is an important competency for healthcare professionals. This course will provide students with opportunities to discuss and analyze key issues in the healthcare quality movement. Conceptual frameworks used in explaining healthcare outcomes and identification of driving forces defining the development of various outcomes will be addressed. Specific healthcare outcomes and the influence that they have on advance practice nursing and policy formulation will be examined and analyzed. Finally, the strategies and skills healthcare professionals will need to practice and manage effectively within this outcomes environment will be detailed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Nursing students only.

NURSP 2091 - FINANCE AND ECONOMICS FOR HEALTH CARE LEADERS

Minimum Credits: 3

Maximum Credits: 3

This course is designed to familiarize clinical leaders with the basic concepts of business, economics, and financial management in health care organizations. Students will learn key financial terms; the relevance of health care finances in today's environment; the ability to develop and monitor budgets for practice initiatives; and the business and financial acumen needed to evaluate and design effective practice changes. The course utilizes financial and clinical data to allow clinical leaders to learn how to effectively balance the administrative and clinical needs of today's health care environment.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Nursing students only.

NURSP 2091D - FINANCE AND ECONOMICS FOR HEALTH CARE LEADERS

Minimum Credits: 3

Maximum Credits: 3

This course is designed to familiarize clinical leaders with the basic concepts of business, economics, and financial management in health care organizations. Students will learn key financial terms; the relevance of health care finances in today's environment; the ability to develop and monitor budgets for practice initiatives; and the business and financial acumen needed to evaluate and design effective practice changes. The course utilizes financial and clinical data from a virtual hospital which allows those in clinical leadership roles learn how to effectively balance the administrative

and clinical needs of today's health care environment.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Attributes: Distance Education

NURSP 2092 - LEADERSHIP DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the application of leadership theory and the development of critical leadership skills necessary for success in today's health care environment. The course is based on five essential competencies for nursing leadership: professionalism, business skills and principles, knowledge of the health care environment, communication and relationship management, and transformational leadership.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: School of Nursing students only.

NURSP 2092D - LEADERSHIP DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the application of leadership theory and the development of critical leadership skills necessary for success in today's health care environment. The course is based on five essential competencies for nursing leadership: professionalism, business skills and principles, knowledge of the health care environment, communication and relationship management, and transformational leadership.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Distance Education

NURSP 2093 - EDUCATION AND MENTORING IN THE CLINICAL SETTING

Minimum Credits: 3

Maximum Credits: 3

This course is designed to develop a theoretical, practical, and evidence-based foundation for graduate students in the education of clients/patient/families, nurse colleagues, and other health care providers. Students will broaden their knowledge base in the dynamics of human behavior, values clarification, educational psychology, and motivation which are fundamental to behavior change and sustaining that change (transformation). Content includes principles of andragogy and pedagogy, analysis of learning styles, replete with instruments and a contemporary model focusing upon behavior change of employees, mentoring, the role and function of preceptors, coaching and feedback skills and application of a competency model will be emphasized. The AACN competencies and curricular expectations for clinical nurse leader education and practice (October 2013) will serve as the overall framework for the course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Nursing students only.

NURSP 2095 - CONTEMPORARY ISSUES IN NURSING AND THE CNL ROLE SEMINAR

Minimum Credits: 2

Maximum Credits: 2

This course focuses on the major contemporary issues facing the nursing profession. Patient safety, process improvement, effective patient care and family partnerships, improved care coordination and implementation of evidence based practice are examples that the CNL role could impact. The course also focuses on successful implementation of the CNL role through knowledge, evidence-based practice and application of leadership principles. The AACN competencies and curricular expectations for clinical nurse leader education and practice (October 2013) will serve as the overall framework for the course.

Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad Letter Grade

NURSP 2096 - CNL CLINICAL PRACTICUM 1

Minimum Credits: 2

Maximum Credits: 2

This course is designed to focus on the role of the clinical nurse leader in implementing quality improvement strategic imperatives with special emphasis on process improvement at the micro and macro levels, customer satisfaction, patient centered care, inter-professional healthcare teams, outcomes management and evidence-based practice. The AACN competencies and curricular expectations for clinical nurse leader education and practice (2013) will provide the framework for the practicum.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: (NURSP 2061 or 2261 or 2461 or 2061D) and (NURSP 2090 or NURSP 2290 or NURSP 2098)

NURSP 2097 - CNL CLINICAL PRACTICUM 2

Minimum Credits: 3

Maximum Credits: 3

This course is designed to focus on the role of the clinical nurse leader in implementing quality improvement strategic imperatives with special emphasis on process improvement at the micro and macro levels, customer satisfaction, patient centered care, inter-professional healthcare teams, outcomes management and evidence-based practice. The AACN competencies and curricular expectations for clinical nurse leader education and practice (2013) will provide the framework for the practicum.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

Course Requirements: PREQ: NURSP 2098 and NURSP (2061 and 2061D) and NURSP 2096

NURSP 2098 - HEALTHCARE QUALITY

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

NURSP 2161 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 3

Students elect an area of interest and work with a specific faculty member to meet agreed upon objectives.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

Course Requirements: School of Nursing students only.

NURSP 2180 - ADVANCED SPECIALTY OPTION: ADULT EPISODIC AND CHRONIC ACUTE CARE

Minimum Credits: 4

Maximum Credits: 4

This course is designed to develop a foundation for advanced nursing practice in the care of patients with common episodic and chronic dysfunctions/alterations. The student will develop advanced practice skills in patient/family assessment, developing and implementing a nursing plan and evaluating the plan's effectiveness when caring for patients across the continuum of acute care services. Health promotion, health maintenance, disease prevention and health restoration appropriate to these patients and families will also be emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Nursing students only.

NURSP 2185 - ADVANCED SPECIALTY OPTION: COMPLEX HEALTH PROBLEMS IN ACUTE CARE

Minimum Credits: 2

Maximum Credits: 2

This course is designed to develop a theoretical foundation for advanced nursing care of the acutely and critically ill adult-gerontology patient. Through didactic information and course assignments, students develop the knowledge base central to planning, implementing and evaluating nursing care for acutely and critically ill adult-gerontology patients with complex health problems that are commonly seen across the continuum of acute care delivery systems. Health maintenance, health promotion, disease prevention and health protection appropriate to this patient population will also be emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: (NUR 2004 or 2404 or 2004D) and (NUR 2034 or 2434 or 2034D)

NURSP 2190 - ADV SPECIALTY OPT: CARDIOPULMONARY

Minimum Credits: 3

Maximum Credits: 3

This course is designed to develop a comprehensive theoretical and practical foundation for advanced nursing practice in the care of adult-gerontology patients with cardiopulmonary dysfunctions/alterations. The course integrates the pathophysiology of cardiopulmonary dysfunctions/alterations with appropriate diagnostic parameters and management strategies. Health promotion, protection, and maintenance appropriate to these patients and families will also be emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NUR 2004

NURSP 2191 - ADV SPECIALTY OPTN: CRITICAL CARE

Minimum Credits: 3

Maximum Credits: 3

This course is designed to develop a comprehensive theoretical and practical foundation for advanced nursing care of adult-gerontology patients with selected dysfunctions/alterations commonly seen in critical illness. Didactic content focuses on information central to planning, implementing and evaluating therapeutic regimens for adult-gerontology patients with problems commonly seen in the critical care setting. Aspects of health promotion and maintenance appropriate to these patients and families will also be emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NUR 2004

NURSP 2192 - ADV SPECIALTY OPTION: ONCOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course is designed to develop a comprehensive theoretical and practical foundation for advanced nursing care of adult-gerontology patients with cancer dysfunctions/alterations. Didactic content focuses on information central to planning, implementing and evaluating therapeutic regimens for adult-gerontology patients with problems commonly seen in the oncology setting. Aspects of health promotion, protection, and maintenance appropriate to these patients and families will also be emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NUR 2004

NURSP 2193 - ADVANCED SPECIALTY OPTION: DIRECTED STUDY

Minimum Credits: 3

Maximum Credits: 3

This course is designed to develop a comprehensive theoretical and practical foundation for advanced nursing care of adult-gerontology patients with dysfunctions/alterations in the selected area of clinical specialization. Didactic content focuses on information central to planning, implementing and evaluating therapeutic regimens for adult-gerontology patients with problems commonly seen in the selected area of clinical specialization. Aspects of health promotion and maintenance appropriate to these patients and families will also be emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NUR 2004

NURSP 2195 - ADVANCED SPECIALITY OPTION: TRAUMA EMERGENCY PREPAREDNESS

Minimum Credits: 3

Maximum Credits: 3

This course is designed to develop a comprehensive theoretical and practical foundation for advanced nursing practice in the diagnosis & management of selected dysfunctions/alterations commonly seen in the trauma, emergency and disaster affected adult-gerontology patient. Didactic content focuses on information central to planning, implementing and evaluating therapeutic regimens for adult-gerontology patients with problems commonly seen in the trauma, emergency, and disaster settings. Aspects of health promotion and maintenance appropriate to these patients and families will also be emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NUR 2004

NURSP 2261 - ORGANIZATIONAL AND MANAGEMENT THEORY

Minimum Credits: 3

Maximum Credits: 3

This graduate level course focuses on organizational, leadership, and management theories and how they apply to health service organizations, both today and in the future. Emphasis will be placed on leading the clinical discipline of nursing based on organizational and systems thinking as well as relevant political and cultural perspectives. Quality and performance improvement strategies, as well as creating and sustaining appropriate levels of change, are explored in order to facilitate the ability to create safe and effective care delivery environments

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Nursing students only.

NURSP 2270 - INFORMATION TECHNOLOGY PROJECT MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

This course provides students with an introduction to information technology project management. Students will learn how to create a comprehensive project management plan which includes: scope, integration, communication, time, cost, risk, quality and human resources management. This course also covers the following topics: system life cycles, messaging standards and procurement.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

NURSP 2272 - USING DATA TO DRIVE DECISIONS

Minimum Credits: 2

Maximum Credits: 2

This course is the first practicum and is designed to apply the knowledge, skills and critical thinking developed through the core content courses of

the administrative program. Using a data base of a 'virtual hospital', students are presented with common administrative problems they are likely to encounter in an administrative role. Particular emphasis is given to solving problems with the appropriate balance of cost and quality.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: (NURSP 2061 or 2261 or 2461 or 2061D) and (NURSP 2091 or 2291 or 2491 or 2091D)

NURSP 2273 - NURSING ADMINISTRATION RESIDENCY

Minimum Credits: 3

Maximum Credits: 3

This course is designed to synthesize the knowledge, skills, and critical thinking developed through the core content courses of the administrative program within a practice environment. Students will be assigned a preceptor based on their identified learning needs and area of interest. It is anticipated that students will be exposed to and involved in various experiences that nursing administrators face in today's health care environment. In collaboration with their preceptor, the student will identify, design and implement a relevant project at the beginning of the semester. The project must be approved by the course instructor. Once a week students will complete an on-line journal through blackboard that illustrates how they have met the objectives below. Each objective must be met by the conclusion of the term. The course instructor will provide feedback on a weekly basis.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

NURSP 2275 - INTRODUCTION TO HEALTH INFORMATICS

Minimum Credits: 3

Maximum Credits: 3

This course focuses on a conceptual foundation for understanding nursing informatics and includes analysis of various applications of information systems within the context of the health care system. This course introduces theoretical models of nursing informatics; healthcare computing; and systems design and analysis. Other topics include nursing vocabularies, nursing knowledge generation; ethical and social issues in healthcare informatics; and the impact of consumer health informatics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Graduate School of Nursing

NURSP 2282 - INFORMATICS THEORIES AND ISSUES

Minimum Credits: 3

Maximum Credits: 3

This course covers relevant theories and models from the fields of: nursing informatics, communication, information science and computer science. The foundations of behavioral theories, group dynamics and principles of adult learning will be introduced. Students will apply these theories and models to emerging issues in informatics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

NURSP 2285 - NURSING INFORMATICS PRACTICUM 1

Minimum Credits: 3

Maximum Credits: 4

This course provides an opportunity for the learner to synthesize previous nursing informatics coursework. The student will implement the theory learned in class in a real-world setting and demonstrate beginning competency as an informatics nurse.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

NURSP 2286 - NURSING INFORMATICS PRACTICUM 2

Minimum Credits: 3

Maximum Credits: 4

The course employs an application focus in which the learner demonstrates leadership, comprehension, critical thinking, and problem-solving abilities within the context of a real-world environment. The student will assume the role of a beginning nursing informatics specialist.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

NURSP 2290 - HEALTHCARE OUTCOMES

Minimum Credits: 3

Maximum Credits: 3

Knowledge and understanding of healthcare outcomes is an important competency for healthcare professionals. This course will provide students with opportunities to discuss and analyze key issues in the healthcare quality movement. Conceptual frameworks used in explaining healthcare outcomes and identification of driving forces defining the development of various outcomes will be addressed. Specific healthcare outcomes and the influence that they have on advance practice nursing and policy formulation will be examined and analyzed. Finally, the strategies and skills healthcare professionals will need to practice and manage effectively within this outcomes environment will be detailed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Nursing students only.

NURSP 2291 - FINANCE AND ECONOMICS FOR HEALTH CARE LEADERS

Minimum Credits: 3

Maximum Credits: 3

This course is designed to familiarize clinical leaders with the basic concepts of business, economics, and financial management in health care organizations. Students will learn key financial terms; the relevance of health care finances in today's environment; the ability to develop and monitor budgets for practice initiatives; and the business and financial acumen needed to evaluate and design effective practice changes. The course utilizes financial and clinical data from a virtual hospital which allows those in clinical leadership roles learn how to effectively balance the administrative and clinical needs of today's health care environment.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

NURSP 2292 - LEADERSHIP DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the application of leadership theory and the development of critical leadership skills necessary for success in today's health care environment. The course is based on five essential competencies for nursing leadership: professionalism, business skills and principles, knowledge of the health care environment, communication and relationship management, and transformational leadership.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: Graduate School of Nursing

NURSP 2293 - EDUCATION AND MENTORING IN THE CLINICAL SETTING

Minimum Credits: 3

Maximum Credits: 3

This course is designed to develop a theoretical, practical, and evidence-based foundation for graduate students in the education of patient/families, nurse colleagues and other health care providers. Students will broaden their knowledge base in the dynamics of human behavior, values clarification, educational psychology and motivation which are fundamental to behavior change and sustaining that change (transformation). Content includes principles of andragogy and pedagogy, analysis of learning styles, replete with instruments and a contemporary model focusing upon behavior change of employees. Mentoring, the role and function of preceptors, coaching and feedback skills and application of a competency model

will be emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Graduate School of Nursing

NURSP 2295 - CONTEMPORARY ISSUES IN NURSING AND THE CNL ROLE SEMINAR

Minimum Credits: 2

Maximum Credits: 2

This course focuses on the major contemporary issues facing the nursing profession. Patient safety, process improvement, effective patient care and family partnerships, improved care coordination and implementation of evidence based practice are examples that the CNL role could impact. The course also focuses on successful implementation of the CNL role through knowledge, evidence-based practice and application of leadership principles.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

NURSP 2296 - CNL CLINICAL PRACTICUM 1

Minimum Credits: 2

Maximum Credits: 2

This course is designed to focus on the role of the clinical nurse leader in implementing quality improvement strategic imperatives with special emphasis on process improvement at the micro and macro levels, customer satisfaction, patient centered care, inter-professional healthcare teams, outcomes management and evidence-based practice. The AACN end of life program competencies provide the framework for the practicum.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: (NURSP 2061 or 2261 or 2461 or 2061D) and (NURSP 2090 or 2290); PROG: Graduate School of Nursing

NURSP 2297 - CNL CLINICAL PRACTICUM 2

Minimum Credits: 3

Maximum Credits: 3

This course is designed to synthesize the knowledge, skills and critical thinking developed through the core content courses of the clinical nurse leader area of concentration. Students practice the role of the CNL in a clinical setting within the healthcare milieu. The AACN and end-of-program competencies provide the framework for the practicum.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: (NURSP 2061 or 2261 or 2461 or 2061D) and (NURSP 2090 and 2290); CREQ: NURSP 2096 or 2296

NURSP 2361 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 3

An in-depth study in a particular area of interest by arrangement with a designated faculty member.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

NURSP 2372 - USING DATA TO DRIVE DECISIONS

Minimum Credits: 2

Maximum Credits: 2

This course is designed to apply the knowledge, skills and critical thinking developed through the core content courses of the administrative program.

Using a data base of a 'virtual hospital', students are presented with common administrative problems they are likely to encounter in an administrative role. Particular emphasis is given to solving problems with the appropriate balance of cost and quality.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: (NURSP 2061 or 2261 or 2461 or 2061D) and (NURSP 2091 or 2291 or 2491 or 2091D)

NURSP 2373 - NURSING ADMINISTRATION RESIDENCY

Minimum Credits: 3

Maximum Credits: 3

This course is designed to synthesize the knowledge, skills, and critical thinking developed through the core content courses of the administrative program within a practice environment. Students will be assigned a preceptor based on their identified learning needs and area of interest. It is anticipated that students will be exposed to and involved in various experiences that nursing administrators face in today's health care environment.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

NURSP 2383 - METHODS IN TECHNOLOGY EVALUATION & USABILITY

Minimum Credits: 2

Maximum Credits: 2

This course is designed to provide informatics students with the knowledge necessary to take an applied role in the design, implementation, and evaluation of healthcare information systems. In this course, students will apply principles of usability and evaluation theory.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

NURSP 2388 - DATABASE MANAGEMENT

Minimum Credits: 2

Maximum Credits: 2

This course provides students with the conceptual knowledge base and practice experiences necessary to understand the workings of a modern relational database management system. It will provide the students with the historical and practical knowledge needed to design a relational database. The students will have hands-on experience with databases and other software that will interface with databases. Standards, such as html, SQL, ODBC and normalization will be stressed in both the theory and practical aspects of this course. The future of database design and access from non-traditional environments will be discussed. Use of databases on servers will be demonstrated.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

NURSP 2388D - DATABASE MANAGEMENT

Minimum Credits: 2

Maximum Credits: 2

This course provides students with the conceptual knowledge base and practice experiences necessary to understand the workings of a modern relational database management system. It will provide the students with the historical and practical knowledge needed to design a relational database. The students will have hands-on experience with databases and other software that will interface with databases. Standards, such as html, SQL, ODBC and normalization will be stressed in both the theory and practical aspects of this course. The future of database design and access from non-traditional environments will be discussed. Use of databases on servers will be demonstrated.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Nurse Specialty Role (DNP)

Course Attributes: Distance Education

NURSP 2461 - ORGANIZTNL & MANAGEMENT THEORY

Minimum Credits: 3

Maximum Credits: 3

This graduate level course focuses on organizational, leadership, and management theories and how they apply to health service organizations, both today and in the future. Emphasis will be placed on leading the clinical discipline of nursing based on organizational and systems thinking as well as relevant political and cultural perspectives. Quality and performance improvement strategies, as well as creating and sustaining appropriate levels of change, are explored in order to facilitate the ability to create safe and effective care delivery environments.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Attributes: Distance Education

NURSP 2475 - INTRO TO HEALTH INFORMATICS

Minimum Credits: 3

Maximum Credits: 3

This course focuses on a conceptual foundation for understanding nursing informatics and includes analysis of various applications of information systems within the context of the health care system. This course introduces theoretical models of nursing informatics; healthcare computing; and systems design and analysis. Other topics include nursing vocabularies, nursing knowledge generation; ethical and social issues in healthcare informatics; and the impact of consumer health informatics.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: Distance Education

NURSP 2491 - FINC ECON HEALTH CARE LEADERS

Minimum Credits: 3

Maximum Credits: 3

This course is designed to familiarize clinical leaders with the basic concepts of business, economics, and financial management in health care organizations. Students will learn key financial terms; the relevance of health care finances in today's environment; the ability to develop and monitor budgets for practice initiatives; and the business and financial acumen needed to evaluate and design effective practice changes. The course utilizes financial and clinical data from a virtual hospital which allows those in clinical leadership roles learn how to effectively balance the administrative and clinical needs of today's health care environment.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Attributes: Distance Education

NURSP 2492 - LEADERSHIP DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the application of leadership theory and the development of critical leadership skills necessary for success in today's health care environment. The course is based on five essential competencies for nursing leadership: professionalism, business skills and principles, knowledge of the health care environment, communication and relationship management, and transformational leadership.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Distance Education

NURSP 3092 - LEADERSHIP IN COMPLEX SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

This advanced level leadership course focuses on leading complex organizations and systems to facilitate the transformation of health care. Using principles of chaos and complexity theory, students will explore methods for assessing organizations, identifying emerging issues, and facilitating organization-wide changes to meet the ongoing challenges facing health care organizations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

NURSP 3094 - EVIDENCE-BASED MANAGEMENT AND QUALITY IMPROVEMENT

Minimum Credits: 3

Maximum Credits: 3

This course is designed to assist students pursuing leadership roles within health systems with the application of evidence-based management principles and the design of quality improvement approaches that support a culture of clinical and service excellence. During this course, students learn to find, interpret, and use scientific evidence related to managerial decisions. Using quality improvement theories, students will analyze their own organizations and identify best practices. Students will apply selected quality tools and techniques to solve actual problems in their workplaces.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Nursing students only.

NURSP 3096 - DATA ANALYTICS AND CLINICAL SYSTEMS DESIGN

Minimum Credits: 3

Maximum Credits: 3

This course is designed to assist students pursuing leadership roles within health systems to use data analytics to assist with the design of clinical systems to improve organizational outcomes. Using a web-designed structure, students will access a Virtual Hospital and use financial and clinical data to successfully resolve issues presented in a case study format. These case studies are designed to simulate actual problems facing nursing leaders both today and in the future. Through class discussions, students will then learn multiple approaches to resolving complicated issues.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Nursing students only.

NURSP 3097 - DNP RESIDENCY: ADMINISTRATION

Minimum Credits: 1

Maximum Credits: 10

This course is designed to provide a culminating practicum experience for the DNP leadership student. Students will focus on promoting evidence based practice as interdisciplinary team members and providing high quality, cost effective care in a dynamic health care environment. Emphasis is placed on further refinement of competencies related to the leadership complex issues, organizations and systems.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Nursing students only.

NURSP 3292 - LEADERSHIP IN COMPLEX SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

This advanced leadership course focuses on leading complex organizations and systems to facilitate the transformation of health care. Using principles of chaos and complexity theory, students will explore methods for assessing organizations, identifying emerging issues, and facilitating organization-wide changes to meet the ongoing challenges facing health care organizations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

NURSP 3297 - DNP RESIDENCY: ADMINISTRATION

Minimum Credits: 1

Maximum Credits: 10

This course is designed to provide a culminating practicum experience for the DNP leadership student. Students will focus on promoting evidence based practice as interdisciplinary team members and providing high quality, cost effective care in a dynamic health care environment. Emphasis is placed on further refinement of competencies related to the leadership of complex issues, organizations and systems.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

Nursing

NUR 2000 - RESEARCH FOR EVIDENCE-BASED PRACTICE 1

Minimum Credits: 2

Maximum Credits: 2

This course examines the interaction of theory, research, and clinical expertise in the development of evidence-based nursing practice. Students identify relevant research and critically appraise published studies to evaluate their quality and applicability to clinical practice. Students gain an understanding of the research process, the critical appraisal of published research studies that use a variety of research designs, and the role of research in evidence-based practice. Students synthesize critically appraised evidence on a clinical topic. Students describe the methodologies used for quality improvement and safety initiatives.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: CREQ: NUR 2011 or 2211 or 2411 or 2011D

NUR 2000D - RESEARCH FOR EVIDENCE-BASED PRACTICE 1

Minimum Credits: 2

Maximum Credits: 2

This course examines the interaction of theory, research, and clinical expertise in the development of evidence-based nursing practice. Students identify relevant research and critically appraise published studies to evaluate their quality and applicability to clinical practice. Students gain an understanding of the research process, the critical appraisal of published research studies that use a variety of research designs, and the role of research in evidence-based practice. Students synthesize critically appraised evidence on a clinical topic. Students describe the methodologies used for quality improvement and safety initiatives.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: CREQ: NUR 2011 or 2211

Course Attributes: Distance Education

NUR 2002 - RESEARCH PRACTICUM

Minimum Credits: 2

Maximum Credits: 2

This course builds on the knowledge and skills acquired in NUR 2000/2400 and NUR 2011/2411 and focuses on the continuing development of an understanding of the research process through participation in an ongoing research project and course seminars. Students identify a researcher who is conducting an ongoing project and who is willing to serve as a preceptor. Students prepare a contract defining the role of the student and how he/she will meet the course objectives while working with the designated preceptor. A written log is submitted documenting the student's learning activities for the practicum. Seminars are held on a regular basis by the primary teacher and focus on discussion of the research process, guided critiques of published research, and presentations by the students of their practicum experiences.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: CREQ: NUR 2007 or 2407 or 2207 or 2007D

NUR 2004 - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN

Minimum Credits: 4

Maximum Credits: 4

This course is designed to provide the student with a comprehensive theoretical foundation of the phenomena that produce alterations in human physiologic function in diverse populations across the life span. Information gained in this course will prepare the student for subsequent courses related to the diagnosis and management of disease processes associated with pathophysiologic dysfunction/alterations in people of various ethnic/cultural groups across the lifespan.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Nursing students only.

NUR 2004D - PATHOPHYSIOLOGY ACROSS THE LIFE SPAN

Minimum Credits: 4

Maximum Credits: 4

This course is designed to provide the student with a comprehensive theoretical foundation of the phenomena that produce alterations in human physiologic function in diverse populations across the life span. Information gained in this course will prepare the student for subsequent courses related to the diagnosis and management of disease processes associated with pathophysiologic dysfunction/alterations in people of various ethnic/cultural groups across the life span.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: Distance Education

NUR 2007 - RESEARCH FOR EVIDENCE-BASED PRACTICE 2

Minimum Credits: 2

Maximum Credits: 2

During this course students build on the knowledge they acquired in NUR 2000/NUR 2200 and NUR 2011/ NUR 2211 to develop an evidence-based protocol to address an answerable clinical question. Students will learn how to write an evidence-based question, conduct an exhaustive review of published literature on a clinical topic, integrate critically appraised research studies, develop an evidence-based protocol, and propose a method to implement and evaluate the protocol. Students will also learn to critically appraise published clinical practice guidelines. Students will develop an evidence-based document that transforms empirically developed information for use in clinical practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: (NUR 2000 and 2011) or (NUR 2200 and 2211) or (NUR 2400 and 2411) or (NUR 2000D and 2011D)

NUR 2007D - RESEARCH FOR EVIDENCE-BASED PRACTICE 2

Minimum Credits: 2

Maximum Credits: 2

Students will learn how to write an evidence-based question, conduct an exhaustive review of published literature on a clinical topic, integrate critically appraised research studies, develop an evidence-based protocol, and propose a method to implement and evaluate the protocol. Students will also learn to critically appraise published clinical practice guidelines. Students will develop an evidence-based document that transforms empirically developed information for use in clinical practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: (NUR 2000 or 2200 or 2400 or 2000D) and (NUR 2011 or 2211 or 2411 or 2011D)

Course Attributes: Distance Education

NUR 2008 - ETHICS FOR ADVANCED PRACTICE NURSING

Minimum Credits: 0

Maximum Credits: 0

This course provides an online learning experience that includes a review of basic terms, concepts, and theories related to ethics. The student is guided through methods of ethical decision-making in clinical, research, health care organizational, local and international settings. The course provides a basis for continuing the study of ethics-based advanced nursing practice as integrated in specialty-specific courses.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad HSU Basis

Course Requirements: MUST be taken with any 2000 or 3000-level Nursing Course

Course Attributes: World Wide Web

NUR 2009 - LEADERSHIP AND HEALTHCARE SYSTEMS: POLICY, ORGANIZATION, AND FINANCING OF HEALTH CARE

Minimum Credits: 0

Maximum Credits: 0

The purpose of this web-enhanced course is to equip the graduate prepared nurse with beginning skills to influence health policy, to provide leadership in the healthcare delivery system, and to utilize basic principles of fiscal management in making high-quality cost-effective choices in the use of health care resources. The course consists of three units. The first unit explores the policymaking process, the role of the advanced practice nurse or advanced generalist and the effect of public policy on healthcare delivery systems. The second unit examines the organization and delivery of healthcare with an emphasis on the continuum of health care, including acute, specialized, and community based systems. Preparation for a nursing leadership role in these integrated care systems is emphasized. The third unit presents an overview of healthcare financing as it relates to the delivery of health care services. The nurse's role as the monitor of quality control, patient safety, and cost-effective care is examined in the context of clinical decision making.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad HSU Basis

Course Requirements: MUST be taken with any 2000 or 3000-level Nursing Course

NUR 2010 - HEALTH PROMOTION AND DISEASE PREVENTION IN CULTURALLY DIVERSE POPULATIONS

Minimum Credits: 3

Maximum Credits: 3

Health promotion and disease prevention are examined from theoretical foundations to clinical applications. The course focuses on individual and community health promotion assessment, screening, and interventions in diverse populations. Epidemiological principles and real clinical examples are discussed as a basis for focusing health promotion assessment and interventions. Course topics are delineated according to Healthy People 2020 and World Health Organization goals with a corresponding focus on factors related to health care disparities among vulnerable populations. Current international research in health promotion and disease prevention is the basis for identifying appropriate interventions in diverse populations and settings.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Nursing students only.

NUR 2010D - HEALTH PROMOTION AND DISEASE PREVENTION IN CULTURALLY DIVERSE POPULATIONS

Minimum Credits: 3

Maximum Credits: 3

Health promotion and disease prevention are examined from theoretical foundations to clinical applications. The course focuses on individual and community health promotion assessment, screening, and interventions in diverse populations. Epidemiological principles and real clinical examples are discussed as a basis for focusing health promotion assessment and interventions. Course topics are delineated according to Health People 2010 goals with a corresponding focus on factors related to health care disparities among vulnerable populations. Current research in health promotion and disease prevention is the basis for identifying appropriate interventions in diverse populations and settings.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Attributes: Distance Education

NUR 2011 - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE

Minimum Credits: 3

Maximum Credits: 3

This course will provide students with the basis for understanding and interpreting commonly used statistical tests, as well as critically appraising their use in published research studies. Content will include descriptive and inferential statistics commonly reported in published research studies including both univariate and multivariate parametric and nonparametric tests. The course will also cover meta-analytic techniques and students will learn to calculate effect sizes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Nursing students only.

NUR 2011D - APPLIED STATISTICS FOR EVIDENCE-BASED PRACTICE

Minimum Credits: 3

Maximum Credits: 3

This course will provide students with the basis for understanding and interpreting commonly used statistical tests, as well as critically appraising their use in published research studies. Content will include descriptive and inferential statistics commonly reported in published research studies including both univariate and multivariate parametric and nonparametric tests. The course will also cover meta-analytic techniques and students will learn to calculate effect sizes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Attributes: Distance Education

NUR 2019 - PED PHYSICAL DIAGNOSIS CLINICAL

Minimum Credits: 1

Maximum Credits: 1

This course focuses on the performance of the health assessment of the child. Students practice performing a patient database, the physical exam, developmental assessment, and to applying the diagnostic process.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

Course Requirements: School of Nursing students only.

NUR 2025 - PHYSICAL DIAGNOSIS-AN

Minimum Credits: 1

Maximum Credits: 1

This course focuses on health assessment of the adult. Concentration is on selected theories, principles and techniques from the physical and behavioral sciences essential to developing the patient data base and to applying the diagnostic process.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NUR 2004 or 2204 or 2404 or 2004D; CREQ: NUR 2031 or 2231; PLAN: Nurse Anesthesia (MSN)

NUR 2031 - THE DIAGNOSTIC PHYSICAL EXAM ACROSS THE LIFE SPAN

Minimum Credits: 3

Maximum Credits: 3

This didactic course focuses on the use of the diagnostic history and physical examination to formulate a health assessment in patient populations across the lifespan. Concentration is on selected theories, principles and techniques from the physical and behavioral sciences essential to obtaining a complete health history and performing a methodical physical examination on patients across the life span.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: (NUR 2004or2204or2404or2004D); PLAN: NURSAN-MSN or NURSAN-DNP or NURSMW-DNP; SUBPLAN: MSNNNP or DNPNNP or DNPFLNP or DNPPPNP or MSNCNL or DNPMSN or DNPAGAC or DNPNA or ODNPNA or MSNADM or OCNL or ONAD or DNPAGNP-SP or DNPPCNP or DNPAGCN or DNPPMHN

NUR 2032 - DIFFERENTIAL DIAGNOSIS CLINICAL

Minimum Credits: 2

Maximum Credits: 2

This clinical course builds upon the diagnostic process that is introduced in NUR 2031 and expanded upon in NUR 2033. Using a problem based approach; students will use the information on the diagnostic process that is taught in NUR 2033 and apply it to the clinical setting. Differential diagnoses will be formulated based on the accurate and thorough health history and physical exam conducted on patients across the lifespan. Students will learn the process of verbally presenting patient cases, formulating differential diagnoses, formulating patient problem lists, and identifying stressors to health.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NUR 2031 or 2231; CREQ: NUR 2033 or 2433 or 2033D; PROG: Graduate School of Nursing

NUR 2032D - DIFFERENTIAL DIAGNOSIS CLINICAL

Minimum Credits: 2

Maximum Credits: 2

This clinical course builds upon the diagnostic process that is introduced in NUR 2031 and expanded upon in NUR 2033. Using a problem based approach; students will use the information on the diagnostic process that is taught in NUR 2033 and apply it to the clinical setting. Differential diagnoses will be formulated based on the accurate and thorough health history and physical exam conducted on patients across the lifespan. Students will learn the process of verbally presenting patient cases, formulating differential diagnoses, formulating patient problem lists, and identifying stressors to health.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

Course Requirements: PREQ:NUR 2031or2231;CREQ: NUR 2033 or2433or2033D;PLAN:NOT IN Neonatal Nurse Practitioner, Pediatric Nurse Practitioner, Family Nurse Practitioner, Psych Primary Care Nurse Practitioner, Student Nurse Midwife or Adult Geron Primary Care Nurse Practitioner

Course Attributes: Distance Education

NUR 2033 - DIFFERENTIAL DIAGNOSIS THEORY ACROSS THE LIFE SPAN

Minimum Credits: 2

Maximum Credits: 2

This didactic course builds upon the diagnostic process introduced in NUR 2031. Using a problem-based approach to symptoms, students will be introduced to the diagnostic framework, algorithms, and terminology that will allow them to move from symptom to diagnosis. Evidence-based diagnosis will focus on the accuracy of the health history and sensitivity of the physical exam, laboratory studies and tests to "rule in" or "rule out" specific diseases. Students will learn the importance of formulating clinical impressions that lead to hypothesis testing in the care of patients across the life span.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NUR 2031 or 2231; CREQ: NUR 2032 or 2432 or 2032D; PROG: Graduate School of Nursing

NUR 2033D - DIFFERENTIAL DIAGNOSIS THEORY ACROSS THE LIFE SPAN

Minimum Credits: 2

Maximum Credits: 2

This didactic course builds upon the diagnostic process introduced in NUR 2031. Using a problem-based approach to symptoms, students will be introduced to the diagnostic framework, algorithms, and terminology that will allow them to move from symptom to diagnosis. Evidence-based diagnosis will focus on the accuracy of the health history and sensitivity of the physical exam, laboratory studies and tests to "rule in" or "rule out" specific diseases. Students will learn the importance of formulating clinical impressions that lead to hypothesis testing in the care of patients across the life span.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NUR 2031 or 2231; CREQ: NUR 2032 or 2432 or 2032D

Course Attributes: Distance Education

NUR 2034 - ADVANCED PHARMACOLOGY ACROSS THE LIFESPAN

Minimum Credits: 3

Maximum Credits: 3

This is a basic science course covering the principles of drug action for several important classes of drugs. A basic knowledge of principles of chemistry and biochemistry will be used to explain the chemical basis of drug receptor interactions. The course begins with the fundamentals of pharmacodynamics, pharmacokinetics and pharmacogenomics, and then covers the pharmacology of the central nervous system, respiratory system, gastrointestinal system, renal/cardiovascular system, endocrine system, immune suppression and antibiotic, antifungal, antiviral therapies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: (NUR 2004 or 2204 or 2404 or 2004D)

NUR 2034D - ADVANCED PHARMACOLOGY ACROSS THE LIFESPAN

Minimum Credits: 3

Maximum Credits: 3

This is a basic science course covering the principles of drug action for several important classes of drugs. A basic knowledge of principles of chemistry and biochemistry will be used to explain the chemical basis of drug receptor interactions. The course begins with the fundamentals of pharmacodynamics, pharmacokinetics and pharmacogenomics, and then covers the pharmacology of the central nervous system, respiratory system, gastrointestinal system, renal/cardiovascular system, endocrine system, immune suppression and antibiotic, antifungal, antiviral therapies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NUR 2004 or 2204 or 2404 or 2004D

Course Attributes: Distance Education

NUR 2040 - LITERATURE AND FILM TO UNDERSTAND THE PATIENT-PRACTITIONER EXPERIENCE

Minimum Credits: 1

Maximum Credits: 1

This course emphasizes the importance of understanding the universal human aspects of health and disease to further develop empathetic and holistic skills among health professional students. The importance of interprofessional collaboration as a mechanism to improve patient outcomes will be explored. Students and faculty will read and/or view selected works that focus on the human condition that may impact the physical and/or psychological health of the patient, families, communities, and care providers - and their interaction with the healthcare system. Guided discussion that helps students to reflect on the humanistic aspects of healthcare will be conducted.

Academic Career: Graduate

Course Component: Lecture

Grade Component: LG/SU3 Elective Basis

Course Requirements: PROGRAM: Nursing - Graduate or Undergraduate

NUR 2043 - FOUNDATIONS OF PERSONALIZED HEALTH: TRANSLATION FROM BASIC RESEARCH TO CLINICAL PRACTICE

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

NUR 2044 - NURSING GRADUATE ORIENTATION MODULE

Minimum Credits: 0
Maximum Credits: 0

This module provides a web-based graduate nursing orientation that is designed to provide graduate nursing students with an overview of the school of nursing and information that they will need to successfully complete their programs and achieve their career goals.

Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis
Course Requirements: MUST be taken with any 2000 or 3000-level Nursing Course
Course Attributes: World Wide Web

NUR 2072 - MEASUREMENT AND EVALUATION

Minimum Credits: 3
Maximum Credits: 3

Theories of measurement and evaluation are analyzed as they relate to the various aspects of instruction in nursing. Class activities are designed to offer the student opportunities to study and use a variety of measurement and evaluation techniques appropriate for classroom and clinical nursing settings. Opportunities are provided for students to analyze ethical, legal and social issues involving measurement and evaluation as well as uses and limitations of evaluation instruments in a variety of nursing situations.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Nursing students only.

NUR 2077 - RESEARCH COMPUTING

Minimum Credits: 3
Maximum Credits: 3

This course focuses on computing tools and techniques currently used in nursing research. Principles for organizing, collecting, storing, managing, and analyzing data will be examined. Different data entry procedures and methods, creating spreadsheets, managing databases, and statistical analysis will be introduced and practiced.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

NUR 2078 - CLINICAL DIAGNOSTICS

Minimum Credits: 3
Maximum Credits: 3

This course emphasizes performing and/or interpreting cost effective office-based laboratory and selected diagnostic tests in problem-based cases. The course is designed for nurse practitioners who may practice where on-site laboratory and diagnostic services may not be available. Included are EKG and x-ray interpretation and performing and interpreting selected laboratory tests. Suturing, casting, splinting workshops and wound care techniques are also included.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: NUR 2033 or 2433 or 2033D; PROG: School of Nursing

NUR 2078D - CLINICAL DIAGNOSTICS

Minimum Credits: 3

Maximum Credits: 3

This course emphasizes performing and/or interpreting cost effective office-based laboratory and selected diagnostic tests in problem-based cases. The course is designed for nurse practitioners who may practice where on-site laboratory and diagnostic services may not be available. Included are EKG and x-ray interpretation and performing and interpreting selected laboratory tests. Suturing, casting, splinting workshops and wound care techniques are also included.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NUR 2033 or 2433 or 2033D

Course Attributes: Distance Education

NUR 2112 - APPLIED PARAMETRIC AND NON-PARAMETRIC STATISTICS FOR THE HEALTH SCIENCES 1

Minimum Credits: 3

Maximum Credits: 3

This course develops skill in parametric and nonparametric applications of descriptive and inferential statistics to health sciences research. The concept of parametric and non-parametric statistics is covered. Parametric tests for comparing means include one-sample z and t-tests, and independent and related samples t-tests. Methods for checking parametric test assumptions are presented, and remedies for assumption violations explored, including non-parametric alternatives for these tests. Software for statistical analyses will be introduced along with data examples from health science research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate Nursing

NUR 2113 - APPLIED PARAMETRIC AND NON-PARAMETRIC STATISTICS FOR THE HEALTH SCIENCES 2

Minimum Credits: 3

Maximum Credits: 3

This course develops skill in parametric and nonparametric statistical applications to factorial designs in health sciences research. Analysis of variance (ANOVA) for normally distributed outcomes is the parametric approach presented. Methods for checking parametric test assumptions are presented, and remedies for assumption violations explored, including non-parametric alternatives for this test including empirical resampling techniques (bootstrapping) and rank-based tests. Software for statistical analyses will be introduced along with data examples from health science research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: "NUR 2112 Applied Parametric and Non-Parametric Statistics for Health Sciences 1" OR "NUR 3112 Applied Parametric and Non-Parametric Statistics for Health Sciences 1"

NUR 2114 - APPLIED REGRESSION FOR HEALTH SCIENCE RESEARCH

Minimum Credits: 3

Maximum Credits: 3

This course covers classical and more modern regression analysis methods with application to the health sciences. A major focus is simple and multiple linear regression and its underlying assumptions for valid inference. Remedial strategies will be presented for regression when nonstandard conditions exist. Predictive modeling using nonlinear regression methods, regression trees, and rule-based models will be introduced. Implementation of regression using statistical software will be presented using data examples from health science research.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NUR 2112 and NUR 2113

NUR 2200 - RESEARCH FOR EVIDENCE-BASED PRACTICE 1

Minimum Credits: 2

Maximum Credits: 2

This course examines the interaction of theory, research, and clinical expertise in the development of evidence based nursing practice. Students develop the skills needed to identify relevant research and to critically appraise published studies to evaluate their quality and applicability to clinical practice. Students gain an understanding of the research process, the critical appraisal of published research studies that use a variety of research designs, and the role of research in evidence-based practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: CREQ: NUR 2011 or 2211 or 2411 or 2011D

NUR 2202 - HEALTH POLICY AND MANAGEMENT IN PUBLIC HEALTH

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

NUR 2207 - RESEARCH FOR EVIDENCE-BASED PRACTICE 2

Minimum Credits: 2

Maximum Credits: 2

During this course students build on the knowledge they acquired in NUR 2000/NUR 2200 and NUR 2011/2211 to develop an evidence-based protocol to address an answerable clinical question. Students will learn how to write an evidence-based question, conduct an exhaustive review of published literature on a clinical topic, integrate critically appraised research studies, develop an evidence-based protocol, and propose a method to implement and evaluate the protocol. Students will also learn to critically appraise published clinical practice guidelines. Students will develop an evidence-based document that transforms empirically developed information for use in clinical practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: (NUR 2000 or 2200 or 2400 or 2000D) and (NUR 2011 or 2211 or 2411 or 2011D)

NUR 2208 - ETHICS FOR ADVANCED PRACTICE NURSING

Minimum Credits: 0

Maximum Credits: 0

This course provides a web-based learning experience that includes a review of basic terms, concepts, and theories related to ethics. The student is guided through methods of ethical decision-making in clinical, research, health care organizational, local and international settings. The course provides a foundation for the study of ethics-based advanced nursing practice as integrated in specialty-specific courses.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad HSU Basis

Course Requirements: School of Nursing students only.

Course Attributes: World Wide Web

NUR 2209 - LEADERSHIP AND HEALTHCARE SYSTEMS: POLICY, ORGANIZATION, AND FINANCING OF HEALTH CARE

Minimum Credits: 0

Maximum Credits: 0

The purpose of this web-enhanced course is to equip the graduate prepared nurse with beginning skills to influence health policy, to provide leadership in the healthcare delivery system, and to utilize basic principles of fiscal management in making high-quality cost-effective choices in the

use of health care resources. The course consists of three units. The first unit explores the policymaking process, the role of the advanced practice nurse or advanced generalist and the effect of public policy on healthcare delivery systems. The second unit examines the organization and delivery of healthcare with an emphasis on the continuum of health care, including acute, specialized, and community based systems. Preparation for a nursing leadership role in these integrated care systems is emphasized. The third unit presents an overview of healthcare financing as it relates to the delivery of health care services. The nurse's role as the monitor of quality control, patient safety, and cost-effective care is examined in the context of clinical decision making.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad HSU Basis

Course Requirements: School of Nursing students only.

NUR 2210 - HEALTH PROMOTION AND DISEASE PREVENTION IN CULTURALLY DIVERSE POPULATIONS

Minimum Credits: 3

Maximum Credits: 3

Health promotion and disease prevention are examined from theoretical foundations to clinical applications. The course focuses on individual and community health promotion assessment, screening, and interventions in diverse populations. Epidemiological principles and real clinical examples are discussed as a basis for focusing health promotion assessment and interventions. Course topics are delineated according to health people 2010 goals with a corresponding focus on factors related to health care disparities among vulnerable populations. Current research in health promotion and disease prevention is the basis for identifying appropriate interventions in diverse populations and settings.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Nursing students only.

NUR 2231 - THE DIAGNOSTIC PHYSICAL EXAM ACROSS THE LIFE SPAN

Minimum Credits: 3

Maximum Credits: 3

This didactic course focuses on the use of the diagnostic history and physical examination to formulate a health assessment in patient populations across the lifespan. Concentration is on selected theories, principles and techniques from the physical and behavioral sciences essential to obtaining a complete health history and performing a methodical physical examination on patients across the life span.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: CREQ: (NUR 2004 or 2204 or 2404 or 2004D); SUBPLAN: Clinical Nurse Leader (Nurse Specialty Role-MSN)

NUR 2234 - ADVANCED PHARMACOLOGY

Minimum Credits: 3

Maximum Credits: 3

This is a basic science course covering the principles of drug action for several important classes of drugs. A basic knowledge of principles of chemistry and biochemistry will be helpful in understanding the chemical basis of drug receptor interactions. The course begins with fundamentals of pharmacodynamics and pharmacokinetics and then covers the pharmacology of the central nervous system, respiratory system, gastrointestinal system, renal/cardiovascular system, endocrine system, immunosuppression, antibiotics and antifungals.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NUR 2204 or 2004 or 2404 or 2004D

NUR 2244 - NURSING GRADUATE ORIENTATION MODULE

Minimum Credits: 0

Maximum Credits: 0

This module provides a web-based graduate nursing orientation that is designed to provide graduate nursing students with an overview of the school

of nursing and information that they will need to successfully complete their programs and achieve their career goals.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad HSU Basis

Course Requirements: School of Nursing students only.

Course Attributes: World Wide Web

NUR 2265 - FUNDAMENTALS OF DIASTER AND MASS CASUALTY CARE

Minimum Credits: 2

Maximum Credits: 2

This course is designed to develop a comprehensive understanding and practical foundation for advanced nursing practice of the causes, prevention, and response to disasters as well as insight into the disaster management system nationally and locally. Didactic content focuses on information central to emergency preparedness, disaster planning and response and mass casualty care.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

NUR 2278 - CLINICAL DIAGNOSTICS

Minimum Credits: 3

Maximum Credits: 3

This course emphasizes performing and/or interpreting cost effective office-based laboratory and selected diagnostic tests in problem-based cases.

The course is designed for nurse practitioners who may practice where on-site laboratory and diagnostic services may not be available. Included are ekg and x-ray interpretation and performing and interpreting selected laboratory tests. Suturing, casting, splinting workshops and wound care techniques are also included.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NUR 2033 or 2433 or 2033D; PROG: School of Nursing

NUR 2280 - INTRODUCTION TO GENETICS AND MOLECULAR THERAPEUTICS

Minimum Credits: 3

Maximum Credits: 3

This introductory course focuses on the fundamentals of human and molecular genetics. It is designed to give students a basic understanding of genetic concepts and molecular techniques so that this knowledge can be applied to current and future genetic diagnoses and therapies encountered in nursing.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

NUR 2400 - RES FOR EBP 1

Minimum Credits: 2

Maximum Credits: 2

This course examines the interaction of theory, research, and clinical expertise in the development of evidence-based nursing practice. Students develop the skills needed to identify relevant research and to critically appraise published studies to evaluate their quality and applicability to clinical practice. Students gain an understanding of the research process, the critical appraisal of published research studies that use a variety of research designs, and the role of research in evidence-based practice.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: CREQ: NUR 2011 or NUR 2211

Course Attributes: Distance Education

NUR 2404 - PATHOPHYS ACROSS LIFE SPAN

Minimum Credits: 4

Maximum Credits: 4

This course is designed to provide the student with a comprehensive theoretical foundation of the phenomena that produce alterations in human physiologic function in diverse populations across the life span. Information gained in this course will prepare the student for subsequent courses related to the diagnosis and management of disease processes associated with pathophysiologic dysfunction/alterations in people of various ethnic/cultural groups across the life span.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: Distance Education

NUR 2407 - RES FOR EBP 2

Minimum Credits: 2

Maximum Credits: 2

Students will learn how to write an evidence-based question, conduct an exhaustive review of published literature on a clinical topic, integrate critically appraised research studies, develop an evidence-based protocol, and propose a method to implement and evaluate the protocol. Students will also learn to critically appraise published clinical practice guidelines. Students will develop an evidence-based document that transforms empirically developed information for use in clinical practice.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: (NUR 2000 or NUR 2200 or NUR 2400) and (NUR 2011 or NUR 2211 or NUR 2411)

Course Attributes: Distance Education

NUR 2410 - HEALTH PROMO/DISEASE PRVNTN

Minimum Credits: 3

Maximum Credits: 3

Health promotion and disease prevention are examined from theoretical foundations to clinical applications. The course focuses on individual and community health promotion assessment, screening, and interventions in diverse populations. Epidemiological principles and real clinical examples are discussed as a basis for focusing health promotion assessment and interventions. Course topics are delineated according to Health People 2010 goals with a corresponding focus on factors related to health care disparities among vulnerable populations. Current research in health promotion and disease prevention is the basis for identifying appropriate interventions in diverse populations and settings.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Attributes: Distance Education

NUR 2411 - APPLIED STATISTICS FOR EBP

Minimum Credits: 3

Maximum Credits: 3

This course will provide students with the basis for understanding and interpreting commonly used statistical tests, as well as critically appraising their use in published research studies. Content will include descriptive and inferential statistics commonly reported in published research studies including both univariate and multivariate parametric and nonparametric tests. The course will also cover meta-analytic techniques and students will learn to calculate effect sizes.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Attributes: Distance Education

NUR 2432 - DIFFERENTIAL DIAGNOSIS CLN

Minimum Credits: 2

Maximum Credits: 2

This clinical course builds upon the diagnostic process that is introduced in NUR 2031 and expanded upon in NUR 2033. Using a problem based approach; students will use the information on the diagnostic process that is taught in NUR 2033 and apply it to the clinical setting. Differential diagnoses will be formulated based on the accurate and thorough health history and physical exam conducted on patients across the lifespan. Students will learn the process of verbally presenting patient cases, formulating differential diagnoses, formulating patient problem lists, and identifying stressors to health.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NUR 2031 or NUR 2231; CREQ: NUR 2033 or NUR 2433

Course Attributes: Distance Education

NUR 2433 - DIFFRNCL DIAG ACROSS LIFE SPAN

Minimum Credits: 2

Maximum Credits: 2

This didactic course builds upon the diagnostic process introduced in NUR 2031. Using a problem-based approach to symptoms, students will be introduced to the diagnostic framework, algorithms, and terminology that will allow them to move from symptom to diagnosis. Evidence-based diagnosis will focus on the accuracy of the health history and sensitivity of the physical exam, laboratory studies and tests to "rule in" or "rule out" specific diseases. Students will learn the importance of formulating clinical impressions that lead to hypothesis testing in the care of patients across the life span.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NUR 2031 or NUR 2231; CREQ: NUR 2032 or NUR 2432

Course Attributes: Distance Education

NUR 2434 - ADVANCED PHARMACOLOGY

Minimum Credits: 3

Maximum Credits: 3

This is a basic science course covering the principles of drug action for several important classes of drugs. A basic knowledge of principles of chemistry and biochemistry will be helpful in understanding the chemical basis of drug receptor interactions. The course begins with fundamentals of pharmacodynamics and pharmacokinetics and then covers the pharmacology of the central nervous system, respiratory system, gastrointestinal system, renal/cardiovascular system, endocrine system, immunosuppression, antibiotics and antifungals

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NUR 2004 or NUR 2204 or NUR 2404

Course Attributes: Distance Education

NUR 2465 - FUNDMS DISTR/MASS CASUALTY CRE

Minimum Credits: 2

Maximum Credits: 2

This course is designed to develop a comprehensive understanding and practical foundation for advanced nursing practice of the causes, prevention, and response to disasters as well as insight into the disaster management system nationally and locally. Didactic content focuses on information central to emergency preparedness, disaster planning and response and mass casualty care.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: Distance Education

NUR 2478 - CLINICAL DIAGNOSTICS

Minimum Credits: 3

Maximum Credits: 3

This course emphasizes performing and/or interpreting cost effective office-based laboratory and selected diagnostic tests in problem-based cases. The course is designed for nurse practitioners who may practice where on-site laboratory and diagnostic services may not be available. Included are EKG and x-ray interpretation and performing and interpreting selected laboratory tests. Suturing, casting, splinting workshops and wound care techniques are also included.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NUR 2033 or NUR 2433

Course Attributes: Distance Education

NUR 2480 - INTRO GENETCS & MOLEC THERPUTC

Minimum Credits: 3

Maximum Credits: 3

This introductory course focuses on the fundamentals of human and molecular genetics. It is designed to give students a basic understanding of genetic concepts and molecular techniques so that this knowledge can be applied to current and future genetic diagnoses and therapies encountered in nursing.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: Distance Education

NUR 2680 - INTRODUCTION TO GENETICS AND MOLECULAR THERAPEUTICS

Minimum Credits: 3

Maximum Credits: 3

This introductory course focuses on the fundamentals of human and molecular genetics. It is designed to give students a basic understanding of genetic concepts and molecular techniques so that this knowledge can be applied to current and future genetic diagnoses and therapies encountered in nursing.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

NUR 2680D - INTRODUCTION TO GENETICS AND MOLECULAR THERAPUTICS

Minimum Credits: 3

Maximum Credits: 3

This introductory course focuses on the fundamentals of human and molecular genetics. It is designed to give students a basic understanding of genetic concepts and molecular techniques so that this knowledge can be applied to current and future genetic diagnoses and therapies encountered in nursing.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: Distance Education

NUR 2681 - ADV TOPICS IN HUMAN GENETICS

Minimum Credits: 3

Maximum Credits: 3

This is a 12-week graduate level course that will emphasize the clinical aspects of genetic disorders including diagnosis, current standard treatment, available gene testing and molecular therapy, ethical/cultural issues, support group availability and the state of current research in the field. This will be accomplished using a problem based learning approach with case resolutions to demonstrate the clinical variation of genetic disorders, including the variety of causes, treatments, testing and ethical concerns. This course is also designed to introduce the student to resources related to teaching genetics/genomics and appropriate design of genetic/genomic research.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

NUR 2800 - COORDINATING CLINICAL TRIALS

Minimum Credits: 2

Maximum Credits: 2

The purpose of this course is to provide individuals with a basic understanding of clinical trials research conducted in accordance with federal regulations. Aspects of clinical trials research such as regulatory requirements, informed consent, pre- and post-study activities, audit procedures, and budgetary issues will be covered.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NUR 2000 or 2200 or 2400 or 2000D

NUR 2801 - COORDINATING CLINICAL TRIALS PRACTICUM

Minimum Credits: 1

Maximum Credits: 2

The course is designed to familiarize the student with the various roles and responsibilities of a clinical research coordinator. Each student may select one or more research areas. Preceptors in these areas will guide observations that exemplify the role of the clinical research coordinator. Each student will also participate in the review of research proposals at the university of Pittsburgh institutional review board and an observational experience at the clinical and translational research center (CTRC). The CTRC is an NIH funded center at the University of Pittsburgh used for inpatient and outpatient studies. The course includes opportunities for discussion of research protocols and review of procedures from a variety of perspectives.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: CREQ: NUR 2800

NUR 2820 - PRINCIPLES AND PRACTICE OF FORENSIC NURSING AND LEGAL NURSE CONSULTING

Minimum Credits: 3

Maximum Credits: 3

This course provides knowledge in areas of the law; the process of a lawsuit; and ethical, legal, and social issues (ELSI) related to nurse consulting and forensic nursing (FN). It is designed to provide an overview of how nursing knowledge and skills can be transferred and translated into legal nurse consulting (LNC) and forensic nursing examination (FNE) practice. Approaches and methods in legal nurse consulting and forensic nursing are discussed including but not limited to screening cases, analyzing health professional malpractice cases, performing medical records review and examination, quality assurance and risk management, preparing effective written and verbal reports and abstracts, and preparing for testifying as an expert witness. Specific activities focused on the development of investigative techniques in forensic nursing examination are included. Emphasis is placed on the application of nursing skills and knowledge to questions of law and health in criminal and civil investigations and other court related issues.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: Hybrid

NUR 2822 - SEMINAR AND PRACTICUM IN FORENSIC NURSING AND LEGAL NURSE CONSULTING

Minimum Credits: 3

Maximum Credits: 3

The seminar and practicum in forensic nursing and legal nurse consulting course provides the student with an opportunity to attend a seminar with other students who are completing their practicum experience in a variety of settings and mentored by diverse preceptors. Emphasis is placed on the application of nursing skills and knowledge to areas of practice in law (reviewing malpractice cases for and attorney, collaborating with law enforcement, health, correctional, or psychiatric or ed settings) where a forensic nurse or legal nurse consultant practices.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Nursing students only.

NUR 2823 - FORENSIC PMH NURSING AND CORRECTIONAL NURSING

Minimum Credits: 3

Maximum Credits: 3

This course provides an overview of forensic psychiatric mental health nursing and correctional nursing practice. The course focuses on the role of the forensic psychiatric mental health nurse (FPMHN) and correctional forensic nurse (CFN) in caring and providing interventions for the criminally insane, adjudicated criminal defendants unable to stand trial by reason of insanity or mental disorder/defect, or incarcerated offenders in rehabilitation or in treatment, as well as survivors and their families who are affected by interpersonal violence. Emphasis is placed on the role of the nurse when FPMHN and CN intersect with the law to affect patient outcomes. Research themes, standards of practice, evidence-based interventions and outcomes are discussed. The application of ELSI (ethical, legal and sociocultural issues) in FPMHN and CFN are presented. The role of the CFN in various correctional facilities and level of client treatment needs will be explored.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NUR 2820

NUR 2829 - CONTEMPORARY ISSUES IN CROSS CULTURAL HEALTH CARE

Minimum Credits: 3

Maximum Credits: 3

Purpose of course is to increase awareness of how the delivery and acceptance of health care may be influenced by social, cultural, and environmental factors. It will provide an overview of how these factors influence a person's response to stressors, daily health and living needs. Goal is to help students increase their understanding of culturally congruent care by utilizing cultural concepts, theories and research. Students will analyze factors that facilitate/ hinder communication about health needs, acceptance of the health care regimen and access to health care systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

NUR 2865 - FUNDAMENTALS OF DISASTER AND MASS CASUALTY CARE

Minimum Credits: 2

Maximum Credits: 2

This course is designed to develop a comprehensive understanding and practical foundation for advanced nursing practice of the causes, prevention, and response to disasters as well as insight into the disaster management system nationally and locally. Didactic content focuses on information central to emergency preparedness, disaster planning and response and mass casualty care.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

NUR 2865D - FUNDAMENTALS OF DISASTER AND MASS CASUALTY CARE

Minimum Credits: 2

Maximum Credits: 2

This course is designed to develop a comprehensive understanding and practical foundation for advanced nursing practice of the causes, prevention, and response to disasters as well as insight into the disaster management system nationally and locally. Didactic content focuses on information central to emergency preparedness, disaster planning and response and mass casualty care.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: Distance Education

NUR 2890 - INTRODUCTION TO EPIDEMIOLOGY

Minimum Credits: 2

Maximum Credits: 2

Epidemiology is the study of the patterns and causes of health and disease in populations. It is the scientific basis of public health. Using a problem-based approach, this course will focus on the basic principles and methods of epidemiology as they apply to health and disease in populations, as well as the development of health policy.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NUR 2000; PROG: School of Nursing

NUR 3010 - PHD DISSERTATION

Minimum Credits: 1

Maximum Credits: 9

The PhD dissertation fulfills two major purposes: (1) to establish the student's competency in the conduct of scholarly research, the successful public defense and uploading of all required documents of which demonstrates the candidate's ability to carry out, analyze and report scholarly research at a higher level of professional competency; and (2) to contribute to the science of nursing through the dissemination of results from the investigation.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

NUR 3012 - PUBLIC POLICY IN HEALTH CARE

Minimum Credits: 2

Maximum Credits: 2

This course offers political and analytical insights into understanding U.S. health policy-making and into developing strategies that influence health policy outcomes. The course presents an analysis of the functions of the public and private sector in creating and implementing health policy across diverse patient populations. The role of political and social philosophy in defining nursing and health services is examined. The course includes consideration of areas in which policy made by multiple branches of government and various types of public and private organizations significantly affects nursing as a profession and its ability to deliver care; regulation of professional practice; and the impact of public policy on patient health outcomes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

NUR 3012D - PUBLIC POLICY IN HEALTH CARE

Minimum Credits: 2

Maximum Credits: 2

This course offers political and analytical insights into understanding U.S. health policy-making and into developing strategies that influence health policy outcomes. The course presents an analysis of the functions of the public and private sector in creating and implementing health policy across diverse patient populations. The role of political and social philosophy in defining nursing and health services is examined. The course includes consideration of areas in which policy made by multiple branches of government and various types of public and private organizations significantly affects nursing as a profession and its ability to deliver care; regulation of professional practice; and the impact of public policy on patient health outcomes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Attributes: Distance Education

NUR 3013 - ETHICS IN HEALTHCARE

Minimum Credits: 1

Maximum Credits: 1

Philosophical and clinical foundations in ethics are analyzed and used to provide a basis for guidelines in ethical decision-making and practice. Content will include legal-ethical issues in practice, ethical implications in the role of the doctorally prepared nurse, historical and political influences

on ethics in health care, diversity in race, gender, and sexual orientation, and principals of justice, autonomy, and provider-patient relations. Additionally this course describes general ethical practices and ethical principles associated with the proper conduct of research, scientific integrity and protection of human subjects.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

NUR 3013D - ETHICS IN HEALTHCARE

Minimum Credits: 1

Maximum Credits: 1

Philosophical and clinical foundations in ethics are analyzed and used to provide a basis for guidelines in ethical decision-making and practice. Content will include legal-ethical issues in practice, ethical implications in the role of the doctorally prepared nurse, historical and political influences on ethics in health care, diversity in race, gender, and sexual orientation, and principals of justice, autonomy, and provider-patient relations. Additionally this course describes general ethical practices and ethical principles associated with the proper conduct of research, scientific integrity and protection of human subjects.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Attributes: Distance Education

NUR 3016 - THEORETICAL FOUNDATIONS FOR RESEARCH

Minimum Credits: 3

Maximum Credits: 3

This course focuses upon the relationship of theory to research with an emphasis on the role of theory in the design and interpretation of research. Attention is given to the evaluation of theory, the utility of theories in research, and the comparison of research strategies from various theoretical perspectives. Emphasis is placed upon midrange, multidisciplinary theories relevant to clinical research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

NUR 3018 - FOCUS GROUP PRACTICUM

Minimum Credits: 2

Maximum Credits: 6

This course builds upon the student's didactic knowledge gained in NUR 3055 or equivalent through the supervised experience of planning, conducting, analyzing, and preparing reports for focus groups. Emphasis is placed upon the student's mastery of the ability to formulate questions, facilitate discussion, including the management of difficult participants, note taking, and analysis of data and preparation of the report. Students will be expected to lead at least two focus groups and to serve as note taker in at least two additional groups. It is expected that a secondary component of the practicum will be to develop an understanding of cultural differences in approaches to health and health care through the conduct of focus groups among different cultural groups as well as learning from the focus group experiences of others.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

NUR 3020 - QUANTITATIVE RESEARCH METHODS

Minimum Credits: 3

Maximum Credits: 3

This course provides an overview of quantitative research methods, including various research designs appropriate for studying health care phenomena. Some of the quantitative methods included are: descriptive, comparative, correlational, survey, methodological, epidemiological, experimental and quasi-experimental designs, clinical trials, evaluation research, longitudinal, and secondary analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: PSYED 2019 or BIOST 2042

NUR 3022 - QUALITATIVE RESEARCH METHODS

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the study of research traditions that guide the collection and analysis of qualitative data. The course provides an overview of various qualitative methods, such as phenomenology, grounded theory, case study, ethnography, hermeneutics and historical approaches. It includes a focus on the philosophical perspectives underlying each of the methods.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

NUR 3027 - SEMINAR ON STRUCTURE OF KNOWLEDGE

Minimum Credits: 3

Maximum Credits: 3

In this course the focus is on the organization and integration of evidence from a series of scientific work in order to structure the results in such a manner that the perspectives, assumptions, and ways of knowing are evident. Structuring involves historical review, critical inquiry, and synthesis of disseminated knowledge. The process results in creating a knowledge structure that is used for the advancement of science.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PREQ: NUR 3016 and (HPS 1653 or PHIL 1610)

NUR 3030 - PROFESSIONAL DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

This seminar focuses on competencies needed to develop and sustain a program of research. Emphasis will be placed on developing skills that support a program of research, and assist in the dissemination of knowledge, e.g., abstract/oral/poster presentations grant preparation, IRB submission, grants management. The course will include presentations by researchers conducting multidisciplinary research using a variety of funding mechanisms. Students will analyze strategies used in initiating and sustaining a research career.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

NUR 3031 - METHODOLOGIES FOR DNP PROJECTS

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: (NUR 2011 or 2011D) and (NUR 2000 or 2000D); PLAN: Nursing (DNP)

NUR 3031D - METHODOLOGIES FOR DNP PROJECTS

Minimum Credits: 2

Maximum Credits: 2

During this course, students develop a proposal appropriate for a Doctor of Nursing Practice (DNP) project. The evidence-based proposal includes the following components: (a) a focus on a change that directly or indirectly affects health care outcomes, (b) a focus on a system or population/aggregate, (c) an implementation plan in an arena or area of practice, (d) a plan for sustainability, and (e) an evaluation plan that measures processes and/or outcomes (formative or summative). During this course, students learn to apply the following four methodologies for the development and conduct of a DNP project and future scholarly projects, specifically quality improvement, surveillance, program evaluation, and N

of 1.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: (NUR 2011 or 2011D) and (NUR 2000 or 2000D); PLAN: Nursing (DNP)

Course Attributes: Distance Education

NUR 3032 - DATA ANALYSIS FOR DNP PROJECTS

Minimum Credits: 2

Maximum Credits: 2

This course provides students hands-on experience with the menu-driven statistical software program of Statistical Package for the Social Sciences (SPSS). Content includes commonly used descriptive and inferential statistics including univariate and multivariate tests, parametric and non-parametric tests, and qualitative description. Students can analyze and interpret quantitative and qualitative data from their own Doctor of Nursing Practice project dataset or an instructor-provided dataset.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: (NUR 2011 or 2011D) and (NUR 3031 or 3031D); CREQ: NURSP 2388; PLAN: Nursing (DNP)

NUR 3032D - DATA ANALYSIS FOR DNP PROJECTS

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Requirements: PREQ: (NUR 2011 or 2011D) and (NUR 3031 or 3031D); CREQ: NURSP 2388; PLAN: Nursing (DNP)

Course Attributes: Distance Education

NUR 3036 - CAPSTONE PROJECT

Minimum Credits: 2

Maximum Credits: 2

Students will undertake a systematic investigation of a clinically based or administration based problem selected by the student and supported by faculty. Course requirements include identification of the problem to be addressed, review and critique of pertinent literature, and implementation of the project. The project will use an evidence-based practice model, and it will be systematically developed in consultation with the student's capstone committee who will evaluate each step of the process. This process can begin in NUR 2007: research for evidence-based practice 2.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad HSU Basis

NUR 3037 - DNP PROJECT CLINICAL

Minimum Credits: 1

Maximum Credits: 1

This practicum represents the final clinical course for the DNP degree. Here the student will experience a mentored and supervised immersion in a clinical practice where the project designed and approved in the capstone project course will be implemented and evaluated. The practice site, approved by the capstone committee must provide access to the necessary and appropriate population for project implementation, as well as support for full expression of the DNP scope of practice.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NUR 3036 or 3236; PROG: School of Nursing (Graduate)

NUR 3040 - RESEARCH EMPHASIS : CRITICAL CARE

Minimum Credits: 3

Maximum Credits: 3

This seminar will explore current and future trends in physiologic research involving adults who are critically or acutely ill with the potential for acute decompensation. Emphasis will be placed on strategies that have the potential to restore or optimize physiologic function, evaluation of outcomes, ethical issues, and new developments in genetic research. The course will include presentations by multidisciplinary faculty who are currently conducting biobehavioral research in these areas and student presentations.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

NUR 3041 - RESEARCH EMPHASIS SEMINAR - ADOLESCENT HEALTH

Minimum Credits: 3

Maximum Credits: 3

This seminar will explore the developmental trajectory of research on adolescent health and development, as well as theoretical/conceptual models applicable to such research. Key research areas will be critically evaluated. Topics will focus primarily on research related to transitions experienced during adolescence (e.g., Biological, psychological, social cognitive). An emphasis will be placed on the integration of biological and behavioral research and its inherent methodologies. Human and lower animal studies will be utilized. The course will include presentations, discussion, and critiques of selected readings. Students will provide a class presentation and paper focusing on a developmental conceptual model applicable to their selected area of research with adolescents.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

NUR 3042 - RESEARCH EMPHASIS SEMINAR-CHRONIC DISORDERS

Minimum Credits: 3

Maximum Credits: 3

This seminar is designed to provide an in-depth examination of the cross-discipline literature on chronic illness. The common manifestations of chronic disorders will be addressed, including such common features as impact on cognitive function, functional ability, quality of life, adherence to treatment, depression, sleep, pain, stress, physical activity, dietary considerations, as well as other areas relevant to student interests. Discussion of these paradigms across chronic disorder populations and settings will be included, varying with the interests of the students in the course. Students will be expected to complete an in-depth critical review of the research literature on a specific feature of chronic disorders as well as a review of clinical research evidence related to a set of common features within a specific chronic disorder of interest.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

NUR 3043 - RESEARCH EMPHASIS SEMINAR: WOMEN'S HEALTH

Minimum Credits: 3

Maximum Credits: 3

This seminar is directed toward expanding the capability of scientists for knowledge building that will maximize the health of women and transform the values and structures of the health care system. This course will examine the influence of gender, ethnicity, socioeconomic class and other barriers that may affect the quality of health care for women by exploring exemplars of current research in women's health.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

NUR 3044 - RESEARCH EMPHASIS SEMINAR: CANCER SURVIVORSHIP

Minimum Credits: 3

Maximum Credits: 3

The cancer survivorship research emphasis seminar focuses on synthesis of the empirical evidence in cancer survivorship and critical evaluation of theories from multiple disciplines underlying this research. Students will examine controversies and methodological issues associated with investigations of the physical, psychological and social responses to cancer and cancer therapy and discuss innovations in cancer survivorship

research. Emphasis will be placed on the examination of the influence of underrepresented populations on research in cancer survivorship.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

NUR 3045 - RESEARCH PRACTICUM

Minimum Credits: 1

Maximum Credits: 6

This course focuses on the student's development of selected research skills in collaboration with a mentor and his or her research team. Each student has the opportunity to design a practicum that complements prior research experience and is tailored to his or her current learning needs. The array of course activities may include but not be limited to developing a research proposal, submitting it as part of a grant application, preparing a protocol for submission to the institutional review board, assisting with recruitment or data collection activities for ongoing investigation, learning data management skills, participating in performance of laboratory procedures, participating in research team meetings, conducting literature searches, and preparing abstracts and/or manuscripts for presentation or publication.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

NUR 3049 - RESEARCH SEMINAR

Minimum Credits: 1

Maximum Credits: 1

This seminar focuses on assisting students to identify their area of research concentration for their doctoral studies and subsequent research trajectory. Students will learn how to: generate evidence through research; critically appraise quantitative and qualitative knowledge; and conduct a systematic literature review to address a specific research question. Students will be introduced to a variety of research programs related to nursing, including interdisciplinary and translational research programs lead by nurse researchers. Students will distinguish primary from secondary data analyses. Students will be expected to examine relevant concepts from nursing science and to identify faculty areas of expertise that can support their own research agenda.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

NUR 3050 - GRANT WRITING

Minimum Credits: 1

Maximum Credits: 1

This course focuses on the organization, development and preparation of a grant application. Course content is based on the general issues encountered during the development of grant applications. Students are expected to prepare components of their grant application under the direction of their mentor using the guidelines for an appropriate funding organization. Ph.D. students are expected to support some aspect of their dissertation research.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

NUR 3050D - GRANT WRITING

Minimum Credits: 1

Maximum Credits: 1

This course focuses on the organization, development and preparation of a grant application. Course content is based on the general issues encountered during the development of grant applications. Students are expected to prepare components of their grant application under the direction of their mentor using the guidelines for an appropriate funding organization. Ph.D. students are expected to support some aspect of their dissertation research.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis
Course Attributes: Distance Education

NUR 3051 - BUILDING A PROGRAM OF RESEARCH: PRELIMINARY STUDIES, TEAM BUILDING, AND HUMAN SUBJECT PROTECTIONS

Minimum Credits: 1

Maximum Credits: 1

This seminar addresses sequential development of a research trajectory by engaging the student in focused discussion of the rationale for and design of preliminary studies. Students explore various approaches to conducting and funding preliminary studies as well as how to foster interdisciplinary collaboration and build a research team. In addition, they consider key issues in conducting responsible science and human subject protection as well as dissemination of research findings.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

NUR 3052 - MANUSCRIPT DEVELOPMENT

Minimum Credits: 1

Maximum Credits: 1

This course focuses on the process of preparing a manuscript for possible publication. Attention is directed toward selecting an appropriate journal, the organization of the paper, relevant legal and ethical issues, single vs. Multiple authorship, refining one's writing skills, and the development and preparation of a manuscript for submission to a peer-reviewed journal.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

NUR 3052D - MANUSCRIPT DEVELOPMENT

Minimum Credits: 1

Maximum Credits: 1

This course focuses on the process of preparing a manuscript for possible publication. Attention is directed toward selecting an appropriate journal, the organization of the paper, relevant legal and ethical issues, single vs. multiple authorship, refining one's writing skills, and the development and preparation of a manuscript for submission to a peer-reviewed journal.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

Course Attributes: Distance Education

NUR 3054 - PRACTICUM FOR NURSING AND HEALTH SCIENCES EDUCATION

Minimum Credits: 3

Maximum Credits: 3

This course is designed to help teachers conceptualize and operationalize the elements of clinical and didactic instruction in a variety of practice settings. Students have the opportunity to enact the role of educator through a guided seminar/ preceptorship experience in an area relevant to the student's practice and educational interests. This course will provide a theoretical foundation for application and synthesis activities that characterize instruction and learning in a practice profession. Philosophical and experiential issues specific to health sciences education are emphasized in class discussion.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

NUR 3055 - COMMUNITY DEVELOPMENT AND FOCUS GROUPS: PREPARATION, FACILITATION AND APPLICATION

Minimum Credits: 2

Maximum Credits: 2

This seven-week workshop will introduce students to the focus group as a data-gathering tool and will prepare them to use focus groups in their work. The workshop will use lectures, discussions and interactive exercises to familiarize students with all aspects of focus groups. Topics to be covered include the theoretical basis of focus groups, formulating questions, recruiting participants, facilitating the discussion, taking notes and applying the data. It is recommended that students read one text. In addition, students will complete a series of assignments designed to sharpen their listening, facilitating and analytical abilities. Critical components of the class will be observation of and hands-on experience with facilitating discussions, taking notes and reporting. Ability to role play highly desirable.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

NUR 3056 - INTRODUCTION TO TRANSLATIONAL RESEARCH IN THE HEALTH SCIENCES

Minimum Credits: 2

Maximum Credits: 2

Course will provide students with a comprehensive survey of the processes involved in translating research discoveries into practices that promote health and prevent disease. The specific topics to be covered include five goals: 1) introduce students to the NIH roadmap and to discuss the conceptual framework for multidisciplinary and interdisciplinary research. 2) Provide perspectives on objectives outlined at the national level in healthy people 2010/2020 and at the global level by organizations such as the world health organization. 3) Provide an understanding of the models of translational research. 4) Introduce students to the methods of clinical and translational research. 5) Interpret and explain the drug and therapeutic development process. Also, topics include the implementation of new therapies as standards of care and the application of innovative preventive services. Various research methodologies, including those encompassed in the drug development process will be discussed. Course will offer lectures via electronic media and will use a collaborative learning approach to classroom activities.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

NUR 3060 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 9

This course focuses on the student's development of unique knowledge and skills in collaboration with a faculty mentor. Each student has the opportunity to design an independent study that complements prior knowledge and is tailored to the student's current learning needs. Content of the independent study will reflect an in-depth focus in a particular area of study as arranged between the student and designated faculty member. Content to be covered may include, but is not limited to, theoretical approaches from the biomedical and psychosocial sciences, research designs and methods, data analytic techniques, and advanced clinical practice issues.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

NUR 3061 - INTENSIVE METHODS: ADVANCED QUANTITATIVE METHODS

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Requirements: Plan: Nursing (PhD)

NUR 3062 - INTENSIVE METHODS: QUALITATIVE & MIXED-METHODS RESEARCH

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Requirements: PREQ: NUR 3061; PLAN: Nursing (PhD)

NUR 3063 - INTENSIVE METHODS: INNOVATIVE DESIGN & METHODS IN DATA SCIENCE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Nursing (PhD)

NUR 3064 - STATE OF THE SCIENCE IN BIOPSYCHOSOCIAL RESEARCH

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Nursing (PhD)

NUR 3065 - STATE OF THE SCIENCE IN LEVERAGING TECHNOLOGY FOR SELF-MANAGEMENT

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Nursing (PhD)

NUR 3066 - STATE OF THE SCIENCE IN CANCER SURVIVORSHIP

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Nursing (PhD)

NUR 3067 - STATE OF THE SCIENCE IN WOMEN'S HEALTH

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Nursing (PhD)

NUR 3068 - STATE OF THE SCIENCE IN SYMPTOM SCIENCE

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Requirements: PREQ: NUR 3285 and 3286 and 3287; PLAN: Nursing (PhD)

NUR 3069 - STATE OF SCIENCE: ADVANCED TOPICS IN HUMAN GENETICS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Nursing (PhD)

NUR 3070 - ADVANCED MULTIVARIATE QUANTITATIVE STATISTICAL TOPICS

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Requirements: PREQ: NUR 3290; PLAN: Nursing PHD

NUR 3071 - PHD RESEARCH APPRENTICESHIP

Minimum Credits: 1

Maximum Credits: 6

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

NUR 3099 - THE SCIENCE OF HEALTH CARE DELIVERY

Minimum Credits: 2

Maximum Credits: 2

This course is designed to develop a theoretical, practical, and evidence-based foundation for the delivery of safe, effective, evidence-based health care. Participants in this course will develop the knowledge base and critical thinking skills central to identifying and solving problems in the planning, implementation and evaluation of health care across the continuum of care delivery systems and across professions. The two overarching goals of the course are to a) develop a better understanding of how the healthcare delivery system works and fails to work, and b) develop a foundation for organizational and systems leadership for care reform, quality improvement and systems thinking in the delivery of safe, effective, evidence-based care using interprofessional approaches.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

NUR 3099D - THE SCIENCE OF HEALTH CARE DELIVERY

Minimum Credits: 2

Maximum Credits: 2

This course is designed to develop a theoretical, practical, and evidence-based foundation for the delivery of safe, effective, evidence-based health care. Participants in this course will develop the knowledge base and critical thinking skills central to identifying and solving problems in the planning, implementation and evaluation of health care across the continuum of care delivery systems and across professions. The two overarching goals of the course are to a) develop a better understanding of how the healthcare delivery system works and fails to work, and b) develop a foundation for organizational and systems leadership for care reform, quality improvement and systems thinking in the delivery of safe, effective, evidence-based care using interprofessional approaches.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis
Course Attributes: Distance Education

NUR 3110 - RESEARCH INSTRUMENTATION

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the general properties of skillful measurement integral to the research process. The domain sampling model is presented as the major theory of measurement error with the parallel test model presented as a special case of domain sampling model. The construct, criterion and content validity of psychosocial instruments are explored and methods for evaluating each of these relative to specific instruments are presented. The theory of reliability is approached from the domain sampling model and factors are identified that reduce the reliability of an instrument. Methods to estimate reliability such as internal consistency, alternative forms and long-range stability are included. The basic concepts of biomedical instrumentation and the static characteristics that describe instruments performance (e.g., Accuracy, precision, resolution, reproducibility, zero drift, sensitivity drift, and linearity) of physiological instruments are reviewed. Also, a basic discussion will be held on laboratory standardization's (e.g., CDC) and reliability of laboratory assays (use of split samples, coefficient of variation measures). A variety of scaling methodologies will be discussed as well as the principals involved in the design and formatting of questionnaires.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: PSYED 2019 or BIOST 2042; PROG: School of Nursing

NUR 3112 - APPLIED PARAMETRIC AND NON-PARAMETRIC STATISTICS FOR THE HEALTH SCIENCES 1

Minimum Credits: 3

Maximum Credits: 3

This course develops skill in parametric and nonparametric applications of descriptive and inferential statistics to health sciences research. The concept of parametric and non-parametric statistics is covered. Parametric tests for comparing means include one-sample z and t-tests, and independent and related samples t-tests. Methods for checking parametric test assumptions are presented, and remedies for assumption violations explored, including non-parametric alternatives for these tests. Software for statistical analyses will be introduced along with data examples from health science research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate Nursing

NUR 3113 - APPLIED PARAMETRIC AND NON-PARAMETRIC STATISTICS FOR THE HEALTH SCIENCES 2

Minimum Credits: 3

Maximum Credits: 3

This course develops skill in parametric and nonparametric statistical applications to factorial designs in health sciences research. Analysis of variance (ANOVA) for normally distributed outcomes is the parametric approach presented. Methods for checking parametric test assumptions are presented, and remedies for assumption violations explored, including non-parametric alternatives for this test including empirical resampling techniques (bootstrapping) and rank-based tests. Software for statistical analyses will be introduced along with data examples from health science research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NUR 2112 or NUR 3112

NUR 3114 - APPLIED REGRESSION FOR HEALTH SCIENCE RESEARCH

Minimum Credits: 3

Maximum Credits: 3

This course covers classical and more modern regression analysis methods with application to the health sciences. A major focus is simple and

multiple linear regression and its underlying assumptions for valid inference. Remedial strategies will be presented for regression when nonstandard conditions exist. Predictive modeling using nonlinear regression methods, regression trees, and rule-based models will be introduced. Implementation of regression using statistical software will be presented using data examples from health science research.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NUR 3112 and NUR 3113

NUR 3115 - ADVANCED QUANTITATIVE METHODS IN HEALTH SCIENCE RESEARCH

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the application of advanced statistical techniques in current health science research. Aspects of methodology relevant to statistical analysis such as design, statistical power, sample size, and statistical significance will be conceptually integrated with data analysis. Statistical strategies popular in a variety of areas of research, such as epidemiology, nursing and medicine, will be considered for their utility in answering research questions and/or testing hypotheses.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

NUR 3236 - CAPSTONE PROJECT

Minimum Credits: 2

Maximum Credits: 2

This course is designed to provide a culminating practicum experience for the DNP leadership student. Students will focus on promoting evidence based practice as interdisciplinary team members and providing high quality, cost effective care in a dynamic health care environment. Emphasis is placed on further refinement of competencies related to the leadership of complex issues, organizations and systems.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

NUR 3237 - CAPSTONE CLINICAL

Minimum Credits: 1

Maximum Credits: 1

This practicum represents the final clinical course for the DNP degree. Here the student will experience a mentored and supervised immersion in clinical or administrative practice where the project designed and approved in the capstone project course will be implemented and evaluated. The practice site, approved by the capstone committee must provide access to the necessary and appropriate population for project implementation, as well as support for full expression of the DNP scope of practice.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NUR 3036 or NUR 3236

NUR 3250 - GRANT WRITING

Minimum Credits: 1

Maximum Credits: 1

This course focuses on the organization, development and preparation of a grant application. Course content is based on the general issues encountered during the development of grant applications. Students are expected to prepare components of their grant application under the direction of their mentor using the guidelines for an appropriate funding organization. Ph.D. students are expected to support some aspect of their dissertation research.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

NUR 3252 - MANUSCRIPT DEVELOPMENT

Minimum Credits: 1

Maximum Credits: 1

This course focuses on the process of preparing a manuscript for possible publication. Attention is directed toward selecting an appropriate journal, the organization of the paper, relevant legal and ethical issues, single vs. Multiple authorship, refining one's writing skills, and the development and preparation of a manuscript for submission to a peer-reviewed journal.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SU3 Basis

NUR 3285 - PHILOSOPHICAL UNDERPINNINGS OF NURSING RESEARCH

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the application of advanced quantitative statistical methods used in research. Aspects of methodology relevant to statistical analysis such as design, sampling, statistical power, sample size, and significance will be conceptually integrated with data analysis. Statistical strategies popular in other research areas will be explored for their utility in answering research questions and/or testing hypotheses in nursing.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

NUR 3286 - THEORETICAL FOUNDATIONS FOR RESEARCH

Minimum Credits: 3

Maximum Credits: 3

This course focuses upon the relationship of theory to research with an emphasis on the role of theory in the design and interpretation of research. The relationship between the development of science and theory is stressed. Attention is given to the evaluation of theory, the utility of theories in research, and the comparison of research strategies from various theoretical perspectives and the contribution of effect size. Emphasis is placed upon midrange, multidisciplinary theories relevant to clinical research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: NUR 3285 or HPS 1653 PLAN: Nursing (PhD)

NUR 3287 - RESEARCH DESIGN & METHODS

Minimum Credits: 3

Maximum Credits: 3

This course is a core component and foundational to the dissertation process and the program of research. The course provides a compendium of qualitative and quantitative research methods and study designs appropriate for studying health care phenomena. The emphasis of the course is on the interrelationship between clinical problems, literature reviews, research questions, study designs, and methods of inquiry and analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Nursing PhD; PREQ: (NUR 3285 or HPS 1653) and (BIOST 2041 or PSYED 2018 or NUR 3112); CREQ: NUR 3286 or NUR 3016 and BIOST 2042 or PSYED 2019

NUR 3288 - RESEARCH MEASUREMENT

Minimum Credits: 2

Maximum Credits: 2

This course focuses on quantitative approaches to analyze reliability, validity, and sensitivity of measurements in health research. Classic and emerging measurement theories will be discussed. Principles of psychometrics, including reliability and validity, and latent variable-based measurement models such as exploratory factor analysis will be discussed and applied by students to evaluate the reliability and validity of research instruments. Emphasis is placed on understanding the interrelationship of study aims, design and methods in outcomes measurement.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: (BIOST 2041 or PSYED 2018 or NUR 3112) and (BIOST 2042 or PSYED 2019 or NUR 3113) and (NUR 3285 or HPS 1653) and (NUR 3286 or NUR 3016); CREQ: NUR 3289; LEVEL: Nursing PhD

NUR 3289 - INTERVENTION DEVELOPMENT

Minimum Credits: 2

Maximum Credits: 2

This course focuses on an analysis of the relationship between intervention theory and the development of intervention protocols. In-depth exploration of selected programs of research will be used to generate and evaluate theories and intervention protocols. Methodological and practical issues in the design and implementation of theory-based intervention studies will be examined.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: (NUR 3285 or HPS 1653) and (NUR 3286 or NUR 3016) and (NUR 3287 or NUR 3020) and (BIOST 2041 or PSYED 2018 or NUR 3112) and (BIOST 2042 or PSYED 2019); CREQ: (NUR 3288 or NUR 3110 or NUR 3113); PLAN: Nursing PhD

NUR 3290 - ADVANCED QUANTITATIVE ANALYTIC METHODS SEMINAR

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the application of advanced quantitative statistical methods used in research. Aspects of methodology relevant to statistical analysis such as design, sampling, statistical power, sample size, and significance will be conceptually integrated with data analysis. Statistical strategies popular in other research areas will be explored for their utility in answering research questions and/or testing hypotheses in nursing.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: (BIOST 2041 or PSYED 2018 or NUR 3112) and (BIOST 2042 or PSYED 2019 or NUR 3113) and (BIOST 2049 or PSYED 2410) and (NUR 3285 or HPS 1653) and (NUR 3286 or NUR 3016) and (NUR 3287 or NUR 3020) and (NUR 3288 or NUR 3110) and NUR 3289; Nursing (PhD)

NUR 3291 - RESPONSIBILITIES AND ACTIVITIES OF SCIENTISTS 1

Minimum Credits: 2

Maximum Credits: 2

This seminar addresses the moral and ethical agency of a nursing scientist in the health professions, developing knowledge and skills to act ethically. First the course will cover multiple challenges of conducting research including ethical issues, health policy, scientific freedom and social responsibility, collaboration and negotiation, and interdisciplinary responsibilities. Next, key issues in conducting responsible science and human subject protection will be covered, including the conduct of culturally competent scholarship. Lastly issues in nursing leadership including valuing and upholding the caring nature of professional practice and advocacy for, and valuing the needs and concerns of patients/families will be addressed.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Nursing (PhD)

NUR 3292 - RESPONSIBILITIES AND ACTIVITIES OF SCIENTISTS 2

Minimum Credits: 2

Maximum Credits: 2

This seminar addresses the responsibilities and activities involved in obtaining and sustaining a career in academic research.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Nursing (PhD)

NUR 3293 - ART AND SCIENCE OF TEACHING AND LEARNING

Minimum Credits: 2

Maximum Credits: 2

This course provides instruction in course design, methods of student and classroom instruction and evaluation of learning for teaching in academia in order that students can contribute to the formal and informal education of future nurses through discovery, application and integration of knowledge. One evaluative methodology may be the teaching practicum, taken concurrently or in a subsequent semester.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Nursing PhD

NUR 3412 - PUBLIC POLICY IN HEALTH CARE

Minimum Credits: 2

Maximum Credits: 2

This course offers political and analytical insights into understanding U.S. health policy-making and into developing strategies that influence health policy outcomes. The course presents an analysis of the functions of the public and private sector in creating and implementing health policy across diverse patient populations. The role of political and social philosophy in defining nursing and health services is examined. The course includes consideration of areas in which policy made by multiple branches of government and various types of public and private organizations significantly affects nursing as a profession and its ability to deliver care; regulation of professional practice; and the impact of public policy on patient health outcomes.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Attributes: Distance Education

NUR 3413 - ETHICS IN HEALTHCARE

Minimum Credits: 1

Maximum Credits: 1

Philosophical and clinical foundations in ethics are analyzed and used to provide a basis for guidelines in ethical decision-making and practice. Content will include legal-ethical issues in practice, ethical implications in the role of the doctorally prepared nurse, historical and political influences on ethics in health care, diversity in race, gender, and sexual orientation, and principals of justice, autonomy, and provider-patient relations. Additionally this course describes general ethical practices and ethical principles associated with the proper conduct of research, scientific integrity and protection of human subjects.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Attributes: Distance Education

NUR 3450 - GRANT WRITING

Minimum Credits: 1

Maximum Credits: 1

This course focuses on the organization, development and preparation of a grant application. Course content is based on the general issues encountered during the development of grant applications. Students are expected to prepare components of their grant application under the direction of their mentor using the guidelines for an appropriate funding organization. Ph.D. students are expected to support some aspect of their dissertation research.

Academic Career: GRAD

Course Component: Practicum

Grade Component: Grad HSU Basis

Course Attributes: Distance Education

NUR 3452 - MANUSCRIPT DEVELOPMENT

Minimum Credits: 1

Maximum Credits: 1

This course focuses on the process of preparing a manuscript for possible publication. Attention is directed toward selecting an appropriate journal, the organization of the paper, relevant legal and ethical issues, single vs. multiple authorship, refining one's writing skills, and the development and preparation of a manuscript for submission to a peer-reviewed journal.

Academic Career: GRAD

Course Component: Practicum

Grade Component: Grad HSU Basis

Course Attributes: Distance Education

NUR 3499 - THE SCI OF HLTH CARE DELIVERY

Minimum Credits: 2

Maximum Credits: 2

This course is designed to develop a theoretical, practical, and evidence-based foundation for the delivery of safe, effective, evidence-based health care. Participants in this course will develop the knowledge base and critical thinking skills central to identifying and solving problems in the planning, implementation and evaluation of health care across the continuum of care delivery systems and across professions. The two overarching goals of the course are to a) develop a better understanding of how the healthcare delivery system works and fails to work, and b) develop a foundation for organizational and systems leadership for care reform, quality improvement and systems thinking in the delivery of safe, effective, evidence-based care using interprofessional approaches.

Academic Career: GRAD

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Attributes: Distance Education

Nutrition

NUTR 1600 - INTRODUCTION TO DIETETICS

Minimum Credits: 2

Maximum Credits: 2

This is an introduction to the profession of dietetics. Emphasis will be placed on the scope of the profession of dietetics practice, the role and functions of registered dietitian nutritionists, and the education requirements for entry into practice.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: Letter Grade

NUTR 1602 - NUTRITION ASSESSMENT

Minimum Credits: 3

Maximum Credits: 3

This course will focus on the rationale for and the use of a variety of standards used in assessing and planning the quality and quantity of the food and nutrient intake of individuals and groups. It will include in-depth study and application of commonly used reference standards and tools used for evaluating levels and proportions of macronutrients, micronutrients and various dietary food components. Assessment of health indicators in individuals and populations will also be addressed.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: Letter Grade

Course Requirements: PLAN: Clinical Dietetics-Nutrition (BS, BPH, BS-H) or Clinical Dietetics - Nutrition (NDNUTR-ND)

NUTR 1604 - FOOD SERVICE MANAGEMENT WITH LAB

Minimum Credits: 3

Maximum Credits: 3

This course presents the basic principles and skills of food service management and leadership. Learning experiences include lectures, discussions,

and required field trips. Please note, no other courses can be scheduled during the break between the morning and afternoon class sessions as this time will be needed for travel to field trips sites.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: Letter Grade

Course Requirements: PLAN: Clinical Dietetics-Nutrition (BS, BPH, BS-H)

NUTR 1605 - PRINCIPLES OF NUTRITION EDUCATION AND COUNSELING

Minimum Credits: 3

Maximum Credits: 3

Concepts and components of the teaching-learning process and their application in the dietetics practice. Experience in the instructional planning and implementation functions of clinical dietitians is emphasized.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: Letter Grade

Course Requirements: PLAN: Clinical Dietetics-Nutrition (BS, BPH, BS-H) or Clinical Dietetics - Nutrition (NDNUTR-ND)

NUTR 1610 - FOOD SCIENCE 1

Minimum Credits: 3

Maximum Credits: 3

This is an introductory course emphasizing the chemical and physical properties of food in relation to its selection, quality, and preparation. Experience in the construction, modification and preparation of recipes to meet various dietary needs is also provided.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: Letter Grade

Course Requirements: PREQ: NUTR 1602; PLAN: Nutrition and Dietetics (BPH; BS; BS-H) or Clinical Dietetics - Nutrition (NDNUTR-ND) or (NS-BS)

NUTR 1612 - FOOD AND CULTURE

Minimum Credits: 3

Maximum Credits: 3

Introduction to ethnic influence on the diversity of American food patterns. Social, cultural, economic, geographic, and religious factors are considered.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: Letter Grade

Course Requirements: PLAN: Nutrition and Dietetics (BPH; BS; BS-H) or Clinical Dietetics - Nutrition (NDNUTR-ND) or (NS-BS)

NUTR 1613 - FOOD SCIENCE 1 LABORATORY

Minimum Credits: 1

Maximum Credits: 1

Study of the chemical and physical changes that occur in food as a result of various food preparation methods and their effects on nutrient quality. Experience in the construction, modification and preparation of recipes to meet various dietary needs is also provided.

Academic Career: Undergraduate

Course Component: Practicum

Grade Component: Letter Grade

Course Requirements: PREQ: NUTR 1602; PLAN: Nutrition and Dietetics (BPH; BS; BS-H) or Clinical Dietetics - Nutrition (NDNUTR-ND) or (NS-BS)

NUTR 1620 - NUTRIENT METABOLISM

Minimum Credits: 3

Maximum Credits: 3

The first of a two-course sequence in advanced nutrition and metabolism presenting the principles of normal nutrition and their application in providing nutritional care and guidance. Emphasis is placed on the macronutrients and energy balance.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: Letter Grade

Course Requirements: PLAN: Nutrition and Dietetics (BPH; BS; BS-H) or Clinical Dietetics - Nutrition (NDNUTR-ND)

NUTR 1622 - LIFE CYCLE NUTRITION

Minimum Credits: 3

Maximum Credits: 3

The study of the physiological, developmental, sociological, and environmental factors that affect nutrient requirements and recommendations at various stages of the life cycle.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: Letter Grade

Course Requirements: PLAN: Nutrition and Dietetics (BPH; BS; BS-H) or Clinical Dietetics - Nutrition (NDNUTR-ND) or (NS-BS)

NUTR 1625 - NUTRITION THERAPY

Minimum Credits: 4

Maximum Credits: 4

This course will provide an introduction to medical nutrition therapy in the prevention and treatment of disease. The course will cover the nutrition implications, nutrition assessment process, and nutrition interventions for specific diseases. Teaching approaches for the course include lectures, assigned readings, in-class discussions, and problem-based learning through simulation/case studies.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: Letter Grade

NUTR 1630 - NUTRITION THERAPY 1

Minimum Credits: 3

Maximum Credits: 3

The first of a two-course sequence which will provide an introduction to medical nutrition therapy in the treatment of acute and chronic diseases. The course will cover pathophysiology and treatment of specific diseases, nutrition implications of specific diseases, nutrition assessment, determination of nutrient requirements, and nutrition interventions including calculation of modified diets.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: Letter Grade

Course Requirements: PLAN: Nutrition and Dietetics (BPH; BS; BS-H) or Clinical Dietetics - Nutrition (NDNUTR-ND) or (NS-BS)

Obstetrics and Gynecology

OBGYN 5341 - OBSTETRICS AND GYNECOLOGY

Minimum Credits: 0

Maximum Credits: 0

This is a four week clerkship at Magee-Womens Hospital. The clerkship is divided among obstetrics, gynecology, and outpatient services. The daily schedule includes teaching rounds, small group tutorials, and lectures, in addition to patient responsibilities. Students are expected to take call and remain in the hospital overnight approximately twice a week during their rotation on obstetrics. At the end of the clerkship, an oral and/or written examination will be given.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

OBGYN 5345 - CLERKSHIP REPEAT COURSE

Minimum Credits: 0

Maximum Credits: 0

This course will be registered when the necessity to record a student's unsuccessful makeup is required. The course will be used only in those instances when the clerkship is repeated in a shorter or longer time frame than the previous course taken and failed. The specific title given the course will reflect the number of weeks repeated.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

OBGYN 5387 - INDIVIDUAL STUDY OR RESEARCH

Minimum Credits: 0

Maximum Credits: 0

The department of obstetrics, gynecology and reproductive sciences will arrange an individual study or research experience for third year medical students in an area of their interest.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

OBGYN 5420 - OBSTETRICAL SUBINTERNSHIP

Minimum Credits: 0

Maximum Credits: 0

This elective is offered for a four-week period of time. The student will function similar to an intern on the obstetrical service. Examine patients on admission to the labor suite, assess these patients during labor, assist at their delivery and follow them during their postpartum hospitalization.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OBGYN 5430 - GYNECOLOGICAL SUBINTERNSHIP

Minimum Credits: 0

Maximum Credits: 0

The student will function similar to an intern on the gynecologic service during this four-week elective. Time will be spent on the ward and/or private gynecology services. The subintern will work up patients following admissions, examine these patients and establish a differential diagnosis. Student will assist at the surgical procedures of these patients and their postoperative care.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OBGYN 5432 - MINIMALLY INVASIVE GYNECOLOGIC SURGERY

Minimum Credits: 0

Maximum Credits: 0

This elective will teach minimally invasive gynecologic surgery as well as the principles of evaluation and management of women with pelvic pain. Students will learn to take pertinent history and perform the (pelvic pain specific) physical exams on women with endometriosis as well as women with other sources of chronic pelvic pain. There will be exposure to all disciplines of minimally invasive gynecologic surgery including laparoscopic

deep excision of endometriosis, presacral neurectomy, reconstruction for pelvic organ prolapse, hysterectomy, myomectomy, and adenexal surgery. Students will participate in the pre-op evaluations with the faculty and will have the opportunity to scrub in on cases. The students will renew their understanding and appreciation of pelvic anatomy (retroperitoneal and pelvic support anatomy) from the laparoscopic perspective.

Academic Career: Medical School

Course Component: Clinical

Grade Component: Grad LG/SU5

Course Attributes: School of Medicine Year 4

OBGYN 5435 - OBSTETRIC/GYNECOLOGY ELECTIVE

Minimum Credits: 0

Maximum Credits: 0

This clinical elective can be customized to meet individual needs. Students may elect to concentrate on maternal-fetal medicine, genetics, or gyn-one. The rotation will include both in-patient and ambulatory experience. Students must make advance arrangements and a specific descriptive course title may be assigned for recording on the official transcript.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OBGYN 5440 - OBSTETRICAL AND AMBULATORY CARE

Minimum Credits: 0

Maximum Credits: 0

This four-week elective offers hands-on experience in the delivery room and clinic at mercy hospital. The ob service consists mostly of 600 clinic deliveries per year with 24 hour, in-house coverage by attending staff. The clinic has a supervisory obstetrician/gynecologist full-time in attendance.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OBGYN 5445 - OUTPATIENT GYNECOLOGY

Minimum Credits: 0

Maximum Credits: 0

The student will function similarly to an intern. Time will be spent at office sites as well as hospital affiliates. The sub intern will obtain histories and physicals, establish a differential diagnosis and assist in developing a plan of care with an additional focus on the cultural and socioeconomic challenges of a diverse population. The student will assist in minor and major surgical procedures as well as post-operative care. S/he will assist in the management of obstetrical patients during the antepartum, intrapartum and postpartum periods. The student will also have the opportunity to interact with patients who experience termination procedures. The sub internship will be offered for a four-week period with one weekend call required.

Academic Career: Medical School

Course Component: Clinical

Grade Component: Grad LG/SU5

Course Attributes: School of Medicine Year 4

OBGYN 5450 - REPRODUCTIVE ENDOCRINOLOGY

Minimum Credits: 0

Maximum Credits: 0

This four week elective offers a clinical experience in two areas: the evaluation of couples with infertility and the diagnostic evaluation and management of endocrine dysfunctions involving the hypothalamic-pituitary-ovarian axis. The majority of work will be evaluating and managing these problems in outpatient areas. Inpatient gynecological procedures including laparoscopy, hysteroscopy, microsurgical techniques for resection of endometriosis and tuboplastic procedures for restoration of fertility will be observed.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OBGYN 5460 - MATERNAL AND FETAL MEDICINE

Minimum Credits: 0

Maximum Credits: 0

In this four-week elective students will follow high-risk obstetrical patients as outpatients in the perinatal and medical clinics and as inpatients in the labor suite. Students will become familiar with the principles of biophysical and biochemical monitoring of the fetus during labor as well as the techniques of antepartum fetal evaluation. These include amniocentesis, sonography, and antepartum fetal heart rate monitoring. Management of pregnancies with underlying medical problems of the mother will be an integral part of the elective.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OBGYN 5470 - GYNECOLOGIC ONCOLOGY

Minimum Credits: 0

Maximum Credits: 0

Students will participate as a member of a team providing care to patients with gynecologic malignancies during this four-week elective at Magee-Womens Hospital. Student will learn the staging classifications, the appropriate workup and be involved in the treatment and follow up of patients. The individual will scrub in the operating room and be involved in the administration of chemotherapy and radiation therapy for gynecologic malignancies.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OBGYN 5480 - UROGYNECOLOGY SUBINTERNSHIP

Minimum Credits: 0

Maximum Credits: 0

Elective with intensive exposure to women with urinary incontinence and other pelvic floor defects. Student will see patients in an office setting learning to obtain an appropriate history, neurologic and pelvic examination. Student will also assist in the surgical procedures and post-operative care of these patients. Additional exposure is planned for cystometric evaluations, pharmacologic intervention, pelvic floor muscle rehabilitation, behavioral and biofeedback intervention protocols.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OBGYN 5487 - FAMILY PLANNING

Minimum Credits: 0

Maximum Credits: 0

The focus of this elective is to learn more about the gynecologic subspecialty of family planning. During the four weeks of the elective, the student will be present in several clinical settings to include: planned parenthood of Western Pennsylvania; family planning clinics in the Magee outpatient clinic - one specializing more in IUDs, implants, and sterilization pre-operative evaluations and the other specializing more in pre-operative preparation and evaluation for dilation and evacuation procedures); time will be spent with faculty in the private office seeing general GYN patients, family planning consults, and abortion patients; Magee or, both sterilization surgery and dilation and evacuation procedures. The student will decide on a topic from the current medical literature and present a full review to the family planning faculty, fellows and research staff.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OBGYN 5488 - REPRODUCTIVE GENETICS

Minimum Credits: 0

Maximum Credits: 0

Clinical reproductive genetics with the opportunity to tailor the experience to the student's interest. Core experience in genetic counseling will include advanced maternal age (AMA), abnormal family history, prenatal screenings, teratogen exposure, prenatally detected anomalies, adult genetics clinic and cancer counseling. The student will observe invasive diagnostic procedures (CVS and amniocentesis) as well as in the cytogenetics lab. The student will attend weekly fetal diagnosis & treatment center meetings and weekly clinical genetics meetings. The student will observe how genetics impacts personalized medicine. There may be opportunity to attend adult genetics clinic and participate in research.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

OBGYN 5490 - WOMEN'S HEALTH

Minimum Credits: 0

Maximum Credits: 0

This elective is an interdisciplinary offering by the department of obstetrics, gynecology and reproductive sciences and the department of medicine. The goal is to introduce students to the breadth and complexity of gender-specific health care. A variety of ambulatory clinical sites will be utilized to provide experience in women's health care, including, but not limited to; health maintenance and preventive care; family planning; genetic counseling; menopause and hormone replacement; osteoporosis; coronary artery disease; depression; violence against women.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OBGYN 5495 - MIDLIFE HEALTH

Minimum Credits: 0

Maximum Credits: 0

Course objectives: extract a targeted history from patients presenting to the midlife health center; perform a physical exam focused on perimenopausal and menopausal issues; be familiar with the gynecologic and medical needs of midlife female patients; develop a differential diagnosis for common conditions in perimenopause and menopause, such as abnormal vaginal bleeding; be familiar with the indications and contraindications with commonly used therapies for menopausal issues; competently assist on various surgical procedures; write postoperative orders on patients; be familiar with the work-up and management of postoperative complications. Students planning to practice primary care medicine, gynecology, urology, or geriatrics will benefit from this intensive exposure to the health needs of midlife-aged women. He/she will see patients in an office setting, learning to obtain an appropriate history and physical exam focused on menopausal issues. He/she will also be exposed to procedures such as endometrial biopsies and vulvar biopsies. He/she will be exposed to standard pharmacologic interventions, as well as integrative approaches such as acupuncture. In addition, the student may assist in the surgical procedures and postoperative care of these patients.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OBGYN 5500 - INTERNATIONAL MEDICINE IN OBSTETRICS AND GYNECOLOGY

Minimum Credits: 0

Maximum Credits: 0

The student will function similarly to an intern with faculty mentorship by designated OB/GYN faculty and staff. The student will spend this four-week elective at an international hospital and rural clinical affiliation. The sub intern will obtain histories and physicals, establish a differential diagnosis and assist in developing a plan of care with an additional focus on the cultural and socioeconomic challenges and resources of a developing country. The student will assist in minor and major surgical procedures as well as pre and post-operative care. He/she will assist in the management of obstetrical patients during antepartum, intrapartum and post partum periods. Course objectives: understand the multifaceted challenges in accessing and delivering care in developing countries; recognize the disparity gap in healthcare as it relates to the personnel, medical and surgical resources; evaluate patients with OB/GYN problems endemic to the international site; manage pregnant patients with both normal and high acuity medical and obstetrical issues; evaluate the course of normal labor and delivery and the post partum period; assist on OB/GYN procedures and

recognize common pathology; assist in the planning and implementation of family planning programs and post abortive care.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OBGYN 5580 - SEXUALLY TRANSMITTED DISEASES

Minimum Credits: 0

Maximum Credits: 0

This rotation, located in the clinics of the Allegheny county health department, will provide an opportunity to gain practical experience under the direct guidance and supervision of the attending physician in the diagnosis and treatment of commonly seen sexually transmissible diseases including gonorrhea and syphilis. Opportunities will be available for obtaining skills in the commonly performed laboratory procedures such as gram staining and culturing and in performing darkfield examinations. Limited experience in contact investigation will be gained.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OBGYN 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0

Maximum Credits: 0

An individualized course of study may be arranged with the department of obstetrics, gynecology and reproductive sciences to fit the student's needs. The student will meet with a department faculty person to design a clinical course of study for a four-week period of time. A written proposal must be approved by the faculty member as well as the student's scheduling advisor. When approvals have been received, the school registrar will schedule the course and notify the department student coordinator.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OBGYN 5725 - INFECTIOUS DISEASE-OB/GYN (ILS)

Minimum Credits: 0

Maximum Credits: 0

This four week selective emphasizes the many unique features of infections in obstetrics, gynecology, and reproductive medicine. Students will learn the pathogenesis of organisms relevant to the female reproductive tract, and about transmission of organisms to the fetus. Students will evaluate pregnant and non pregnant patients with reproductive tract infections and discuss clinical and management issues daily with faculty. Students will also be exposed to contemporary laboratory techniques of identifying pathogenic organisms.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OBGYN 5750 - GET READY FOR RESIDENCY BOOT CAMP

Minimum Credits: 0

Maximum Credits: 0

This elective is an intensive preparation for students who are about to enter residency. Students will be provided with a combination of general and specialty-specific, clinically relevant content in a variety of modalities. The focus will be on content that will prepare the student to function at the starting level of an intern (and meet the expected intern-level milestones) after graduation. Teaching modalities will include simulation, small group sessions, skills workshops, standardized patient cases, and a limited number of high-yield lectures.

Academic Career: Medical School

Course Component: Clinical

Grade Component: S/U Basis

OBGYN 5885 - OB AND GYN RESEARCH

Minimum Credits: 0

Maximum Credits: 0

The research elective at Magee-Womens Hospital will involve the student in basic or clinical research projects under the supervision of a full-time faculty member. The student will participate in the design and conduct of the study as well as in the analysis of the data obtained during the study. The student will then be expected to participate writing a report of the study which should be of a quality suitable for publication in a refereed journal. This elective is offered in four-week time blocks.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OBGYN 5886 - INDIVIDUAL STUDY

Minimum Credits: 0

Maximum Credits: 0

The department of obstetrics, gynecology and reproductive sciences will arrange an individual clinical experience to fit the student's needs.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OBGYN 5899 - INDEPENDENT STUDY OBSTETRICS/GYNECOLOGY

Minimum Credits: 0

Maximum Credits: 0

The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

OBGYN 5900 - EXTRAMURAL OBSTETRICS AND/OR GYNECOLOGY

Minimum Credits: 0

Maximum Credits: 0

A clinical experience in obstetrics and/or gynecology may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Occupational Therapy

OT 2100 - FDS OCCUPATIONAL SCIENCE & OT

Minimum Credits: 3

Maximum Credits: 3

Examines the history, philosophy, and science of the profession of occupational therapy. The focus is on the meaning of occupation and its role in health, wellness, and participation. Occupational science and occupational performance theories of practice are introduced. Examines how occupational therapists develop and manage their therapeutic relationships with clients using a model of intentional relationships, focusing on the use of narrative reasoning, emotional intelligence and empathy, and a client-centered collaborative approach. Formal interview techniques and casual

conversation approaches used to obtain information are introduced and practiced.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Occupational Therapy (MOT)

OT 2101 - HUMAN MOVEMENT ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

Examines human performance in-depth using the approaches of occupational analysis and activity analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: HRS 2022; PLAN: Occupational Therapy (MOT)

OT 2102 - GROUP THEORY AND PRACTICE

Minimum Credits: 2

Maximum Credits: 2

Group process as a tool to assess and facilitate societal participation is studied. Emphasis is placed on enhancing communication and leadership skills, and clinical reasoning abilities.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2102; PLAN: Occupational Therapy (MOT)

OT 2103 - OCCUPATION ACROSS THE LIFESPAN

Minimum Credits: 3

Maximum Credits: 3

Human development from conception through senescence and death is studied, with the emphasis on adulthood and late life maturity. The focus is on age-associated changes in sensory, motor, cognitive, emotional, and psychosocial functions and their implications for self-care, play-leisure, school and work occupations in the context of occupational therapy services.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2100; PLAN: Occupational Therapy (MOT)

OT 2104 - CLINICAL PSYCHIATRY

Minimum Credits: 1

Maximum Credits: 1

Psychiatric diagnoses that are highly prevalent in children, adolescents, adults, and older adults are defined and described. Etiology, signs and symptoms, clinical course, psychiatric management, morbidity, and prognosis are reviewed. The influence of psychiatric pathology on daily living skills and routines, and societal participation is examined.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2100; PLAN: Occupational Therapy (MOT)

OT 2105 - CLINICAL MEDICINE

Minimum Credits: 2

Maximum Credits: 2

General medical diagnoses that are leading causes of disability in children, adolescents, adults, and older adults are defined and described. Etiology,

signs and symptoms, clinical course, medical management, morbidity, and prognosis are reviewed. Influence of medical pathology on activities of daily living and routines, and societal participation is examined.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2100 and HRS 2022; PLAN: Occupational Therapy (MOT)

OT 2106 - CLINICAL RESEARCH FOR OT

Minimum Credits: 2

Maximum Credits: 2

Occupational therapy and rehabilitation research and its application to practice, management, and education is explored. Scientific method, hierarchies of evidence, levels of measurement, and interpretation of findings are examined.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2100; PLAN: Occupational Therapy (MOT)

OT 2107 - PSYCHOSOCIAL / COGNITIVE THEORY AND PRACTICE/MASTER OF OCCUPATIONAL THERAPY

Minimum Credits: 4

Maximum Credits: 4

The occupational therapy process for clients with psychosocial and/or cognitive dysfunction is studied in-depth. Theories, principles, assessments, and interventions focus on performance of activities and routines of daily living and participation in society. Enriches didactic coursework through experiential learning. Through directed observation and participation, students apply knowledge to practice and develop an understanding of the needs of clients with psychosocial and/or cognitive dysfunction and the skills needed for the analysis and adaptation of occupational performance deficits.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2102 and 2104; PLAN: Occupational Therapy (MOT)

OT 2108 - CLIN NEUROLOGY & ORTHOPEDICS

Minimum Credits: 3

Maximum Credits: 3

Neurologic and orthopedic diagnoses that are leading causes of disability in children, adolescents, adults, and older adults are defined and described. Etiology, signs and symptoms, clinical course, medical management, morbidity and prognosis are reviewed. This course provides the background for understanding the influence of neurologic and orthopedic pathology on activities and routines of daily living and participation in society.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: HRS 2022 and OT 2100; PLAN: Occupational Therapy (MOT)

OT 2109 - NEUROBEHAVIORAL SCIENCE/MASTER OF OCCUPATIONAL THERAPY

Minimum Credits: 3

Maximum Credits: 3

Concepts of normal sensorimotor integration, including the influence of neural centers on postural control and functional movement are considered and the clinical manifestations of dysfunction of major neural elements are discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2105; PLAN: Occupational Therapy (MOT)

OT 2110 - BIOMECHANICAL THEORY & PRACT 1

Minimum Credits: 2

Maximum Credits: 2

OT process for clients with physical dysfunctions involving biomechanical impairments is introduced. Emphasis is on clinical evaluations and their function in diagnostic reasoning.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2101 and 2105 and 2113; PLAN: Occupational Therapy (MOT)

OT 2111 - OCCUPATIONAL THEORY AND THE HEALTH CARE SYSTEM/MASTER OF OCCUPATIONAL THERAPY

Minimum Credits: 2

Maximum Credits: 2

Examines health care trends, reimbursement regulations, legislative policies, and current issues affecting occupational therapy. Strategies for maintaining continued competence and supervisory roles are interpreted and applied to practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2100; PLAN: Occupational Therapy (MOT)

OT 2112 - NEUROREHABILITATION THEORY & AND PRACTICE/MASTER OF OCCUPATIONAL THERAPY

Minimum Credits: 3

Maximum Credits: 3

The occupational therapy process for clients with neurological and neurobehavioral dysfunction is studied in-depth. Theories, principles, assessments, and interventions focus on performance of activities and routines of daily living and participation in society.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2109; PLAN: Occupational Therapy (MOT)

OT 2113 - REHABILITATION THEORY AND PRACTICE/MASTER OF OCCUPATIONAL THERAPY

Minimum Credits: 3

Maximum Credits: 3

The interface between functional impairment, activity, and societal participation is studied in-depth. Emphasis is on adaptation to compensate for dysfunction in performance of occupations for life activities (self-care, home and community management, rest/sleep, education/work, and play/leisure, and social participation).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: HRS 2022 and OT 2100; PLAN: Occupational Therapy (MOT)

OT 2114 - BIOMECHANICAL THEORY AND PRACTICE/MOT

Minimum Credits: 4

Maximum Credits: 4

The occupational therapy process for clients with physical dysfunction involving biomechanical impairments is studied in-depth. Theories, principles, assessments, and interventions focus on performance of activities and routines of daily living and participation in society. Enriches didactic coursework through experiential learning. Through directed observation and participation, students apply knowledge to practice and develop an understanding of the needs of clients with neurological/neurobehavioral and biomechanical dysfunction. Addresses professional issues and the

professional development of the occupational therapist. Issues explored include the application of professional and clinical reasoning in traditional and emerging practice settings, collaborative practice, ethics, licensure, certification, and professional sustainability.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2110; PLAN: Occupational Therapy (MOT)

OT 2115 - DEVELOPMENTAL THEORY AND PRACTICE/MASTER OF OCCUPATIONAL THERAPY

Minimum Credits: 4

Maximum Credits: 4

The occupational therapy process for children and youth is studied in-depth. Theories, principles, assessments, and interventions focus on performance of activities and routines of daily living and participation in society. Enriches didactic coursework through experiential learning. Through directed observation and participation, students apply knowledge to practice and develop an understanding of the needs of children and youth, and older adults.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2103 and 2109; PLAN: Occupational Therapy (MOT)

OT 2116 - INTEGRATIVE CAPSTONE SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Course addresses the role of the OT as a contributor to the profession. Problem-focused and solution-oriented students pose, and subsequently solve questions related to clinical issues. Solutions are evidenced in quantitative or qualitative learning products.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2106; PLAN: Occupational Therapy (MOT)

OT 2117 - MANAGEMENT OF OCCUPATIONAL THERAPY PRACTICE/MASTER OF OCCUPATIONAL THERAPY

Minimum Credits: 3

Maximum Credits: 3

Examines the role of the occupational therapist as a manager of occupational therapy services. Focuses on the application of principles and practices of administration and supervision in diverse practice environments.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2111; PLAN: Occupational Therapy (MOT)

OT 2118 - SP TOPICS OT THEORY & PRACTICE

Minimum Credits: 3

Maximum Credits: 3

The role of occupational therapy in productive aging and the promotion of successful aging in older adults is studied in-depth. Theories, principles, assessments, and interventions focus on performance of activities and routines of daily living and participation in society.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2110; PLAN: Occupational Therapy (MOT)

OT 2119 - OT FIELDWORK EDUCATION A (FW2)

Minimum Credits: 1

Maximum Credits: 10

Course offers an in-depth learning experience in delivering occupational therapy services. The learning experience occurs at an approved clinical education site that offers the opportunity to develop competence in the professional responsibilities of an entry-level occupational therapist.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PREQ: OT 2114 and 2115 and 2118; PLAN: Master of Occupational Therapy

OT 2120 - OT FIELDWORK EDUCATION B (FW2)

Minimum Credits: 1

Maximum Credits: 10

Course offers an in-depth learning experience in delivering occupational therapy services. The learning experience occurs at an approved clinical education site that offers the opportunity to develop competence in the professional responsibilities of an entry-level occupational therapist.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PREQ: OT 2114 and 2115 and 2118; PLAN: Occupational Therapy (MOT)

OT 2121 - OT FIELDWORK EDUCATION C

Minimum Credits: 1

Maximum Credits: 6

Course offers an in-depth learning experience in delivering occupational therapy services. The learning experience occurs at an approved clinical education site that offers the opportunity to develop specialized skills.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Occupational Therapy (MOT)

OT 2199 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 6

A topic of interest to the student is examined in-depth under the guidance of a faculty mentor. It is the student's responsibility to contract with a faculty member for this tutorial.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis

OT 2200 - FOUNDATIONS OF OCCUPATION

Minimum Credits: 2

Maximum Credits: 2

The history, philosophy, theory and science of the profession of occupational therapy are introduced. The focus is on the meaning of occupation its role in health and wellness. Occupation science and frames of reference for practice will introduced.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Doctor of Occupational Therapy (OTD)

OT 2201 - BODY FUNCTIONS AND STRUCTURES: ANATOMY

Minimum Credits: 3

Maximum Credits: 3

Emphasizes the understanding and application of knowledge of human anatomy in diagnostics of clinical conditions commonly encountered by an occupational therapist. The practical component includes the use of prosected cadavers, skeletal models, and palpation of surface anatomical features in live models.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Doctor of Occupational Therapy (OTD)

OT 2202 - THERAPEUTIC APPROACHES 1

Minimum Credits: 2

Maximum Credits: 2

Examines how occupational therapists develop and manage their therapeutic relationships with clients using a model of intentional relationships, focusing on the use of narrative reasoning, emotional intelligence and empathy, and a client-centered collaborative approach. Formal interview techniques and casual conversation approaches used to obtain information are introduced and practiced.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Doctor of Occupational Therapy (OTD)

OT 2203 - CLINICAL SEMINAR 1

Minimum Credits: 1

Maximum Credits: 1

Addresses professional issues and the professional development of the occupational therapist. Focuses on diversity, inclusion, self-awareness, and self-understanding. Issues explored include the roles and functions of occupational therapy practitioners; participation in professional organizations; and professional sustainability.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Doctor of Occupational Therapy (OTD)

OT 2204 - HUMAN PERFORMANCE ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

Examines human performance in-depth using the approaches of occupational analysis and activity analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2200 and 2201; PLAN: Doctor of Occupational Therapy (OTD)

OT 2205 - NEUROBEHAVIORAL SCIENCE

Minimum Credits: 3

Maximum Credits: 3

Examines neuroscientific concepts underlying normal somatosensory, special sensory, motor, cognition, and emotion functional systems, and explores the manifestation of dysfunction of major neural elements.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2201; PLAN: Doctor of Occupational Therapy (OTD)

OT 2206 - CLINICAL CONDITIONS 1

Minimum Credits: 3

Maximum Credits: 3

Defines and describes neuromuscular, orthopedic, psychiatric, and clinical medicine diagnoses that are leading causes of disability in children, adolescents, adults, and older adults. Etiology, signs and symptoms, clinical course, medical management, morbidity, and prognosis are reviewed, and the influence of pathology on occupational performance is examined.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2201; PLAN: Doctor of Occupational Therapy (OTD)

OT 2207 - PRINCIPLES OF ASSESSMENT

Minimum Credits: 3

Maximum Credits: 3

Examines the principles associated with the evaluation process, including the selection and administration of assessment tools, and the scoring and interpretation of assessment data. Psychometrics are explored and data collection and analysis is practiced using a range of assessment methods.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2202; PLAN: Doctor of Occupational Therapy (OTD)

OT 2208 - CRITICAL APPRAISAL OF EVIDENCE

Minimum Credits: 2

Maximum Credits: 2

Occupational therapy and rehabilitation research and its application to practice, management, and education is explored. Scientific method, hierarchies of evidence, levels of measurement, and interpretation of findings are examined.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2200; PLAN: Doctor of Occupational Therapy (OTD)

OT 2209 - CLINICAL SEMINAR 2

Minimum Credits: 1

Maximum Credits: 1

Addresses professional issues and the professional development of the occupational therapist. Introduces a model for professional and clinical reasoning to plan, direct, perform, and reflect on occupational therapy services. Explores the various audiences and types of documentation used by occupational therapy practitioners.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: PREQ: OT 2203; PLAN: Doctor of Occupational Therapy (OTD)

OT 2210 - PSYCHOSOCIAL/COGNITIVE THEORY AND PRACTICE

Minimum Credits: 3

Maximum Credits: 3

The occupational therapy process for clients with psychosocial and/or cognitive dysfunction is studied in-depth. Theories, principles, assessments, and interventions focus on performance of activities and routines of daily living and participation in society.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2207; PLAN: Doctor of Occupational Therapy (OTD)

OT 2211 - ACTIVITY/CONTEXT ADAPTATION THEORY AND PRACTICE

Minimum Credits: 3

Maximum Credits: 3

The interface between functional impairment, activity, and societal participation is studied in-depth. Emphasis is on adaptation to compensate for dysfunction in performance of occupations for life activities (self-care, home and community management, rest/sleep, education/work, and play/leisure, and social participation).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2207; PLAN: Doctor of Occupational Therapy (OTD)

OT 2212 - CLINICAL CONDITIONS 2

Minimum Credits: 3

Maximum Credits: 3

Defines and describes neuromuscular, orthopedic, psychiatric, and clinical medicine diagnoses that are leading causes of disability in children, adolescents, adults, and older adults. Etiology, signs and symptoms, clinical course, medical management, morbidity, and prognosis are reviewed, and the influence of pathology on occupational performance is examined. Builds on content in Clinical Conditions 1.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2206; PLAN: Doctor of Occupational Therapy (OTD)

OT 2213 - OCCUPATIONAL THERAPY AND THE HEALTH SYSTEM

Minimum Credits: 2

Maximum Credits: 2

Examines health care trends, reimbursement regulations, legislative policies, and current issues affecting occupational therapy. Strategies for maintaining continued competence and supervisory roles are interpreted and applied to practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2209; PLAN: Doctor of Occupational Therapy (OTD)

OT 2214 - THERAPEUTIC APPROACHES 2

Minimum Credits: 2

Maximum Credits: 2

Examines the dynamic process used by occupational therapists to facilitate a client's or group of clients' engagement in occupations to promote health and participation. Focuses on education and training, self-advocacy, and health literacy for clients, those involved in the care of the clients, and groups.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2202; PLAN: Doctor of Occupational Therapy (OTD)

OT 2215 - FIELDWORK EDUCATION A

Minimum Credits: 1

Maximum Credits: 1

Enriches didactic coursework through experiential learning. Through directed observation and participation, students apply knowledge to practice and develop an understanding of the needs of clients with psychosocial and/or cognitive dysfunction and the skills needed for the analysis and adaptation of occupational performance deficits.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PREQ: OT 2207; CREQ: OT 2210 and 2211; PLAN: Doctor of Occupational Therapy (OTD)

OT 2216 - CLINICAL SEMINAR 3

Minimum Credits: 1

Maximum Credits: 1

Addresses professional issues and the professional development of the occupational therapist. Focuses on applying the model for professional and clinical reasoning to practice. Issues explored include traditional and emerging practice settings, collaborative practice, ethics, and professional sustainability.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: PREQ: OT 2209; PLAN: Doctor of Occupational Therapy (OTD)

OT 2217 - NEUROREHABILITATION THEORY AND PRACTICE

Minimum Credits: 3

Maximum Credits: 3

The occupational therapy process for clients with neurological and neurobehavioral dysfunction is studied in-depth. Theories, principles, assessments, and interventions focus on performance of activities and routines of daily living and participation in society.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2210; PLAN: Doctor of Occupational Therapy (OTD)

OT 2218 - BIOMECHANICAL THEORY AND PRACTICE

Minimum Credits: 3

Maximum Credits: 3

The occupational therapy process for clients with physical dysfunction involving biomechanical impairments is studied in-depth. Theories, principles, assessments, and interventions focus on performance of activities and routines of daily living and participation in society.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2211; PLAN: Doctor of Occupational Therapy (OTD)

OT 2219 - FIELDWORK EDUCATION B

Minimum Credits: 1

Maximum Credits: 1

Enriches didactic coursework through experiential learning. Through directed observation and participation, students apply knowledge to practice and develop an understanding of the needs of clients with neurological/neurobehavioral and biomechanical dysfunction.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PREQ: OT 2215; PREQ: OT 2217 and 2218; PLAN: Doctor of Occupational Therapy (OTD)

OT 2220 - CLINICAL SEMINAR 4

Minimum Credits: 1

Maximum Credits: 1

Addresses professional issues and the professional development of the occupational therapist. Issues explored include the application of professional and clinical reasoning in traditional and emerging practice settings, collaborative practice, ethics, licensure, certification, and professional sustainability.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: PREQ: OT 2216; PLAN: Doctor of Occupational Therapy (OTD)

OT 2221 - DEVELOPMENTAL THEORY AND PRACTICE

Minimum Credits: 3

Maximum Credits: 3

The occupational therapy process for children and youth is studied in-depth. Theories, principles, assessments, and interventions focus on performance of activities and routines of daily living and participation in society.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2217; PLAN: Doctor of Occupational Therapy (OTD)

OT 2222 - PRODUCTIVE AGING THEORY AND PRACTICE

Minimum Credits: 3

Maximum Credits: 3

The role of occupational therapy in productive aging and the promotion of successful aging in older adults is studied in-depth. Theories, principles, assessments, and interventions focus on performance of activities and routines of daily living and participation in society.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2218; PLAN: Doctor of Occupational Therapy (OTD)

OT 2224 - MANAGEMENT OF OCCUPATIONAL THERAPY PRACTICE

Minimum Credits: 2

Maximum Credits: 2

Examines the role of the occupational therapist as a manager of occupational therapy services. Focuses on the application of principles and practices of administration and supervision in diverse practice environments.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2213; PLAN: Doctor of Occupational Therapy (OTD)

OT 2225 - PROJECT DEVELOPMENT 1

Minimum Credits: 3

Maximum Credits: 3

Focuses on the development of the skills needed to plan, implement and evaluate a project that addresses an important question related to professional practice. In collaboration with and mentorship by faculty and content experts, designs and presents a synopsis of a proposal for a capstone project.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2208; PLAN: Doctor of Occupational Therapy (OTD)

OT 2226 - FIELDWORK EDUCATION C

Minimum Credits: 1

Maximum Credits: 1

Enriches didactic coursework through experiential learning. Through directed observation and participation, students apply knowledge to practice and develop an understanding of the needs of children and youth, and older adults.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: CREQ: OT 2221 and 2222; PREQ: OT 2219; PLAN: Doctor of Occupational Therapy (OTD)

OT 2227 - CLINICAL SEMINAR 5

Minimum Credits: 1

Maximum Credits: 1

Addresses professional issues and the professional development of the occupational therapist. Issues explored include the application of professional and clinical reasoning in traditional and emerging practice settings, collaborative practice, ethics, fieldwork and professional entry, licensure, certification, and professional sustainability.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: PREQ: OT 2220; PLAN: Doctor of Occupational Therapy (OTD)

OT 2228 - FIELDWORK EDUCATION D

Minimum Credits: 1

Maximum Credits: 10

Provides an in-depth learning experience in delivering occupational therapy services. The learning experience occurs at an approved clinical education site that offers the opportunity to develop competence in the professional responsibilities of an entry-level occupational therapist.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PREQ: OT 2226; PLAN: Doctor of Occupational Therapy (OTD)

OT 2229 - FIELDWORK EDUCATION E

Minimum Credits: 1

Maximum Credits: 10

Provides an in-depth learning experience in delivering occupational therapy services. The learning experience occurs at an approved clinical education site that offers the opportunity to develop competence in the professional responsibilities of an entry-level occupational therapist.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PREQ: OT 2226; PLAN: Doctor of Occupational Therapy (OTD)

OT 2230 - CLINICAL SEMINAR 6

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

OT 2231 - CLINICAL SEMINAR 7

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

OT 2240 - SPECIAL TOPICS IN OCCUPATIONAL THERAPY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

OT 2241 - CLINICAL PRECEPTORSHIP 1

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

OT 2242 - CLINICAL PRECEPTORSHIP 2

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

OT 2243 - CLINICAL PRECEPTORSHIP 3

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad HSU Basis

OT 3000 - ADVANCEMENTS IN FUNCTIONAL ASSESSMENT

Minimum Credits: 4
Maximum Credits: 4
This course focuses on building a concept matrix using (a) the international classification of functioning, disability and health (ICF) assessment levels (condition, impairment, activity, participation) and (b) methods of assessment (self-report, proxy report, clinical judgment, clinic performance, and home performance) to support a comprehensive assessment plan for a specific patient population. Students will also be introduced to item response theory and its utility for functional assessment.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

OT 3001 - ADVANCEMENTS IN FUNCTIONAL ASSESSMENT: COLLOQUIUM

Minimum Credits: 3
Maximum Credits: 3
Using the ICF-methods matrix approach, the colloquium focuses on development of an ICF-methods matrix for a specific patient population.
Academic Career: Graduate
Course Component: Colloquium
Grade Component: Grad Letter Grade

OT 3100 - EVIDENCE ANALYSIS FOR IMPROVING CLINICAL INTERVENTIONS

Minimum Credits: 4
Maximum Credits: 4
This course uses systematic methods (e.g. Prisma, Pedro, Consort, Strobe, Trend, CASP) and critical thinking to evaluate the rigor of evidence to enable practitioners to evaluate research articles for the purpose of developing clinical protocols and best practice guidelines.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

OT 3101 - EVIDENCE ANALYSIS FOR IMPROVING CLINICAL INTERVENTIONS: COLLOQUIUM

Minimum Credits: 3
Maximum Credits: 3

For a specific population, students will gather and analyze intervention literature that will support development of evidence-based clinical protocols and practice guidelines required by third party payers.

Academic Career: Graduate
Course Component: Colloquium
Grade Component: Grad Letter Grade

OT 3200 - EVIDENCE-BASED PROTOCOLS AND PRACTICE GUIDELINES

Minimum Credits: 4
Maximum Credits: 4

This course focuses on the use of evidence checklists for evaluating and developing practice guidelines (e.g., AGREEII). Current professional practice guidelines will be evaluated, generated, implemented, and assessed for follow-through.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

OT 3201 - EVIDENCE-BASED PROTOCOLS: CLINICAL ROTATION

Minimum Credits: 3
Maximum Credits: 3

This clinical rotation will focus on evaluating occupational therapy practice guidelines relevant to a specific patient population, in an assigned clinic, and then working with clinical staff to develop a practice guideline that will meet the requirements of third party payers (e.g., AGREEII)

Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

OT 3203 - ADVANCED CONCEPTS IN PROFESSIONAL AND CLINICAL REASONING

Minimum Credits: 3
Maximum Credits: 3

Uses case-based methods, evidence synthesis, and critical thinking to derive evidence-based and sustainable solutions to real-world complex clinical challenges in evaluation and intervention, and to develop clinical protocols and best practice guidelines for the implementation of the solutions.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: OT 2229; PLAN: Doctor of Occupational Therapy (OTD)

OT 3204 - ADVANCED CONCEPTS IN HEALTH POLICY AND ADVOCACY

Minimum Credits: 3
Maximum Credits: 3

Focuses on the development and analysis of policy issues, and the engagement in advocacy to address issues affecting occupational therapy and that support health, well-being, and societal participation at the individual and/or systems levels. Addresses strategies for promoting occupational justice and empowering individuals to seek and obtain resources to fully participate in daily life occupations.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: OT 2229; PLAN: Doctor of Occupational Therapy (OTD)

OT 3205 - LEADERSHIP DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

Focuses on leadership skills for promoting the distinct value of occupational therapy, implementing evidence-based occupational therapy services, and advocating for occupational therapy services at the consumer, work environment, and policy levels.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2229; PLAN: Doctor of Occupational Therapy (OTD)

OT 3206 - ADVANCED THEORY AND PRACTICE

Minimum Credits: 3

Maximum Credits: 3

Examines select theoretical perspectives, practice areas, evaluation procedures, intervention protocols, and/or professional issues in-depth.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2229; PLAN: Doctor of Occupational Therapy (OTD)

OT 3207 - PROJECT DEVELOPMENT 2

Minimum Credits: 3

Maximum Credits: 3

Focuses on the construction of the protocol of a capstone project, including collaboration with and mentorship by faculty and content experts in developing plans for implementation, evaluation and sustainability of the program.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: OT 2229; PLAN: Doctor of Occupational Therapy (OTD)

OT 3208 - EXPERIENTIAL PRECEPTORSHIP

Minimum Credits: 1

Maximum Credits: 12

Provides an in-depth learning experience in clinical practice, research, administration, leadership, program and/or policy development, advocacy, or education at an approved clinical education site that offers the opportunity to develop advanced skills that are beyond the professional responsibilities of an entry-level occupational therapist and collaboration and mentorship with faculty and site experts. Includes implementation of a capstone project.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PREQ: OT 3207; CREQ: OT 3209; PLAN: Doctor of Occupational Therapy (OTD)

OT 3209 - PROFESSIONAL DEVELOPMENT SEMINAR

Minimum Credits: 2

Maximum Credits: 2

Addresses professional issues and the professional development of the occupational therapist related to collaborative practice, ethics, professional entry requirements and responsibilities, and professional sustainability. Includes dissemination of capstone project.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: PREQ: OT 3207; CREQ: OT 3208; PLAN: Doctor of Occupational Therapy (OTD)

OT 3300 - DATA-BASED DECISION MAKING FOR CLINICAL PRACTICE

Minimum Credits: 4

Maximum Credits: 4

This course focuses on the application of data analytic strategies (e.g., descriptives, correlations, comparisons, predictions, effect sizes, and single subject design strategies, and qualitative strategies) practitioners can use to analyze clinical data related to patient demographics, patient perceptions, patient outcomes by intervention type, productivity levels, etc.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

OT 3301 - DATA-BASED DECISION MAKING: CLINICAL ROTATION

Minimum Credits: 3

Maximum Credits: 3

In this clinical rotation, students will work with staff at an assigned clinic, using data analytic strategies to analyze and synthesize data from relevant clinical cases to assist them in documenting patient progress, satisfaction, and outcomes, and staff productivity.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

OT 3400 - MASTER PRACTITIONER COGNATE SEMINAR 1

Minimum Credits: 3

Maximum Credits: 3

This seminar focuses on classic, current, and emerging theories relevant to the chosen area of clinical expertise.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

OT 3401 - CLINICAL EDUCATOR COGNATE SEMINAR 1

Minimum Credits: 3

Maximum Credits: 3

This seminar focuses on classic, current, and emerging theories of learning, instruction, and assessment of learning.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

OT 3402 - PROFESSIONAL LEADERSHIP COGNATE SEMINAR 1

Minimum Credits: 3

Maximum Credits: 3

This seminar focuses on classic, current, and emerging theories of leadership, organizational behavior, and management.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

OT 3500 - MASTER PRACTITIONER COGNATE SEMINAR 2

Minimum Credits: 3

Maximum Credits: 3

This seminar focuses on analysis and synthesis of research evidence relevant to the student's chosen area of clinical expertise and capstone project. Students will complete a comprehensive oral examination at the completion of this course.

Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad Letter Grade

OT 3501 - CLINICAL EDUCATOR COGNATE SEMINAR 2

Minimum Credits: 3
Maximum Credits: 3

This seminar focuses on analysis and synthesis of research evidence relevant to the chosen focus of patient or student learning, instruction, or assessment of learning and capstone project. Students will complete a comprehensive oral examination at the completion of this course.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

OT 3502 - PROFESSIONAL LEADERSHIP COGNATE SEMINAR 2

Minimum Credits: 3
Maximum Credits: 3

This seminar focuses on analysis and synthesis of research evidence relevant to the student's chosen focus of clinical or professional leadership, organizational behavior or management and capstone project. Students will complete a comprehensive oral examination at the completion of this course.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

OT 3600 - MASTER PRACTITIONER COGNATE SEMINAR 3

Minimum Credits: 3
Maximum Credits: 3

Students will collect patient assessment and intervention data for a chosen theoretical model, and compare their results to current research evidence in preparation for their capstone project.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

OT 3601 - CLINICAL EDUCATOR COGNATE SEMINAR 3

Minimum Credits: 3
Maximum Credits: 3

Students will collect clinical (patient), classroom (college, university), or continuing education (in-person or online) assessment, instruction, and reassessment data for a chosen theoretical model of learning, instruction, or assessment, and compare their results to current research evidence in preparation for their capstone project.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

OT 3602 - PROFESSIONAL LEADERSHIP COGNATE SEMINAR 3

Minimum Credits: 3
Maximum Credits: 3

Students will collect data relevant for a chosen theoretical leadership model in a chosen organization, and compare their results to current research evidence in preparation for their capstone project.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

OT 3700 - MASTER PRACTITIONER COGNATE PRACTICUM AND CAPSTONE

Minimum Credits: 5

Maximum Credits: 5

This course will consist of a practicum along with a capstone project that focuses on analyzing the active intervention mechanisms and assessment - intervention ---outcome linkages for a specific patient population. Students will submit their project findings for presentation at a professional forum (e.g., regional, national, or international conference), or as a continuing education module.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

OT 3701 - CLINICAL EDUCATOR COGNATE PRACTICUM & CAPSTONE

Minimum Credits: 5

Maximum Credits: 5

This course will consist of a practicum along with a capstone teaching project (objectives, content, teaching methods, assessments) that will be implemented in a clinical (patient education), academic (college, university), or continuing education (in-person or online) setting. Students will present the project at a professional forum (e.g., regional, national, or international conference), or as a continuing education module.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

OT 3702 - PROFESSIONAL LEADERSHIP COGNATE PRACTICUM AND CAPSTONE

Minimum Credits: 5

Maximum Credits: 5

This course will consist of a practicum along with a capstone project that will address a current leadership, communication, and/or advocacy need of a health care facility or system. Students will submit their project findings for presentation at a professional forum (e.g., regional, national, or international conference), or as a continuing education module.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

Ophthalmology

OPHTH 5385 - INDIVIDUAL STUDY OR RESEARCH

Minimum Credits: 0

Maximum Credits: 0

The department of ophthalmology will arrange an individual study or research experience for third year medical students in an area of their interest. These electives are at the junior level and will be four weeks in duration.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

OPHTH 5420 - OPHTHALMOLOGY

Minimum Credits: 0

Maximum Credits: 0

This elective will provide exposure to both general and sub specialty disciplines in ophthalmology. The student will spend time with the full-time staff on specialty services, in the emergency room, operating room, eye clinic, Children's Hospital Clinic, VA Hospital or and eye clinic. Time is also scheduled at the ophthalmology learning center to study programmed sequences dealing with general clinical problems in ophthalmology.

Attendance at weekly surgical rounds is encouraged. Ophthalmic library is available to students.

Academic Career: Medical School

Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OPHTH 5430 - PEDIATRIC OPHTHALMOLOGY

Minimum Credits: 0

Maximum Credits: 0

This elective will provide in-depth exposure to the field of pediatric ophthalmology. It is intended for students exploring the possibility of a career in ophthalmology, as well as for those who wish to gain more ophthalmologic experience prior to a career in another, likely pediatric, field.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OPHTH 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0

Maximum Credits: 0

An individualized course of study may be arranged with the department of ophthalmology to fit the student's needs. The student will meet with a department faculty person to design a clinical course of study for a four-week period of time. A written proposal must be approved by the faculty member as well as the student's scheduling advisor. When approvals have been received, the school registrar will schedule the course and notify the department student coordinator.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OPHTH 5815 - OPHTHALMOLOGY RESEARCH

Minimum Credits: 0

Maximum Credits: 0

Research opportunities are available with appropriate staff members. Call to discuss the various research programs. The individual can then make the necessary arrangements for a research elective with the staff member of his choice.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OPHTH 5899 - INDEPENDENT STUDY IN OPHTHALMOLOGY

Minimum Credits: 0

Maximum Credits: 0

The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OPHTH 5900 - EXTRAMURAL OPHTHALMOLOGY

Minimum Credits: 0

Maximum Credits: 0

A clinical experience in ophthalmology may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements

must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Oral and Maxillofacial Path

OMFP 2111 - SURGICAL ORAL PATHOLOGY 1

Minimum Credits: 1

Maximum Credits: 1

This course will provide training and experience in the full range of oral surgical pathology procedures. The course will train the resident through hands-on experience in de scribing gross specimens as they arrive from the contributor, proper preparation for embedding, microscopic description, generation of a diagnosis, and decision-making in the need to order special stains and immunohistochemical procedures. This course includes instruction in laboratory administration, contributor relations, and histopathologic methods.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

OMFP 2121 - ORAL AND MAXILFACL HISTOPATH 1

Minimum Credits: 0

Maximum Credits: 0

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

OMFP 2131 - OMFP JOURNAL CLUB 1

Minimum Credits: 1

Maximum Credits: 1

This course is a conference where departmental faculty and residents meet to discuss current scientific articles of interest to the field. This will serve as a forum to address controversial and evidence-based topics.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

OMFP 2141 - TMJ AND ORAL AND MAXILLOFACIAL PAIN 1

Minimum Credits: 1

Maximum Credits: 1

This course will involve analysis of case histories of patients who have pain in the head and neck region. Stu dents will be provided cases beforehand and will investigate patient medical and dental history, current medications, differential diagnosis, possible treatments, and treatment outcomes. Topics may also include trigeminal neuralgia, multiple sclerosis, migraine headaches, cranial arteritis, and temporomandibular joint surgery.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

OMFP 2151 - OMFP RESEARCH 1

Minimum Credits: 1

Maximum Credits: 3

The resident, with the assistance of the program director, will select a research mentor and research project that ex poses him/her to methods of research, critical review of the scientific literature, analysis of data, and presentation of the results before his/her peers. A comprehensive

understanding of institutional review board and human subject's committee policies will be required. The research may include, but is not limited to, basic research, clinical trials, epidemiologic studies, and public health issues.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad HSU Basis

OMFP 2161 - ORAL MEDICINE CLINIC 1

Minimum Credits: 1

Maximum Credits: 1

This course has three main components. The first will be observing and assisting faculty members with their clinical oral pathology/oral medicine patients. The second component of the course is the resident's taking responsibility for his/her own clinical patients, under the direct supervision of a faculty member. The third will be the training and evaluation of first professional students in the urgent care clinic rotations.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

OMFP 2171 - CLINICOPATH CORRELATIONS 1

Minimum Credits: 0

Maximum Credits: 0

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Oral and Maxillofacial Surgery

ORSUR 5241 - ORAL SURGERY 1

Minimum Credits: 1

Maximum Credits: 1

This introductory course in oral and maxillofacial surgery is an integral part of dental education and clinical practice. It involves reinforcing and correlating the dental student's knowledge of the basic sciences with physical evaluation and risk assessment for patients requiring oral surgery. Basic dentoalveolar surgery techniques, suturing, flap design and extraction of impacted teeth are discussed as well as complications of dentoalveolar surgery.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

ORSUR 5282 - ORAL SURGERY 2

Minimum Credits: 1

Maximum Credits: 1

In this course, students will learn about classification and management of impacted teeth. An emphasis will also be placed on the recognition and management of common oral surgical related complications. This course includes lectures and class discussions.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

ORSUR 5313 - ORAL SURGERY 3

Minimum Credits: 1

Maximum Credits: 1

In this course, students will be presented with information related to the management of patients with co-existing medical diseases; patients requiring oral surgery in a hospital setting; the treatment of advanced oral and maxillofacial conditions such as odontogenic infections and facial trauma; and

medical/legal considerations with an emphasis on the informed consent process. This course includes lectures and class discussions.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

ORSUR 5314 - PHYSICAL DIAGNOSIS AND EVALUATION

Minimum Credits: 1

Maximum Credits: 1

In this course, students will be provided the foundational information for taking a medical history leading to a focused physical examination. Students will gain practical knowledge to assess the patients medical condition and make practical clinical decisions based on the patient's situation and medical history. This course integrates knowledge learned in the basic sciences, specifically pharmacology, histology, physiology and anatomy for clinical application. A physical systems approach to associated disease states will be used. Representative examples of normal and disease states will be presented with emphasis on oral manifestations and implications for patient management in the dental setting including medical emergencies. This course will help prepare the student for the subsequent Spring 3rd year Clinical Medicine (DSANE 5342) and Medical Emergencies (DSANE 5344) courses.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

ORSUR 5329 - OMFS ROTATION

Minimum Credits: 2

Maximum Credits: 2

This course will provide the student the opportunity to evaluate, diagnose, treat or manage patients requiring reparative surgical procedures on the hard and soft tissues.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

ORSUR 5341 - PHYSICAL DIAGNOSIS AND EVALUATION

Minimum Credits: 1

Maximum Credits: 1

This course in physical evaluation provides an introduction to the techniques involved in performing a routine history and physical examination. The lecture format is augmented by clinical laboratory sessions and is intended to inform the student of the use of physical evaluation as a tool in the armamentarium of the health care provider.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad Letter Grade

ORSUR 5344 - ORAL SURGERY 4

Minimum Credits: 1

Maximum Credits: 1

This course is a continuation of dentoalveolar surgery techniques and includes discussion of more complex situations including those pertaining to maxillofacial surgery.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

ORSUR 5349 - CLINICAL ORAL SURGERY

Minimum Credits: 3

Maximum Credits: 3

This course is designed to permit the student to be able to evaluate, manage, and treat conditions requiring basic dentoalveolar surgery techniques in

clinical dental practice. It involves the application of the student's knowledge in the basic sciences, physical diagnosis, and risk assessment in the performance of basic oral surgery procedures.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad Letter Grade

ORSUR 5369 - OMFS ROTATION

Minimum Credits: 1

Maximum Credits: 1

This course will provide the student the opportunity to evaluate, diagnose, treat or manage patients requiring reparative surgical procedures on the hard and soft tissues.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

ORSUR 5379 - CLINICAL ORAL SURGERY

Minimum Credits: 3

Maximum Credits: 3

This course is designed to permit the student to be able to evaluate, manage, and treat conditions requiring basic dentoalveolar surgery techniques in clinical dental practice. It involves the application of the student's knowledge in the basic sciences, physical diagnosis, and risk assessment in the performance of basic oral surgery procedures.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad Letter Grade

ORSUR 5388 - CLINICAL ORAL SURGERY 1

Minimum Credits: 2

Maximum Credits: 2

This course is designed to provide clinical experiences in the area of oral surgery for predoctoral dental students. By the end of the fourth year of the curriculum, students will be able to demonstrate competence in providing care to dental patients with oral surgery needs at the level of a general dentist and will participate in a variety of additional experiences to increase skills in caring for the patient with oral surgery needs.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: ABCF

ORSUR 5389 - OMFS ROTATION 3

Minimum Credits: 2

Maximum Credits: 2

This course will provide the student the opportunity to evaluate, diagnose, treat or manage patients requiring reparative surgical procedures on the hard and soft tissue.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

ORSUR 5449 - CLINICAL ORAL SURGERY 2

Minimum Credits: 2

Maximum Credits: 2

This course is designed to permit the student to be able to evaluate, manage and treat conditions requiring basic dentoalveolar surgery techniques in clinical dental practice. It involves the application of the student's knowledge in the basic sciences, physical diagnosis, and risk assessment in the performance of basic oral surgery procedures.

Academic Career: Dental Medicine

Course Component: Clinical
Grade Component: ABCF

ORSUR 5800 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 4
Academic Career: Dental Medicine
Course Component: Directed Studies
Grade Component: Grad HSU Basis

ORSUR 5900 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 4
This independent study course is designed for the pre doctoral dental student who desires to pursue additional knowledge in specific areas of oral and maxillofacial surgery. The content of the course is specified by the student and approved and monitored by a full-time faculty member. The teaching format is designed to encourage independent student experiences with the faculty acting in an advisory capacity with limited personal interaction.
Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

ORSUR 5911 - HOSPITAL EXTERNSHIP

Minimum Credits: 1
Maximum Credits: 1
The participant will participate at MUH department of dental medicine for a two week rotation. During this time they will function with the oral surgery residents in the clinic seeing patients presenting with both inpatient and outpatient emergencies. Participants will also rotate in the operating room for an observational experience with oral and maxillofacial surgery staff and residents.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

ORSUR 5912 - ADVANCED ORAL SURGERY

Minimum Credits: 3
Maximum Credits: 3
This advanced clinical oral surgery elective is a clinical rotation in oral surgery that is restricted to students who are interested in pursuing advanced training in oral and maxillofacial surgery. Students will have the opportunity to participate in and be exposed to oral surgery patients requiring more difficult surgical procedures along with man aging medically compromised patients.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

ORSUR 5913 - BASIC ORAL SURGERY

Minimum Credits: 3
Maximum Credits: 3
This basic oral surgery elective is a clinical rotation in oral surgery where the student has the opportunity to participate in or be exposed to oral surgery patients requiring routine and surgical extractions, minor preprosthetic surgery, impacted teeth, odontogenic infections, oral pathologic lesions, assisting other students and managing medically compromised patients.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

ORSUR 5914 - HOT TOPICS IN DENTISTRY: NEW TREATMENTS, EMERGING TECHNOLOGIES AND CLINICAL DEBATES IN DENTISTRY.

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Dental Medicine

Course Component: Independent Study

Grade Component: Grad HSU Basis

ORSUR 5941 - HOSPITAL EXTERNSHIP

Minimum Credits: 3

Maximum Credits: 3

This course will consist of a rotating externship in oral and maxillofacial surgery at the university of Pittsburgh medical center hospitals. Students will participate in emergency room coverage, ward rounds, ambulatory clinical care and operating room coverage.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

ORSUR 5942 - ADVANCED ORAL SURGERY

Minimum Credits: 3

Maximum Credits: 3

This advanced clinical oral surgery elective is a clinical rotation in oral surgery that is restricted to students who are interested in pursuing advanced training in oral and maxillofacial surgery. Students will have the opportunity to participate in and be exposed to oral surgery patients requiring more difficult surgical extractions, preprosthetic surgery, impacted teeth, odontogenic infections, oral pathologic lesions, and managing medically compromised patients.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

ORSUR 5943 - BASIC ORAL SURGERY

Minimum Credits: 3

Maximum Credits: 3

This basic oral surgery elective is a clinical rotation in oral surgery where the student has the opportunity to participate in or be exposed to oral surgery patients requiring routine and surgical extractions, minor preprosthetic surgery, impacted teeth, odontogenic infections, oral pathologic lesions, and managing medically compromised patients.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

ORSUR 5944 - HOT TOPICS IN DENTISTRY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: DMED

Course Component: Independent Study

Grade Component: Grad HSU Basis

ORSUR 5971 - HOSPITAL EXTERNSHIP

Minimum Credits: 3

Maximum Credits: 3

This course will consist of a rotating externship in oral and maxillofacial surgery at the university of Pittsburgh medical center hospitals. Students

will participate in emergency room coverage, ward rounds, ambulatory clinical care, and operating room coverage.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

Oral Biololgy

ORBIOL 2035 - AGE RELATED CHANGES AND ORAL CAVITY

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ORBIOL 2100 - RESEARCH PRACTICUM

Minimum Credits: 1

Maximum Credits: 3

This course provides an opportunity to gain a working familiarity with the research goal(s) of a designated laboratory and with the experiments designed and methodologies employed to meet this end.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

ORBIOL 2110 - TEACHING PRACTICUM

Minimum Credits: 2

Maximum Credits: 2

This practicum encourages the acquisition and refinement of skills necessary to the delivery of effective instructive presentations in a classroom or laboratory setting. Performance is critiqued by the faculty.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

ORBIOL 2160 - SPECIAL TOPICS

Minimum Credits: 1

Maximum Credits: 3

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

ORBIOL 2191 - PATHOBIOLOGY 1

Minimum Credits: 2

Maximum Credits: 2

This Didactic Conference is designed to introduce graduate students to the basic and advanced concepts on the biological basis of oral diseases and oral manifestations of systemic diseases. Emphasis is given on the molecular basis of diseases. In addition, the control of cell/tissue functions by drugs and host defense during bacterial and viral infections, autoimmune diseases, transplantation, cancer, and immunodeficiency will be discussed. This course will provide an overview of the biological basis of emerging technologies such as genetic engineering, bone remodeling and wound repair, tissue engineering, stem cell technology, as well as genetic basis of human diseases, temporomandibular joint diseases and craniofacial anomalies.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

ORBIOL 2241 - PHYSICAL ANTHROPOLOGY

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ORBIOL 3110 - TEACHING PRACTICUM

Minimum Credits: 2
Maximum Credits: 2
This practicum encourages the acquisition and refinement of skills necessary to the delivery of effective instructive presentations in a classroom or laboratory setting. Performance is critiqued by the faculty.
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad Letter Grade

ORBIOL 3404 - COMPOSITION, STRUCTURE, AND FUNCTION OF MINERALIZED TISSUES

Minimum Credits: 2
Maximum Credits: 2
This is a selective course for predoctoral dental medicine students. Mineralized tissues such as bones, dentin, and enamel are exceptional materials with their properties uniquely optimized to the function. These functional properties are determined by the tissue structure and composition. The aim of this course is to examine how the composition and structural organization of the mineralized tissues affects their functional properties in norm and disease. All registrants for the course are expected to attend all lectures and prepare a presentation and discussion on the assigned research paper. Presentation of the research paper and class participation will be the basis for evaluation.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad Letter Grade

ORBIOL 3501 - MOLECULAR AND CELL BIOLOGY PART 1

Minimum Credits: 4
Maximum Credits: 4
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

ORBIOL 3502 - MOLECULAR AND CELL BIOLOGY PART 2

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

ORBIOL 3503 - ORAL, TISSUES AND EMBRYOLOGY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

ORBIOL 3504 - JOURNAL CLUB

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

ORBIOL 3505 - DIRECTED RESEARCH

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad HSU Basis

ORBIOL 3506 - SKULL ANATOMY AND CEPHALOMETRY

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

ORBIOL 3507 - HEAD & NECK SOFT TISSUE ANATOMY

Minimum Credits: 4
Maximum Credits: 4
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

ORBIOL 3508 - CURRENT TOPICS IN ORAL HEALTH RESEARCH

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ORBIOL 3509 - COMPOSITION, STRUCTURE, AND FUNCTION OF MINERALIZED TISSUES

Minimum Credits: 3
Maximum Credits: 3
Mineralized tissues such as bones, dentin, and enamel are exceptional materials with their properties uniquely optimized to the function. These functional properties are determined by the tissue structure and composition. The aim of this course is to examine how the composition and structural organization of the mineralized tissues affects their functional properties in norm and disease. All registrants for the course are expected to attend all lectures and prepare a presentation and discussion on the assigned research paper. Presentation of the research paper and class participation will be the basis for evaluation.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ORBIOL 3510 - DISSERTATION RESEARCH

Minimum Credits: 1

Maximum Credits: 3

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad HSU Basis

ORBIOL 3511 - THESIS RESEARCH

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

ORBIOL 3512 - CRANIOFACIAL GENETICS

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ORBIOL 3513 - MOLECULAR AND CELL BIOLOGY 1

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ORBIOL 3514 - MOLECULAR AND CELL BIOLOGY 2

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ORBIOL 3515 - GRADUATE INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

ORBIOL 3516 - FOUNDATIONS OF SUCCESSFUL CAREER PLANNING AND DEVELOPMENT PART 1

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

ORBIOL 3517 - EMBRYOLOGY AND ORAL TISSUES

Minimum Credits: 4

Maximum Credits: 4

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ORBIOL 3520 - INTRODUCTION TO SYSTEMIC GROSS ANATOMY

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ORBIOL 3546 - FOUNDATIONS OF SUCCESSFUL CAREER PLANNING AND DEVELOPMENT PART 2

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: PREQ: ORBIOL 3516

ORBIOL 3551 - FOUNDATIONS IN DEVELOPMENT, GENETICS AND BIOCHEMISTRY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ORBIOL 3552 - FOUNDATIONS IN STATISTICS, RESEARCH DESIGN, AND CRITICAL THINKING

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ORBIOL 3553 - FOUNDATIONS IN GENETIC EPIDEMIOLOGY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ORBIOL 3554 - FOUNDATIONS OF CRANIOFACIAL ANATOMY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

ORBIOL 3555 - GENERAL EMBRYOLOGY & CRANIOFACIAL ORGANOGENESIS

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

ORBIOL 3556 - FOUNDATIONS OF CRANIOFACIAL SKELETAL REGENERATION

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ORBIOL 3602 - TMJ REGENERATION AND MECHANICS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ORBIOL 3603 - HUMAN GROWTH AND DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

ORBIOL 3999 - FULL-TIME DISSERTATION CREDITS

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Dental Medicine
Course Component: Thesis Research
Grade Component: Grad SN Basis

ORBIOL 5113 - MOLECULAR AND CELL BIOLOGY 1

Minimum Credits: 3
Maximum Credits: 3
In this course, students will be provided foundational knowledge of molecular structures and the metabolism of biomolecules that underlie normal human health, deviations associated with human disease, and alterations resulting from clinical interventions supporting evidence-based clinical decisions. This course includes lectures with a very pronounced interactive dimension.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad Letter Grade

ORBIOL 5114 - MOLECULAR AND CELL BIOLOGY 2

Minimum Credits: 3

Maximum Credits: 3

This class represents a continued study of the molecular- and cell- biological processes discussed in ORBIOL 5113. In this course, students will be provided foundational knowledge of molecular structures and the metabolism of biomolecules that underlie normal human health, deviations associated with human disease, and alterations resulting from clinical interventions supporting evidence-based clinical decisions. This course includes lectures with a very pronounced interactive dimension.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad Letter Grade

ORBIOL 5115 - MICROBIAL PHYSIOLOGY AND IMMUNOLOGY

Minimum Credits: 3

Maximum Credits: 3

In this course, students will be provided with foundational knowledge of microbiology, focusing on the complex inter-relationships that have evolved between microbes and humans. Topics include the properties of prokaryotic and eukaryotic cells; microbial metabolism; microbial genetics and growth; the control of microbial growth; microbial classification; and the properties of viruses and basic immunology. Emphasis is placed on the role of microorganisms in the development of dental caries and periodontal disease. This course includes lectures and class discussions.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad Letter Grade

ORBIOL 5116 - MOLECULAR AND CELL BIOLOGY 1

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad Letter Grade

ORBIOL 5117 - MOLECULAR AND CELL BIOLOGY 2

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad Letter Grade

ORBIOL 5118 - EMBRYOLOGY AND ORAL TISSUES

Minimum Credits: 4

Maximum Credits: 4

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad Letter Grade

ORBIOL 5120 - BODY TISSUES

Minimum Credits: 2

Maximum Credits: 2

This course introduces students to the microscopic anatomy of the various tissues and organs that make up the human body. The course starts with a description of the structural elements of the cell, followed by a discussion of epithelial, glandular, connective, muscle and nervous tissues. The course continues with coverage of the microscopic features of the cells and tissues that form the various body systems, such as the integumentary, circulatory, respiratory, digestive, endocrine, and urinary systems. The function of the cells found within these tissues and organs is also addressed at an introductory level. Histopathologic correlates are introduced throughout the course, and will help the student understand the link between normal histology and microscopic changes seen in diseased states. The course format is predominantly lecture-based, with an emphasis on histologic slides.

This course provides a strong foundation in histology that will be useful for subsequent courses in Oral Tissues and Embryology (ORBIOL 5130), Systemic Human Physiology (ORBIOL 5141), General and Systemic Pathology (DIASCI 5170), and Oral and Maxillofacial Pathology (DIASCI 5212).

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad Letter Grade

ORBIOL 5125 - GENERAL EMBRYOLOGY AND CRANIOFACIAL ORGANOGENESIS

Minimum Credits: 1

Maximum Credits: 1

In this course, students will be introduced to the principles of human development starting from fertilization extending to postnatal growth of the craniofacial skeleton. The goal of the class is to make the students aware of how developmental processes can impact their daily practice, and can be incorporated into evidence-based decision-making. At the completion of the course, the students will be able to describe human fertilization, organogenesis and craniofacial embryology and will be able to integrate the fundamental knowledge about embryonic and postnatal growth and development and use it to describe how congenital anomalies arise. This course includes lectures and class discussions.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad Letter Grade

ORBIOL 5130 - ORAL TISSUES

Minimum Credits: 3

Maximum Credits: 3

In this course, students will be provided sufficient information for an in-depth understanding of the developmental and structural features of the oral cavity and face so that the student can understand the scientific basis for oral diagnosis and treatment planning. In this course, the basic principles of development, structure, and function are considered as they relate to craniofacial complex. Students will relate concepts from other disciplines i.e., anatomy, physiology, biochemistry, to oral histology and common clinical procedures. This course includes lectures and class discussions.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad Letter Grade

ORBIOL 5140 - SYSTEMIC GROSS ANATOMY

Minimum Credits: 4

Maximum Credits: 4

This is a gross anatomy course for predoctoral dental students that presents the anatomy of the human body from a systems-based approach using lecture and laboratory formats. The primary educational goal of this course is to instruct predoctoral dental students in gross anatomy so that they will have a clear and lasting understanding of the anatomical concepts and relationships that are prerequisites for future courses in their education and for the years of practice that will follow. The course will provide students with an in-depth knowledge of, and appreciation for, the gross anatomy of the human body, particularly those portions directly involved in the practice of dentistry.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

ORBIOL 5141 - SYSTEMIC HUMAN PHYSIOLOGY 1

Minimum Credits: 3

Maximum Credits: 3

As the first of two courses in the systemic Human Physiology series, this course is organized to provide a basic foundation for the dental student that explains 1) how each organ functions in the body; and 2) how all the organs work together as one functional unit to maintain body homeostasis with a recognition that any deviations from this normal organ functions would lead to organ failure of these systems. The topics covered in the systemic Human Physiology 1 course include: nervous system, muscular system, cardiovascular system, urinary system and respiratory organ system. Oral implications of systemic physiology are introduced. The goals of the course are therefore to provide an opportunity for the dental students to learn the principles of cellular and systemic organ functions; apply these principles and concepts to explain the significance of normal human physiology; and identify deviation(s) from normal organ functions that can affect dental treatments, thus establishing a foundation for the practice of dental

Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad Letter Grade

ORBIOL 5142 - THE SKULL: BASIC AND APPLIED ANATOMY

Minimum Credits: 2

Maximum Credits: 2

In this course, students will be instructed on the anatomy of the skull so that they have a clear and lasting understanding of the anatomical concepts and relationships essential for the practice of dentistry. To this end, this course will focus on the gross anatomical structure of the skull and the clinical application of this anatomical knowledge. Skeletal elements will be presented during class lectures and reinforced by laboratory and museum specimens. Concepts important in clinical dentistry will be emphasized; some of these include the identification of bony landmarks used in surgical procedures, local anesthesia, radiographic diagnostics, and orthodontic treatment planning and evaluation.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

ORBIOL 5143 - HEAD AND NECK SOFT TISSUE ANATOMY

Minimum Credits: 4

Maximum Credits: 4

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

ORBIOL 5144 - SYSTEMIC HUMAN PHYSIOLOGY 2

Minimum Credits: 3

Maximum Credits: 3

In this coursework, we will discuss the fundamental principles and concepts that govern each organ and organ system functions in the human body and their integration to maintain homeostasis, as well as some clinical aspects of failure of these systems. The organ systems covered in this course include: sensory, gastrointestinal tract and endocrine systems that include pituitary, thyroid, parathyroid, insulin/glucagon/pancreas, male and female reproduction, and metabolism and temperature regulation. The goal of the course is therefore to provide an opportunity for the dental students to know the principles of cellular and systemic human physiology, appreciate the significance of normal physiology, to understand pharmacology and pathology, and ultimately establish a foundation for the practice.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad Letter Grade

ORBIOL 5172 - NUTRITION

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad Letter Grade

ORBIOL 5174 - CRANIOFACIAL GENETICS

Minimum Credits: 4

Maximum Credits: 4

This course will present students with several scenarios where genetics has a measurable contribution to the etiology of dental disease, and they will gain a general appreciation of the importance of human/molecular genetics in the context of society today.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad Letter Grade

ORBIOL 5175 - INFECTIOUS DISEASES/IMMUNOLOGY LAB

Minimum Credits: 0

Maximum Credits: 0

Academic Career: Dental Medicine

Course Component: Practicum

Grade Component: No Grade Required

ORBIOL 5176 - IMMUNOLOGY

Minimum Credits: 2

Maximum Credits: 2

In this course, students will focus on the structure and function of the immune system as well as on the major human infectious diseases. Microbial Physiology and Immunology I (ORBIOL 5115) is a required prerequisite. Emphasis is placed on the role of microorganisms in the development of dental caries and periodontal disease. This course includes lectures and class discussions.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad Letter Grade

ORBIOL 5214 - PHARMACOLOGY AND THERAPEUTICS

Minimum Credits: 4

Maximum Credits: 4

In this course, students will be provided with foundational knowledge of physiologic pharmacology. The course is oriented to second year dental students to establish the basis for safe and effective dental therapeutics. This course is team taught with faculty from the School of Pharmacy including: Dr. Sharon Corey, Dr. Beth Minnigh, and Dr. Michael A. Zemaitis. This course includes lectures and class discussions.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad Letter Grade

ORBIOL 5244 - CRANIOFACIAL GENETICS

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

ORBIOL 5340 - CURRENT TOPICS IN ORAL HEALTH RESEARCH

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF with +/- Values

ORBIOL 5800 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 3

Academic Career: Dental Medicine

Course Component: Directed Studies

Grade Component: Grad HSU Basis

ORBIOL 5817 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Dental Medicine
Course Component: Directed Studies
Grade Component: Grad HSU Basis

ORBIOL 5847 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 3
Undergraduate dental student who desires to pursue research interests in basic science. These areas include any one of the following: immunology, microbiology, nutrition or oral biology. The content of the course is specified by the student and this directed study is designed for the approved by the course director. The teaching format is designed to teach the student specific knowledge or skills of research using enhanced faculty interaction and personal contact.
Academic Career: Dental Medicine
Course Component: Directed Studies
Grade Component: Grad HSU Basis

ORBIOL 5877 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Dental Medicine
Course Component: Directed Studies
Grade Component: Grad HSU Basis

ORBIOL 5878 - COMPETING FOR FACULTY POSITIONS IN DENTAL SCHOOLS

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

ORBIOL 5900 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 3
This course is designed to provide the student with an opportunity to conduct in-depth study in a particular subject area of their choice.
Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

ORBIOL 5912 - ADVANCED ORAL HISTORY

Minimum Credits: 2
Maximum Credits: 2
This course will consist of two parts. The first part will be lecture format covering the structure and development of the oral cavity. The second part will be a journal club format with presentations and discussions of recent reviews or journal articles relating to the course topic.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

ORBIOL 5913 - CURRENT TOPICS IN TMJ

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

ORBIOL 5914 - CLINICAL GERIATRICS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

ORBIOL 5931 - AGING AND ORAL HEALTH

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Seminar
Grade Component: Grad HSU Basis

ORBIOL 5940 - SURVIVAL SKILLS FOR A CAREER IN DENTAL RESEARCH

Minimum Credits: 2
Maximum Credits: 2
The focus of this course will be applied and, as such, students will be required to read and discuss scientific literature and other materials. Particular emphasis will be placed on the process of defining ideas and hypotheses. As a result, students will understand how research is planned, supported and published.
Academic Career: Dental Medicine
Course Component: Seminar
Grade Component: Grad HSU Basis

ORBIOL 5942 - AGE RELATED CHANGES AND ORAL CAVITY

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

ORBIOL 5943 - SOFT TISSUE HEAD AND NECK ANATOMY TEACHING PRACTICUM

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

ORBIOL 5944 - COMPOSITION OF MINERALIZED TIS

Minimum Credits: 2
Maximum Credits: 2
Mineralized tissues such as bones, dentin, and enamel are exceptional materials with their properties uniquely optimized to the function. These functional properties are determined by the tissue structure and composition. The aim of this course is to examine how the composition and structural

organization of the mineralized tissues affects their functional properties in norm and disease. All registrants for the course are expected to attend all lectures and prepare a presentation and discussion on the assigned research paper. Presentation of the research paper and class participation will be the basis for evaluation.

Academic Career: DMED

Course Component: Lecture

Grade Component: Grad Letter Grade

ORBIOL 5951 - SYSTEMS GROSS ANATOMY TEACHING PRACTICUM

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Dental Medicine

Course Component: Practicum

Grade Component: Grad HSU Basis

ORBIOL 5977 - CRANIOFACIAL GENETICS TEACHING PRACTICA

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Dental Medicine

Course Component: Practicum

Grade Component: Grad HSU Basis

ORBIOL 5999 - DEAN'S SUMMER RESEARCH PROGRAM

Minimum Credits: 3

Maximum Credits: 3

This course is for students who are concurrently enrolled in the Dean's Summer Research Program with the School of Dental Medicine and the Biomedical Masters Program.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad HSU Basis

Oral Medicine and Pathology

OMP 5817 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 3

This course will provide the student the opportunity to do research in an area of oral medicine/pathology of mutual interest to the faculty and student.

Academic Career: Dental Medicine

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

OMP 5847 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 3

This course will provide the students with the opportunity to do research in an area of oral medicine/pathology of mutual interest to the faculty and student.

Academic Career: Dental Medicine

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

Organization Studies

BORG 2060 - INDEP STUDY IN ORGNIZTN BEHAVIOR

Minimum Credits: 1

Maximum Credits: 6

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BORG 2061 - INDEPENDENT STUDY IN ORGANIZATIONAL BEHAVIOR 2

Minimum Credits: 1

Maximum Credits: 9

Self-designed elective course in organizational behavior

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BORG 2402 - LEADING PEOPLE IN HEALTHCARE ORGANIZATIONS

Minimum Credits: 3

Maximum Credits: 3

The effective management of people is a critical component of organizational competitiveness. This course addresses problems and issues concerning leadership, interpersonal effectiveness, and challenges for managers in the 21st century

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BORG 3005 - SEMINAR ON INNOVATION AND ORGANIZATIONAL CHANGE: A MICRO-LEVEL PERSPECTIVE

Minimum Credits: 3

Maximum Credits: 3

This seminar focuses on individual-level and team-level behaviors aimed at innovation and change in organizations. We will be exploring topics such as employee voice and proactive behaviors, team diversity and innovation, innovation implementation, creativity, and barriers to change in organizations. The purpose of this course is to examine theory and empirical research in these areas in order to help you to develop skills in developing conceptual models and research questions, as well as understanding, critiquing, and extending theory and research published in top academic journals. Each week we will cover a topic in depth, review a selected set of readings, discuss critical issues relating to theory and research methods, and discuss ways to extend conceptual and empirical models.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BORG 3010 - INDEP STUDY ORGNZTNL STUDIES

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad HSU Basis

BORG 3099 - READINGS ORGANIZATIONAL STUDIES

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

Organiztnl Beh & Human Resrcs

BOAH 2409 - ORGANIZATIONAL BEHAVIOR: LEADERSHIP AND GROUP EFFECTIVENESS

Minimum Credits: 2

Maximum Credits: 2

The effective management of people is a critical component of organizational competitiveness. This course addresses problems and issues concerning leadership, interpersonal effectiveness, and challenges for managers in the 21st century. The student is prepared to manage himself or herself and others in a rapidly-changing global environment. Topics covered include leadership, teamwork, power, politics, and influence.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BOAH 2421 - HUMN RESORC COMPETITIVE ADVNTG

Minimum Credits: 2

Maximum Credits: 2

This course identifies the key role of human resources management in the organization's effort to create value and explores its link with competitive strategy.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BOAH 2401 or BOAH 2409 ; PROG: Katz Graduate School of Business

BOAH 2422 - MANAGING HUMAN RESOURCES IN A GLOBAL ECONOMY

Minimum Credits: 2

Maximum Credits: 2

This course provides an integrative framework for understanding the macro- and micro-level issues that are associated with effective workforce management in a regional and global context. As more and more companies move toward global supply chain management, it is critical to consider the impact that country-level labor factors can have on operating performance and firm competitiveness. Accordingly, the challenges of identifying and integrating pertinent labor-related data for international sourcing decisions will be examined. At the firm level, we will discuss the role of human resources in business strategy formulation and implementation. Emphasis will be placed on best practice in the areas of talent acquisition and development as well as performance management. Relevant topical issues such as succession planning, managing large-scale reductions-in-force, and managing expatriate personnel may be addressed. With a focus on how to best allocate responsibilities for HR within the organization and effectively deliver HR services, the implications of such developments as HR-process outsourcing, EHR, internal restructuring, and the possibility of transforming the HR function from a cost center into a profit center will be discussed. The course is designed to accomplish three fundamental learning objectives: improved understanding of how traditional and contemporary HR practices can impact organizational effectiveness. Enhanced awareness of the substantial labor-market differences that exist across countries (economic, cultural, regulatory); and greater sensitivity to the challenges of managing international value-and operating-chains to enhance competitive advantage.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BOAH 2423 - MANAGING HUMAN CAPITAL

Minimum Credits: 3

Maximum Credits: 3

This course examines the design and use organizational human resources systems to achieve market advantage. Emphasis is placed on exploring the decisions managers must make to obtain an appropriate number of qualified employees and to motivate them to achieve organizational competitive objectives. Participants examine the influences of managing technologies, public policy directives and international competitive requirements as they affect decisions relating to staffing, compensation, employee relations and human resource development.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BOAH 2401 or 2409; PROG: Joseph M. Katz Grad Sch Bus (PKATZ)

BOAH 2424 - MANAGING HUMAN RESOURCES IN A GLOBAL ECONOMY

Minimum Credits: 2

Maximum Credits: 2

This course will provide an overview of human resource management and development policies and practices in different continents, such as Asia, America, Africa, Europe, and the South Pacific. The course will focus on managing workforce in global setting, human resource management and development in international joint ventures and global corporations. Topics include: hiring and selecting, training and developing, compensating, motivating, performance appraising, retaining in an international setting, cross cultural management, and the development of global managers. We will attempt to: develop a conceptual and critical understanding of human capital and global human resources management; develop familiarity with policies and practices of human resources management around the globe; and develop an agenda of future global managers.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BOAH 2456 - MANAGING OFFSHORE OUTSOURCING

Minimum Credits: 2

Maximum Credits: 2

This course provides an in-depth assessment of the operational and legal challenges that must be addressed to effectively outsource a company's business processes to overseas locations. The fundamental learning objective is to enhance students' functional skills across the life cycle of these initiatives from process identification and internal restructuring through contract negotiations and ongoing vendor management. We begin with a review of existing frameworks and tools to identify processes that are viable candidates for external sourcing (e.g., Business mapping notation, business process reengineering principles). The consolidation of business processes into domestic shared-service units or captive centers abroad will be treated as a transition stage to more extensive co-sourcing and outsourcing relationships with third-party vendors. From there, students will examine the challenges of developing and executing an offshoring strategy and structuring effective relationships with foreign-based, outsourcing partners. Special attention will be focused on the performance management and corporate social responsibility aspects of these initiatives. A multifunctional perspective is maintained throughout, examining outsourcing trends and best practice in the areas of finance & accounting, HRM, procurement, call center management/customer support, and it.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BOAH 2401 or BOAH 2409 ; PROG: Katz Grad School of Business (KGSB)

BOAH 2517 - INTERPERSONAL SKILLS MANAGERS 1

Minimum Credits: 1.5

Maximum Credits: 1.5

Explicit training in interpersonal skills; presenting oneself to others, effective verbal and nonverbal communication, persuasion, and the use of interpersonal resources to become an effective manager and leader.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BOAH 2519 - NEGOTIATIONS 1

Minimum Credits: 2

Maximum Credits: 2

The purpose of this course is to explore the nature of negotiations so that we might become better bargainers. To be an effective manager, an individual must develop negotiation and bargaining skills. Although the contexts change, managers are regularly involved in bargaining.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BOAH 2401; CREQ: BOAH 2520; PROG: Katz Graduate School of Business

BOAH 2521 - STAFFING ORGANIZATIONS

Minimum Credits: 2

Maximum Credits: 2

Designed to develop an advanced framework for the analysis and understanding of organizational personnel systems. There is an in-depth exploration of human resource planning and related programmatic activity which may include job analysis, performance appraisal, and some aspects of human resources development.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BOAH 2409; PROG: Katz Graduate School of Business

BOAH 2522 - COMPENSATION

Minimum Credits: 2

Maximum Credits: 2

In-depth exploration of the personnel selection and compensation elements of the overall human resources system which are examined in the context of a proactive planning system for developing and utilizing organizational human resources.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: CREQ: BOAH 2521; PROG: Katz Graduate School of Business

BOAH 2527 - CROSS CULTURAL DIMN INT'L MGT

Minimum Credits: 2

Maximum Credits: 2

This course entails the study of the behavior of people in organizations located in different cultures and nations. It focuses on the description and explanation of organization behavior across countries and cultures, and most importantly, the interaction of people from different countries working within the same organization or the same work environment. Relevant topics include the roles of language, education, religion, values, and social organization in influencing human behavior.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BOAH 2401 or BOAH 2409; PROG: Joseph M. Katz Grad Sch Bus

BOAH 2528 - ORGANIZATIONAL BEHAVIOR- COMMUNICATING STRATEGICALLY

Minimum Credits: 1.5

Maximum Credits: 1.5

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BOAH 2532 - NEGOTIATIONS, TEAMWORK AND CHANGE 1

Minimum Credits: 2

Maximum Credits: 2

We negotiate daily in a variety of contexts: business, family, and social. Negotiation serves several purposes: (1) establishing new or renewing old relationships; (2) changing behaviors and expectations; and (3) resolving disputes. A key goal of this course is to learn the techniques of effective negotiating and collaborative problem solving. Successful negotiations and teamwork reduce costs, improve outcomes, and build constructive relationships. Negotiations are part of a broader set of exchanges that take place within and across organizational contexts. This is the first half of a two-part course on negotiations, teamwork, and change. This course will introduce you to effective techniques for negotiating and collaborative decision making in dyads, as well as in groups. It will further cover the methods for negotiating, facilitating, and leading change in organizational contexts. This is an experiential course and you will be involved directly in negotiating, leveraging team dynamics, and facilitating change in a range of contexts. These experiences will involve a host of tangible and not-so-tangible outcomes, ranging from monetary terms and conditions to matters of goodwill, trust, and information-sharing.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BOAH 2401 or 2409; PROG: Katz Graduate School of Business

BOAH 2537 - CONFLICT RESOLUTION IN THE WORKPLACE 1

Minimum Credits: 2

Maximum Credits: 2

This course is designed to build on the skills you learned in the prerequisite negotiation course (BOAH 2532 Negotiations, Teamwork and Change) to improve your skills in analyzing and resolving disputes in a variety of settings. Most of the lessons and principles covered in the course are not necessarily specific or unique to business-related or managerial applications, even though that will be the focal setting of study. A basic premise of the course is that while analytic skills are needed to discover optimal solutions to problems, a broad array of conflict management skills are often needed to get these solutions accepted and implemented. The course will allow participants the opportunity to develop these skills experientially, where considerable emphasis will be placed on learning from simulations and case analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BOAH 2532; PROG: Katz Graduate School of Business

BOAH 2551 - PROJECT COURSE IN ORGANIZATIONAL LEADERSHIP 1

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BOAH 2552 - PROJECT COURSE IN ORGANIZATIONAL LEADERSHIP 2

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BOAH 2801 - ORG BEHAV: LDRSHP & GRP EFFECT

Minimum Credits: 3

Maximum Credits: 3

The objective of this course is to help students understand the basic structure and substance of a firm's reports from a user's point of view.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BOAH 3002 - FOUNDATIONS OF ORGANIZATIONAL BEHAVIOR

Minimum Credits: 3

Maximum Credits: 3

This seminar focuses on individual and group behavior in organizations. We will be exploring the primary topics in organizational behavior, including person-organization interactions, motivation, employment relationships, leader-member influences, and group processes. Each week we will cover an area in depth, explore major theories, review a selected set of readings, and discuss some of the critical issues that the readings raise with regard to both theory and research methods.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Orthodontics & Dentofacial Orthopedics

ODO 2011 - GRADUATE ORTHODONTIC CLINIC 1

Minimum Credits: 2

Maximum Credits: 2

Clinical cases are diagnosed by the graduate resident and presented to a faculty member for review. Treatment is on a monthly basis with a variety of appliances utilized. Faculty is responsible for all patients but, residents are encouraged to accept increasing responsibility for the patients' treatment.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

ODO 2012 - GRADUATE ORTHODONTIC CLINIC 2

Minimum Credits: 2

Maximum Credits: 2

Clinical cases are diagnosed by the graduate resident and presented to a faculty member for review. Treatment is on a monthly basis with a variety of appliances utilized. Faculty is responsible for all patients but, residents are encouraged to accept increasing responsibility for the patient's treatment.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

ODO 2013 - GRADUATE ORTHODONTIC CLINIC 3

Minimum Credits: 2

Maximum Credits: 2

Clinical cases are diagnosed by the graduate resident and presented to a faculty member for review. Treatment is on a monthly basis with a variety of appliances utilized. Faculty is responsible for all patients but, residents are encouraged to accept increasing responsibility for the patients treatment.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

ODO 2014 - GRADUATE ORTHODONTIC CLINIC 4

Minimum Credits: 3

Maximum Credits: 3

Clinical cases are diagnosed by the graduate resident and presented to a faculty member for review. Treatment is on a monthly basis with a variety of appliances utilized. Faculty is responsible for all patients but, residents are encouraged to accept increasing responsibility for the patients' treatment.

Academic Career: Graduate

Course Component: Clinical
Grade Component: Grad LG/SU3 Basis

ODO 2015 - GRADUATE ORTHODONTIC CLINIC 5

Minimum Credits: 3

Maximum Credits: 3

Clinical cases are diagnosed by the graduate resident and presented to a faculty member for review. Treatment is on a monthly basis with a variety of appliances utilized. Faculty is responsible for all patients but, residents are encouraged to accept increasing responsibility for the patient's treatment.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

ODO 2016 - GRADUATE ORTHODONTIC CLINIC 6

Minimum Credits: 3

Maximum Credits: 3

Clinical cases are diagnosed by the graduate resident and presented to a faculty member for review. Treatment is on a monthly basis with a variety of appliances utilized. Faculty is responsible for all patients but, residents are encouraged to accept increasing responsibility for the patients treatment.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

ODO 2020 - MODERN COMPUTING ORTHODONTICS

Minimum Credits: 0

Maximum Credits: 0

The course in modern computing in orthodontics is designed to introduce the student to computer hard and software currently in use in the department of orthodontics and dentofacial orthopedics. The clinical application of current imaging, database and record storing software will be introduced in preparation for use in patient care.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

ODO 2021 - CLINICAL PEDIATRIC ORTHODONTICS 1

Minimum Credits: 1

Maximum Credits: 1

The clinical pediatric orthodontics course series is designed to afford the resident in pediatric dentistry the clinical experiences necessary to ensure competency in diagnosis of abnormalities in the developing dentition and treatment of those conditions which can be corrected or significantly improved by early utilization of limited procedures. Residents will be afforded the opportunity to participate in the provision of comprehensive, multidisciplinary dental care under supervision of faculty from the department of pediatric dentistry and the department of orthodontics and dentofacial orthopedics.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

ODO 2022 - CLINICAL PEDIATRIC ORTHODONTICS 2

Minimum Credits: 1

Maximum Credits: 1

The clinical pediatric orthodontics course series is designed to afford the resident in pediatric dentistry the clinical experiences necessary to ensure competency in diagnosis of abnormalities in the developing dentition and treatment of those conditions which can be corrected or significantly improved by the early utilization of limited procedures. Residents will be afforded the opportunity to participate in the provision of comprehensive, multidisciplinary dental care under supervision of faculty from the department of pediatric dentistry and the department of orthodontics and dentofacial orthopedics.

Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis

ODO 2024 - CLINICAL PEDIATRIC ORTHODONTICS 4

Minimum Credits: 1

Maximum Credits: 1

The clinical pediatric orthodontics course series is designed to afford the resident in pediatric dentistry the clinical experiences necessary to ensure competency in diagnosis of abnormalities in the developing dentition and treatment of those conditions which can be corrected or significantly improved by the early utilization of limited procedures. Residents will be afforded the opportunity to participate in the provision of comprehensive, multidisciplinary dental care under supervision of faculty from the department of pediatric dentistry and the department of orthodontics and dentofacial orthopedics.

Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis

ODO 2025 - CLINICAL PEDIATRIC ORTHODONTICS 5

Minimum Credits: 1

Maximum Credits: 1

The clinical pediatric orthodontics course series is designed to afford the resident in pediatric dentistry the clinical experiences necessary to ensure competency in diagnosis of abnormalities in the developing dentition and treatment of those conditions which can be corrected or significantly improved by the early utilization of limited procedures. Residents will be afforded the opportunity to participate in the provision of comprehensive, multidisciplinary dental care under supervision of faculty from the department of pediatric dentistry and the department of orthodontics and dentofacial orthopedics.

Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis

ODO 2027 - CLINICAL PEDIATRIC ORTHODONTICS 3

Minimum Credits: 1

Maximum Credits: 1

The clinical pediatric orthodontics course series is designed to afford the resident in pediatric dentistry the clinical experience necessary to ensure competency in diagnosis of abnormalities in the developing dentition and treatment of those conditions which can be corrected or significantly improved by the early utilization of limited procedures. Clinical experiences in this course series will be gained through patient screenings in the department of pediatric dentistry and the cleft palate-craniofacial center, as well as through rendering clinical care in the department of orthodontics and dentofacial orthopedics. Residents enrolled in this course will be afforded the opportunity to participate in the provision of comprehensive, multidisciplinary dental care under the supervision of faculty from the department of pediatric dentistry, the department of orthodontics and dentofacial orthopedics as well as attending professionals from the cleft palate-craniofacial center. The course is intended for residents enrolled in the advanced specialty education program in pediatric dentistry.

Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

ODO 2031 - ADVANCED ORTHODONTIC CLINIC 1

Minimum Credits: 4

Maximum Credits: 4

Clinical cases treated in the areas of (1) maxillo-facial surgical orthodontic treatment, (2) growth modification cases, (3) congenital syndromes including cleft palate. The resident treats the patient under the guidance of a faculty team that may include maxillo-facial surgery, prosthodontics, periodontics, psychology, speech pathology, and orthodontics.

Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad LG/SU3 Basis

ODO 2032 - ADVANCED ORTHODONTIC CLINIC 2

Minimum Credits: 4

Maximum Credits: 4

Clinical cases treated in the areas of (1) maxillo-facial surgical orthodontic treatment, (2) growth modification cases, (3) congenital syndromes including cleft palate. The resident treats the patient under the guidance of a faculty team that may include maxillo-facial surgery, prosthodontics, periodontics, psychology, speech pathology, and orthodontics.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

ODO 2033 - ADVANCED ORTHODONTIC CLINIC 3

Minimum Credits: 2

Maximum Credits: 2

Clinical cases treated in the areas of (1) maxillo-facial surgical orthodontic treatment, (2) growth modification cases, (3) congenital syndromes including cleft palate. The resident treats the patient under the guidance of a faculty team that may include maxillo-facial surgery, prosthodontics, periodontics, psychology, speech pathology, and orthodontics.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

ODO 2041 - BIOMECHANICAL ORTHODONTICS 1

Minimum Credits: 0.5

Maximum Credits: 0.5

This course is an introduction to solid mechanics and materials science and emphasis is placed towards the application to orthodontic structure. Also special emphasis is placed upon the application of mechanics principles to the analysis, materials selection, and design of orthodontic elements and orthodontic appliances.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ODO 2042 - BIOMECHANICAL ORTHODONTICS 2

Minimum Credits: 0.5

Maximum Credits: 0.5

This course is a continuation of the study of orthodontic appliance systems, to include fixed, removable and complex appliances. Special emphasis is placed upon the design of orthodontic appliances to meet unique patient treatment needs.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ODO 2051 - ORTHODONTIC LAB TECHNIQUES 1

Minimum Credits: 5

Maximum Credits: 5

The objective of this course is to train the graduate residents in all phases of arch wire formation and mechanics concerned with the application of any current, acceptable orthodontic mechanics. The clinical manifestations of these appliances are taught. The use and proper construction of extra oral anchorage appliances and the full range of intra oral anchorage elastic systems is taught.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

ODO 2056 - ORTHODONTIC DIAGNOSIS AND TREATMENT PLANNING 1 LABORATORY

Minimum Credits: 0
Maximum Credits: 0
Academic Career: Graduate
Course Component: Credit Laboratory
Grade Component: Grad HSU Basis

ODO 2057 - ORTHODONTIC DIAGNOSIS AND TREATMENT PLANNING 1

Minimum Credits: 1
Maximum Credits: 1

This course is designed to provide the first year student in orthodontics with a fundamental understanding of the concepts of orthodontic diagnosis and treatment planning. In the first term students will acquire knowledge pertaining to orthodontic diagnostic records, the etiology of malocclusion and various treatment modalities common to the practice of orthodontics.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2058 - ORTHO DIAG & TREATMENT PLAN 2

Minimum Credits: 1
Maximum Credits: 1

The second term of orthodontic diagnosis and treatment planning provides students with the opportunity to apply diagnostic and treatment planning skills acquired in the first term to selected orthodontic cases. The application of independent thought in case analysis will be stressed.

Academic Career: GRAD
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

ODO 2059 - ORTHODONTIC DIAGNOSIS AND TREATMENT PLANNING 3

Minimum Credits: 1
Maximum Credits: 1

The third term of orthodontic diagnosis and treatment planning provides students with the opportunity to apply diagnostic and treatment planning skills acquired in the first two sections of the course. Students will have additional opportunities to apply diagnostic and treatment planning skills previously acquired to additional orthodontic cases. The application of independent thought in case analysis is stressed.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

ODO 2060 - ORTHODONTICS SEMINAR 1

Minimum Credits: 1
Maximum Credits: 1

These seminars are devoted to differential diagnosis, treatment planning (active and retention phases), evaluation of treatment progress, and short and long range treatment results. Treatment objectives and methods are discussed by the students and faculty.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2061 - ORTHODONTICS SEMINAR 2

Minimum Credits: 0
Maximum Credits: 0

These seminars are devoted to differential diagnosis, treatment planning (active and retention phases), evaluation of treatment progress, and short and long range treatment results. Treatment objectives and methods are discussed by the students and faculty.

Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

ODO 2062 - ORTHODONTICS SEMINAR 3

Minimum Credits: 2

Maximum Credits: 2

These seminars are devoted to differential diagnosis, treatment planning (active and retention phases), evaluation of treatment progress, and short and long range treatment results. Treatment objectives and methods are discussed by the student and faculty.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ODO 2063 - ORTHODONTICS SEMINAR 4

Minimum Credits: 1

Maximum Credits: 1

These seminars are devoted to differential diagnosis, treatment planning (active and retention phases), evaluation of treatment progress, and short and long range treatment results. Treatment objectives and methods are discussed by the students and faculty.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ODO 2064 - ORTHODONTICS SEMINAR 5

Minimum Credits: 0

Maximum Credits: 0

These seminars are devoted to differential diagnosis, treatment planning (active and retention phases), evaluation of treatment progress, and short and long range treatment results. Treatment objectives and methods are discussed by the students and faculty.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

ODO 2065 - ORTHODONTICS SEMINAR 6

Minimum Credits: 1

Maximum Credits: 1

These seminars are devoted to differential diagnosis, treatment planning (active and retention phases), evaluation of treatment progress, and short and long range treatment results. Treatment objectives and methods are discussed by the students and faculty.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

ODO 2066 - ORTHODONTICS SEMINAR 7

Minimum Credits: 1

Maximum Credits: 1

These seminars are devoted to differential diagnosis, treatment planning (active and retention phases), evaluation of treatment progress, and short and long range treatment results. Treatment objectives and methods are discussed by the students and faculty.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ODO 2067 - ORTHODONTICS SEMINAR 8

Minimum Credits: 0

Maximum Credits: 0

These seminars are devoted to differential diagnosis, treatment planning (active and retention phases), evaluation of treatment progress, and short and long range treatment results. Treatment objectives and methods are discussed by the students and faculty.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

ODO 2068 - ORTHODONTICS SEMINAR 9

Minimum Credits: 1

Maximum Credits: 1

These seminars are devoted to differential diagnosis, treatment planning (active and retention phases), evaluation of treatment progress, and short and long range treatment results. Treatment objectives and methods are discussed by the students and faculty.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ODO 2069 - ORTHODONTICS SEMINAR 10

Minimum Credits: 1

Maximum Credits: 1

Seminars devoted to differential diagnosis, treatment planning (active and retention phases), evaluation of treatment progress and short and long term treatment results. Treatment objective and methods are discussed by the students and faculty.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ODO 2071 - DENTOFACIAL PROGRAM 1

Minimum Credits: 1

Maximum Credits: 1

This seminar emphasizes the team approach for the treatment of patients with congenital and/or acquired deviations with manifestations in the craniofacial complex. Case presentations and group discussion is the format utilized. The differential diagnosis and treatment planning of these patients are evaluated and recommendations for treatment made.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

ODO 2072 - DENTOFACIAL PROGRAM 2

Minimum Credits: 1

Maximum Credits: 1

This seminar emphasizes the team approach for the treatment of patients with congenital and/or acquired deviations with manifestations in the craniofacial complex. Case presentations and group discussion is the format utilized. The differential diagnosis and treatment planning of these patients are evaluated and recommendations for treatment made.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ODO 2073 - DENTOFACIAL PROGRAM 3

Minimum Credits: 0

Maximum Credits: 0

This course emphasizes the team approach to the treatment of patients with congenital and/or acquired deviations manifested in the craniofacial complex. Case presentations with group discussions is the format utilized. The differential diagnosis and treatment planning of these patients is

completed and recommendations for treatment made.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

ODO 2074 - DENTOFACIAL PROGRAM 4

Minimum Credits: 1

Maximum Credits: 1

This seminar emphasizes the team approach for the treatment of patients with congenital and/or acquired deviations with manifestations in the craniofacial complex. Case presentations and group discussion is the format utilized. The differential diagnosis and treatment planning of these patients are evaluated and recommendations for treatment made.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

ODO 2075 - DENTOFACIAL PROGRAM 5

Minimum Credits: 1

Maximum Credits: 1

This seminar emphasizes the team approach for the treatment of patients with congenital and/or acquired deviations with manifestations in the craniofacial complex. Case presentations and group discussion is the format utilized. The differential diagnosis and treatment planning of these patients are evaluated and recommendations for treatment made.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ODO 2076 - DENTOFACIAL PROGRAM 6

Minimum Credits: 0

Maximum Credits: 0

This course emphasizes the team approach to the treatment of patients with congenital and/or acquired deviations manifested in the craniofacial complex. Case presentations with group discussions is the format utilized. The differential diagnosis and treatment planning of these patients is completed and recommendations for treatment made.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

ODO 2077 - DENTOFACIAL PROGRAM 7

Minimum Credits: 1

Maximum Credits: 1

This seminar emphasizes the team approach for the treatment of patients with congenital and/or acquired deviations with manifestations in the craniofacial complex. Case presentations and group discussion is the format utilized. The differential diagnosis and treatment planning of these patients are evaluated and recommendations for treatment made.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

ODO 2078 - DENTOFACIAL PROGRAM 8

Minimum Credits: 1

Maximum Credits: 1

This course emphasizes the team approach to the treatment of patients with congenital and/or acquired deviations manifested in the craniofacial complex. Case presentations with group discussions is the format utilized. The differential diagnosis and treatment planning of these patients is completed and recommendations for treatment made.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2081 - SCIENTIFIC ORTHODONTIC LITERATURE 1

Minimum Credits: 1

Maximum Credits: 1

Review of literature related to growth and orthodontic treatment modalities. Research and basic science areas related to orthodontics are presented, critically reviewed, analyzed and discussed by all residents with faculty members acting as moderators.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ODO 2082 - SCIENTIFIC ORTHODONTIC LITERATURE 2

Minimum Credits: 1

Maximum Credits: 1

Review of literature related to growth and orthodontic treatment modalities. Research and basic science areas related to orthodontics are presented, critically reviewed, analyzed and discussed by all residents with faculty members acting as moderators.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

ODO 2083 - SCIENTIFIC ORTHODONTIC LITERATURE 3

Minimum Credits: 1

Maximum Credits: 1

Review of literature related to growth and orthodontic treatment modalities. Research and basic science areas related to orthodontics are presented, critically reviewed, analyzed and discussed by all residents with faculty members acting as moderators.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ODO 2084 - SCIENTIFIC ORTHODONTIC LITERATURE 4

Minimum Credits: 1

Maximum Credits: 1

Review of literature related to growth and orthodontic treatment modalities. Research and basic science areas related to orthodontics are presented, critically reviewed, analyzed and discussed by all residents with faculty members acting as moderators.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ODO 2085 - SCIENTIFIC ORTHODONTIC LITERATURE 5

Minimum Credits: 0

Maximum Credits: 0

Review of literature related to growth and orthodontic treatment modalities. Research and basic science areas related to orthodontics are presented, critically reviewed, analyzed and discussed by all residents with faculty members acting as moderators.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ODO 2086 - SCIENTIFIC ORTHODONTIC LITERATURE 6

Minimum Credits: 0

Maximum Credits: 0

Review of literature related to growth and orthodontic treatment modalities. Research and basic science areas related to orthodontics are presented, critically reviewed, analyzed and discussed by all residents with faculty members acting as moderators.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ODO 2087 - SCIENTIFIC ORTHODONTIC LITERATURE 7

Minimum Credits: 0

Maximum Credits: 0

Review of literature related to growth and orthodontic treatment modalities. Research and basic science areas related to orthodontics are presented, critically reviewed, analyzed and discussed by all residents with faculty members acting as moderators.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

ODO 2088 - SCIENTIFIC ORTHODONTIC LITERATURE 8

Minimum Credits: 1

Maximum Credits: 1

Review of literature related to growth and orthodontic treatment modalities. Research and basic science areas related to orthodontics are presented, critically reviewed, analyzed and discussed by all residents with faculty members acting as moderators.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

ODO 2089 - SCIENTIFIC ORTHODONTIC LITERATURE 9

Minimum Credits: 1

Maximum Credits: 1

Review of literature related to growth and orthodontic treatment modalities. Research and basic science areas related to orthodontics are presented, critically reviewed, analyzed and discussed by all residents with faculty members acting as moderators.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ODO 2090 - ORAL PHYSIOLOGY

Minimum Credits: 1

Maximum Credits: 1

This course in oral physiology attempts to summarize basic aspects of oral neurophysiology as they relate to the everyday practice of orthodontics. The student will achieve an understanding of neural anatomy, the mechanoreceptors in the oral cavity responsible for oral posture and reflexes, systems of central nervous tissue responsible for reflexes, and pattern generation, the functioning of skeletal muscle as an organ system and special adaptations in carnivore and primate jaw-closing muscles, and finally an in-depth understanding of mastication and swallowing.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ODO 2091 - GROWTH AND DEVELOPMENT 1

Minimum Credits: 1

Maximum Credits: 1

Objectives of this course include introducing the resident to the processes of normal growth and development and to enable them to recognize and identify deviations from normal.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2092 - GROWTH AND DEVELOPMENT 2

Minimum Credits: 1

Maximum Credits: 1

Objectives of this course include introducing the resident to the processes of normal growth and development and to enable them to recognize and identify deviations from normal.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ODO 2093 - GROWTH AND DEVELOPMENT 3

Minimum Credits: 1

Maximum Credits: 1

Objectives of this course include introducing the resident to the processes of normal growth and development and to enable them to recognize and identify deviations from normal.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ODO 2117 - DENTOFACIAL DEFORMITIES

Minimum Credits: 2

Maximum Credits: 2

This seminar emphasizes the team approach for the treatment of patients with congenital and or acquired deviations with manifestations in the craniofacial complex. Case presentations and group discussion is the format utilized. The differential diagnosis and treatment planning of these patients are evaluated and recommendations for treatment made.

Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

ODO 2121 - NORMAL AND MALOCCLUSION 1

Minimum Credits: 1

Maximum Credits: 1

This course is intended to provide the resident with the opportunity to critically examine the pertinent dental literature on the subject of occlusion. The course deals with (a) the morphologic relation of the dentition in static occlusion (b) the dynamic relationship of the functioning dentition and (c) the role that the dental occlusion plays in the etiology of TMJ disorders and methodologies utilized in their treatment.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2122 - NORMAL AND MALOCCLUSION 2

Minimum Credits: 1

Maximum Credits: 1

This course is intended to provide the resident with the opportunity to critically examine the pertinent dental literature on the subject of occlusion. This course deals with (a) the morphologic relation of the dentition in static occlusion (b) the dynamic relationship of the functioning dentition and (c) the role that the dental occlusion plays in the etiology of TMJ disorders and methodologies utilized in their treatment.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2123 - NORMAL AND MALOCCLUSION 3

Minimum Credits: 1

Maximum Credits: 1

This course is intended to provide the resident with the opportunity to critically examine the pertinent dental literature on the subject of occlusion. This course deals with (a) the morphologic relation of the dentition in static occlusion (b) the dynamic relationship of the functioning dentition and (c) the role that the dental occlusion plays in the etiology of TMJ disorders and methodologies utilized in their treatment.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ODO 2131 - INTRODUCTION TO ORTHODONTIC RESEARCH 1

Minimum Credits: 1

Maximum Credits: 1

Major goal is to enhance the residents' ability to utilize learned research methodology as a tool in seeking solutions to significant problems related to the field of orthodontics. This course is to guide the residents toward completion of their thesis in order to obtain their md degree and publication of their research. Appropriate form of orthodontic research and ethics involved are also covered.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ODO 2132 - INTRODUCTION TO ORTHODONTIC RESEARCH 2

Minimum Credits: 1

Maximum Credits: 1

Major goal is to enhance the residents' ability to utilize learned research methodology as a tool in seeking solutions to significant problems related to the field of orthodontics. This course is to guide the residents toward completion of their thesis in order to obtain their md degree and publication of their research. Appropriate form of orthodontic research and ethics involved are also covered.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ODO 2133 - INTRODUCTION TO ORTHODONTIC RESEARCH 3

Minimum Credits: 1

Maximum Credits: 1

The introduction to orthodontic research course series is designed to introduce and further the resident in orthodontics and dentofacial orthopedics' course of study toward fulfilling research requirements for a certificate of completion in the specialty. Under the supervision of department's director of research, the resident will identify a research topic, form a research committee, complete a literature review and research proposal, gain institutional review board approval, complete data collection, analyze the data and submit a draft and/or final revision of a scientific paper for peer review.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ODO 2134 - INTRODUCTION TO ORTHODONTIC RESEARCH 4

Minimum Credits: 1

Maximum Credits: 1

The introduction to orthodontic research course series is designed to introduce and further the resident in orthodontics and dentofacial orthopedics' course study toward fulfilling research requirement for a certificate of completion in the specialty. Under supervision of the departments director of research, the resident will identify a research topic, form a research committee, complete a literature review and research proposal, gain institutional review board approval, complete data collection, analyze the data and submit a draft and/or final revision of a scientific paper for peer review.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

ODO 2135 - INTRODUCTION TO ORTHODONTIC RESEARCH 5

Minimum Credits: 1

Maximum Credits: 1

The introduction to orthodontic research course series is designed to introduce and further the resident in orthodontics and dentofacial orthopedics' course study toward fulfilling research requirements for a certificate of completion in the specialty. Under the supervision of the departments director of research, the resident will identify a research topic, form a research committee, complete a literature review and research proposal, gain institutional review board approval, complete data collection, analyze the data and submit a draft and/or final revision of a scientific paper for peer review.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

ODO 2136 - INTRODUCTION TO ORTHODONTIC RESEARCH 6

Minimum Credits: 1

Maximum Credits: 1

The introduction to orthodontic research course series is designed to introduce and further the resident in orthodontics and dentofacial orthopedics' course study toward fulfilling research requirement for a certificate of completion in the specialty. Under the supervision of the departments director of research, the resident will identify a research topic, form a research committee, complete a literature review and research proposal, gain institutional review board approval, complete data collection, analyze the data and submit a draft and/or final revision of a scientific paper for peer review.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

ODO 2140 - CRANIOFACIAL ANOMALIES

Minimum Credits: 2

Maximum Credits: 2

An overview course for first year orthodontic residents and other graduate dental specialty residents. Topics include: etiology of craniofacial anomalies, the role of the geneticist, plastic surgeon, speech and language development person and orthodontist in treating these patients. In addition, the role of the ENT, pediatric dentist and oral and maxillofacial surgeon is discussed.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ODO 2150 - CONTEMPORARY ORTHODONTICS 1

Minimum Credits: 0

Maximum Credits: 0

The course will review the textbook, "contemporary orthodontics", by W. Proffit and H. Fields and the textbook, "orthodontics; current principles and techniques", by Graber, Vanarsdall and Vig. During the course, the orthodontic resident will be introduced to the fundamental concepts of orthodontics that will enable a better understanding of the everyday orthodontic decisions, practice, and techniques.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

ODO 2151 - CONTEMPORARY ORTHODONTICS 2

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2161 - ETHICS IN ORTHODONTICS

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

ODO 2171 - EVIDENCE BASED CARE 1

Minimum Credits: 0
Maximum Credits: 0
The course series in evidence-based care is designed to introduce the graduate student in orthodontics to the concepts of evidence-based health care. Pertinent literature regarding the efficacy of currently accepted treatment modalities as well as the methods for evaluation of process and outcome will be included in the initial portion of the course. The student will also be exposed to currently accepted outcomes. The presentation of clinical cases for diagnosis and treatment planning will allow the student to plan evidence-based care for their own patients.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

ODO 2172 - EVIDENCE BASED CARE 2

Minimum Credits: 0
Maximum Credits: 0
The course series in evidence-based care is designed to introduce the graduate student in orthodontics to the concepts of evidence-based health care. Pertinent literature regarding the efficacy of currently accepted treatment modalities as well as the methods for evaluation of process and outcome will be included in the initial portion of the course. The student will also be exposed to currently accepted outcomes. The presentation of clinical cases for diagnosis and treatment planning will allow the student to plan evidence-based care for their own patients.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2173 - EVIDENCE BASED CARE 3

Minimum Credits: 0.5
Maximum Credits: 0.5
This series in evidence based care is designed to introduce the graduate student in orthodontics to the concepts of evidence based care. Pertinent literature regarding the efficacy of currently accepted treatment modalities as well as the methods for evaluation of processes and outcome will be included in the initial portion of course. The students will also be exposed to currently accepted outcome measures and methods of evaluating clinical outcomes. The presentation of clinical cases for diagnosis and treatment planning will allow the students to plan evidence based care for patients.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2211 - ADVANCED FACIAL GROWTH

Minimum Credits: 1
Maximum Credits: 1
The course series in advanced facial growth is designed to continue the course of study initiated in the introductory facial growth courses. These courses will provide the second year graduate student in orthodontics an opportunity for in-depth study of growth in each of the regions of the craniofacial skeleton and modification of this growth for therapeutic purposes. Clinical application of the basic concepts of facial growth which were learned in the intro course will be pursued. Review and critical analysis of current literature will be included.
Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2243 - ENVIRONMENT ORTHODONTIC PRACTICE 1

Minimum Credits: 1

Maximum Credits: 1

Environment of orthodontic practice 1 is a course developed for orthodontic residents to enable them to appreciate and comprehend the complexity of the future environment in which they will practice. Didactic presentations along with lively group discussions will be utilized to challenge the participants to examine information at higher cognitive levels. Major areas of emphasis will be the discussion of office designs, utilization of auxiliaries, information systems, effective communication, OSHA, EPA, der regulations, taxes, retirement, ethics, PRA/risks management and wellness model of health.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ODO 2244 - ENVIRONMENT OF ORTHODONTIC PRACTICE 2

Minimum Credits: 0

Maximum Credits: 0

Environment of orthodontic practice 2 is a course developed for orthodontic residents to enable them to appreciate and comprehend the complexity of the future environment in which they will practice. Didactic presentations along with lively group discussions will be utilized to challenge the participants to examine information at higher cognitive levels. Major areas of emphasis will be the discussion of office designs, utilization of auxiliaries, information systems, effective communication, OSHA, EPA, de-regulations, taxes, retirement, ethics, PRA/risks management and wellness model of health.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

ODO 2400 - AMERICAN BOARD OF ORTHODONTICS PREPARATION COURSE 1

Minimum Credits: 1

Maximum Credits: 1

The American board of orthodontics preparation course 1 is designed to introduce third year residents in orthodontics and dentofacial orthopedics for completion of the American board of orthodontics' phase ii (written) and phase iii (case presentation and case diagnosis) requirements for attaining diplomate status as well as completing the certificate in orthodontics at the university of Pittsburgh. Under the supervision of DRS. Janet and Robert Robison, the resident will prepare to identify and define abo requisites for case selection and quality of cases. The residents will focus on the specifics of abo guidelines to ensure excellence in presentation. The phase ii written aspect encompasses the analysis and comprehension of the literature as recommended by the abo reading list. Further, case analysis for the phase iii diagnostic aspect of the examination will be simulated and the resident's format refined.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

ODO 2410 - AMERICAN BOARD OF ORTHODONTICS PREPARATION COURSE 2

Minimum Credits: 1

Maximum Credits: 1

The American Board of Orthodontics preparation course 2 is designed to review essential concepts with third year residents in orthodontics and dentofacial orthopedics for completion of the American Board of Orthodontics' phase ii (written) and phase iii (case presentation and case diagnosis) requirements for attaining diplomate status as well as completing the certificate in orthodontics at the University of Pittsburgh. Under the supervision of DRS. Janet and Robert Robison, the resident will prepare to identify and define abo requisites for case selection and quality of cases. The residents will focus on the specifics of abo guidelines to ensure excellence in presentation. The phase ii written aspect encompasses the analysis and comprehension of the literature as recommended by the abo reading list. Further, case analysis for the phase iii diagnostic aspect of the examination will be simulated and the resident's format refined.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

ODO 2501 - EARLY AGE ORTHODONTIC TREATMENT 1

Minimum Credits: 0.5
Maximum Credits: 0.5
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2502 - EARLY AGE ORTHODONTIC TREATMENT 2

Minimum Credits: 0.5
Maximum Credits: 0.5
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 2503 - EARLY AGE ORTHO TREATMENT 3

Minimum Credits: 0
Maximum Credits: 0
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

ODO 5242 - INTRODUCTION TO ORTHODONTICS

Minimum Credits: 1
Maximum Credits: 1
The objective of this course is to teach the pre-doctoral student the diagnostic process. How to conduct an extra-oral and intra-oral examination of a patient, how to collect and analyze pertinent patient records and how to produce a comprehensive description of the patient's problem and to synthesize the various elements of the description into a rational problem list will be discussed.
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

ODO 5245 - ORTHODONTICS 3 LAB

Minimum Credits: 2
Maximum Credits: 2
This laboratory component objective is to teach the pre-doctoral student the diagnostic process, how to conduct an extra-oral and intra-oral examination of a patient, how to collect and analyze pertinent patient records and how to produce a comprehensive description of the patient's problem and to synthesize the various elements of the description into a rational problem list will be discovered.
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad Letter Grade

ODO 5274 - ORTHODONTICS 4 (TREATMENT)

Minimum Credits: 1
Maximum Credits: 1
The course objective is to teach; (a) the pre-doctoral student the treatment planning process, based on the collection and analysis of pertinent patient records and a rational problem list, the data base; (b) the use of different orthodontic appliances; and (c) the treatment of patients needing limited

orthodontic treatment modalities.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad Letter Grade

ODO 5275 - INTRODUCTION TO ORTHODONTICS LAB

Minimum Credits: 1

Maximum Credits: 1

In this course, students will be introduced to the practical knowledge and skills associated with recognizing malocclusions in the mixed dentition, warranting interceptive orthodontic treatment involving space maintenance. Students will become familiar with simple clinical procedures which can be employed for children in the mixed dentition who would benefit from simple space maintenance procedures. Students will also review tracing and landmark identification of a lateral cephalometric radiograph and learn how to perform the following analyses: Steiner, Sassouni, Tweed and Wits appraisal. This course includes laboratory sessions.

Academic Career: Dental Medicine

Course Component: Practicum

Grade Component: ABCF

ODO 5319 - CLINICAL ORTHODONTICS

Minimum Credits: 2

Maximum Credits: 2

This course is designed to provide clinical experience in the area of orthodontic dentistry for predoctoral dental students. By the end of this course, students will be able to demonstrate competence in orthodontic dentistry for dental patients at the level of a general dentist. Students will complete a week long hands on clinical orthodontics experience that leads to an understanding of the overall clinical procedures which are undertaken during treatment of malocclusions. Orthodontic treatment of patients in mixed and adolescent dentitions will be addressed, including space management procedures.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: ABCF

ODO 5349 - CLINICAL ORTHODONTICS

Minimum Credits: 3

Maximum Credits: 3

The objective of this course is to teach the pre-doctoral student the treatment planning process based on the collection and analysis of pertinent patient records and a rational problem list; the use of different orthodontic appliances in patient care. Clinical cases are diagnosed and treatment plans presented by the student to the faculty.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad Letter Grade

ODO 5900 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 3

This course is available for the design of special projects of reading and/or research on topics related to orthodontics.

Academic Career: Dental Medicine

Course Component: Independent Study

Grade Component: Grad HSU Basis

ODO 5911 - ADVANCED ORTHODONTICS

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Dental Medicine

Course Component: Seminar
Grade Component: Grad HSU Basis

ODO 5941 - ADVANCED CARDIAC LIFE SUPPORT

Minimum Credits: 1

Maximum Credits: 1

The content presented in this course is a standardized curriculum developed by the American heart association for the purpose of managing acute cardiac events prior to the initiation of more definitive care. The objectives of this course are to provide the student with the knowledge and skills necessary to become certified in advanced cardiac life support.

Academic Career: Dental Medicine

Course Component: Seminar

Grade Component: Grad HSU Basis

ODO 5942 - CRANIOFACIAL ANOMALIES

Minimum Credits: 1

Maximum Credits: 1

This course presents a comprehensive introduction to the diagnosis and treatment planning principles of an interdisciplinary team approach to cleft lip and palate and craniofacial anomalies. The objectives of this course are to provide a sound basis for the clinical examination, diagnosis and interactive team management of patients principally with the severe dental presentations associated with the various craniofacial anomalies.

Academic Career: Dental Medicine

Course Component: Seminar

Grade Component: Grad HSU Basis

Orthopedic Surgery

OSURG 5320 - PEDIATRIC ORTHOPAEDICS

Minimum Credits: 0

Maximum Credits: 0

This four-week elective will allow the student concentrated exposure to all aspects of pediatric orthopaedics with a primary object of gaining an appreciation of the physical examination of musculoskeletal disorders in children. Students will be assigned to one of several specific orthopaedic teams and will be integrated to the service and have close contact with orthopaedic residents. Assignment choices will include concentrations in sports medicine, spina bifida/cerebral palsy and adult spinal disorders and there will also be significant exposure to general pediatric orthopaedics and fracture care. Students will be on the call schedule once a week with the pediatric orthopaedic resident. The student may choose to have operating room exposure.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

OSURG 5325 - SPORTS MEDICINE

Minimum Credits: 0

Maximum Credits: 0

This four-week elective offers exposure to general sports medicine. Students will be assigned to one of several specific orthopedic teams, which may include concentration in shoulder and elbow disorders or knee disorders. The student will observe orthopedic evaluations in the office as well as become involved in the medical coverage of sporting events depending on the season. While not required, the student may observe surgery if desired. The course objectives are: to understand the mechanism and pathophysiology of sports-related injuries; to become knowledgeable in orthopedic sports medicine physical examination; and to evaluate and monitor rehabilitation following sports-related injuries.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

OSURG 5330 - ORTHOPAEDIC TRAUMA

Minimum Credits: 0

Maximum Credits: 0

This is an intensive 4-week exposure to orthopaedic trauma during which the student will be assigned to the orthopaedic trauma team. Students will take call in the hospital once per week. Students will participate in the real-time evaluation of acutely-injured patients in the emergency department; the initial evaluation to include interpretation of radiographic studies, as well as the pre- and postoperative management of acutely-injured patients with orthopaedic injuries. Course objectives include: appreciate the implications of multiple trauma; understand the role of orthopaedic injuries in the management of the multiply-injured patient; understand the trauma care system of a major tertiary medical care system; and become comfortable with the basic skills required to evaluate a multiply-injured patient with orthopaedic injuries.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

OSURG 5335 - ORTHOPAEDIC FOOT AND ANKLE

Minimum Credits: 0

Maximum Credits: 0

This elective is a four week exposure to foot and ankle orthopaedics. The student will be integrated on to the service and will have close contact with the orthopaedic resident. The student will observe foot and ankle evaluations in an office setting and will have the opportunity to observe surgery. Course objects include: appreciate the clinical and radiographic assessment of the foot and ankle; gain an appreciation and understanding of the evaluation and treatment of foot and ankle injuries; and become knowledgeable in the examination of the foot and ankle.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

OSURG 5340 - ORTHOPAEDIC HAND SERVICE

Minimum Credits: 0

Maximum Credits: 0

This elective is a four week exposure to hand orthopaedics. The student will be integrated on to the service and will have close contact with the orthopaedic resident. The student will observe hand evaluations in an office setting and have the opportunity to observe surgery. Objectives include: appreciate the clinical assessment of the hand and upper extremity; gain an appreciation and understanding of the evaluation and treatment of hand and upper extremity conditions and procedures; and become knowledgeable in the examination of the hand and upper extremity.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

OSURG 5389 - CLINICAL CLERKSHIP

Minimum Credits: 0

Maximum Credits: 0

This elective will offer the student early in his/her clinical experience an opportunity to learn more about diseases of the musculoskeletal system, their diagnosis and their treatment. The student will be assigned to a clinical service and will participate in both in-patient and ambulatory care. Teaching by preceptorship and demonstration will recognize the student's limited clinical experience.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

OSURG 5392 - INDIVIDUAL STUDY OR RESEARCH

Minimum Credits: 0

Maximum Credits: 0

A student may participate as a member of an existing research team in the orthopaedic research laboratory or pursue independent research interests. Students interested in this elective should plan the rotation well-in advance with both the preceptor and the department's student coordinator. Time periods for this elective are in four week blocks of time.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

OSURG 5410 - OSURG ACTING INTERNSHIP

Minimum Credits: 0

Maximum Credits: 0

The goal of the four week elective is to meet the needs of a student whose career plans include specialization in orthopaedic surgery. This elective is designed to integrate the student into one of the specialty services at the university hospitals. The student should be highly motivated and will function as an integral part of the house staff team.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OSURG 5420 - CLINICAL PRECEPTORSHIP

Minimum Credits: 0

Maximum Credits: 0

This rotation is designed for students who are interested in learning about the musculoskeletal system, its disease processes and treatment. The student will be integrated into one of the clinical services at the university hospitals will be involved in the outpatient care of the patients in the emergency room and the orthopaedic ambulatory care clinic. The elective is four weeks in duration.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OSURG 5451 - OPERATIVE SPORTS MEDICINE

Minimum Credits: 0

Maximum Credits: 0

This four-week elective will integrate the students into the sports medicine orthopaedic services in both an inpatient and an outpatient setting. The course objectives are: to improve the student's musculoskeletal system exam skills; to assess and manage the various musculoskeletal injuries encountered frequently in a sports medicine/musculoskeletal outpatient setting; to develop an appreciation of the roles of surgeons, primary care physicians, athletic trainers, and physical therapists in the sports medicine team approach to the care of athletes.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OSURG 5455 - PRIMARY CARE/SPORTS MEDICINE

Minimum Credits: 0

Maximum Credits: 0

This four-week elective is for the student who is interested in learning more about sports medicine, the musculoskeletal system, its exam and their treatment. Students will be exposed to a variety of sports/musculoskeletal injuries in a multi-provider outpatient sports medicine team approach. Objectives are: improve the student's musculoskeletal system exam skills; assess and manage the various musculoskeletal injuries encountered frequently in a sports medicine/musculoskeletal outpatient setting; develop an appreciation in the sports medicine team approach to the care of athletes.

Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OSURG 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0

Maximum Credits: 0

An individualized course of study may be arranged with the department of orthopaedic surgery to fit the student's needs. The student will meet with a department faculty person to design a clinical course of study for a four-week period of time. A written proposal must be approved by the faculty member as well as the student's advisory dean. When approvals have been received, the school registrar will schedule the course and notify the department student coordinator.

Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OSURG 5881 - ORTHOPAEDIC RESEARCH

Minimum Credits: 0

Maximum Credits: 0

Students interested in orthopaedic research may participate as a member of an existing research team in the orthopaedic research laboratory or pursue independent research interests. Students interested in this elective should contact the coordinator and plan the rotation months in advance. Time periods for this elective are in four week blocks.

Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OSURG 5899 - INDEPENDENT STUDY ORTHOPAEDIC SURGERY

Minimum Credits: 0

Maximum Credits: 0

The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.

Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U

OSURG 5900 - EXTRAMURAL ORTHOPAEDIC SURGERY

Minimum Credits: 0

Maximum Credits: 0

A clinical experience in orthopaedic surgery may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.

Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U

Otolaryngology

OTO 5390 - OTOLARYNGOLOGY RESEARCH

Minimum Credits: 0

Maximum Credits: 0

Students undertaking this elective may join ongoing basic research projects in the laboratory. The student will be given an opportunity to learn research techniques.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

OTO 5420 - HEAD AND NECK SURGERY

Minimum Credits: 0

Maximum Credits: 0

This four-week course concentrates on the management of patients with tumors of the head and neck. Special emphasis is on oncologic surgery, but the elective includes reconstructive surgery of the head and neck, major inflammatory diseases, and management of the airway and swallowing disorders. There will be general ear, nose, and throat experience as well. The objectives are to record and interpret a complete medical history, perform and evaluate an examination of the head and neck and to develop an appropriate management plan.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OTO 5425 - COMBINED OTOLARYNGOLOGY

Minimum Credits: 0

Maximum Credits: 0

This four-week elective combines two weeks each of the head and neck and pediatric otolaryngology rotations. The course will constitute an intensive rotation as a member of the surgical teams. The focus is on management of patients with tumors of the head and neck and children with a variety of diseases of the ear, nose and upper digestive tract. Each week the student will spend two days in the patient office and three days in the operating room, functioning as an integral member of the teams. Teaching rounds will be conducted twice daily by the house staff and attending staff.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OTO 5430 - OTOLARYNGOLOGY PRIVATE PRACTICE

Minimum Credits: 0

Maximum Credits: 0

In this four-week course the student will work as a colleague in a private practice office two days a week seeing patients and working as an assistant in the operating room three days a week. The preceptor is involved in the practice of general ear, nose, and throat to offer experience in recognizing and managing common ENT complaints such as headaches, dizziness, neck mass, trouble swallowing, etc. The objectives are to record a complete medical history, record and evaluate a complete examination of the head and neck and to develop a plan of management.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OTO 5440 - GENERAL OTOLARYNGOLOGY

Minimum Credits: 0

Maximum Credits: 0

This 4 week course will provide the student an opportunity to observe treatment of patients in a large, diversified private practice. The practice includes head and neck surgery, plastic and reconstructive surgery and post-operative care. This service provides excellent clinical exposure to the disease of head and neck for students. Recommended for primary care physicians and students considering surgical specialties. The objectives are to evaluate and diagnose a patient with a complaint of the head and neck, to diagnose the problem and to develop a plan of management.

Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

OTO 5450 - PEDIATRIC OTOLARYNGOLOGY

Minimum Credits: 0

Maximum Credits: 0

This four-week elective course is designed for the student desiring a career in primary medicine, pediatrics or otolaryngology. The student will attend the pediatric otolaryngology outpatient department, surgery and work rounds with staff and residents. In addition, all department activities, including participation in ongoing research, will be available to the students. The objectives of the course are to record and to interpret a pediatric otolaryngology history, to perform a complete pediatric head and neck exam and to formulate a management plan.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OTO 5460 - NEUROTOLOGY

Minimum Credits: 0

Maximum Credits: 0

This course deals with patients with disorders of the hearing and balance systems. Special emphasis is on evaluation, physical examination and special testing -vestibular and audiological -of patients who present with complaints related to hearing, balance, facial dysfunction and medical and surgical management. In addition, the student will have the opportunity to participate in otologic surgery. The objectives are to learn techniques used in evaluation of hearing and balance disorders, to interpret a medical history and to outline a plan of management.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OTO 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0

Maximum Credits: 0

An individualized course of study may be arranged with the department of otolaryngology to fit the student's needs. The student will meet with a department faculty person to design a clinical course of study for a four-week period of time. A written proposal must be approved by the faculty member as well as the student's scheduling advisor. When approvals have been received, the school registrar will schedule the course and notify the department student coordinator

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OTO 5816 - OTOLARYNGOLOGY RESEARCH

Minimum Credits: 0

Maximum Credits: 0

This 4 week experience allows a student to participate in a clinical or basic laboratory research project in otolaryngology. The student can select to work with any faculty in the department. Participation in design, data collection and analysis, and manuscript preparation is expected. The actual total participation may extend beyond the 4 week period.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OTO 5899 - INDEPENDENT STUDY IN OTOLARYNGOLOGY

Minimum Credits: 0

Maximum Credits: 0

The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

OTO 5900 - EXTRAMURAL OTO LARYNOLOGY

Minimum Credits: 0

Maximum Credits: 0

A clinical experience in otolaryngology may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Pathology

MSPTH 5381 - INDIVIDUAL STUDY

Minimum Credits: 0

Maximum Credits: 0

Opportunities are available for third year students to do a variety of electives in the department of pathology. These electives include: anatomic pathology, immunopathology, ob/gyn and perinatal pathology, pediatric pathology, neuropathology, pathology practice, clinical chemistry, and tumor immunology. Independent study is also available in other areas pending consultation with individual faculty.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

MSPTH 5382 - PATHOLOGY RESEARCH

Minimum Credits: 0

Maximum Credits: 0

Research opportunities are available for third year students within the department of pathology. Research areas include: anatomic pathology, immunopathology, ob/gyn and perinatal pathology, pediatric pathology, neuropathology, clinical chemistry, and tumor immunology. Research opportunities are also available in other areas pending consultation with individual faculty.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

MSPTH 5420 - ANATOMIC PATHOLOGY

Minimum Credits: 0

Maximum Credits: 0

During this four or eight week elective, the student will have the opportunity to study and review normal and pathologic anatomy as provided by surgical and autopsy materials. Under the direction of the staff, the student will process surgical specimens and perform autopsies. The findings will

be correlated with the clinical data to provide insight into disease processes and their progression, may participate in ongoing investigations being conducted by the staff.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSPTH 5421 - BASIC PATHOLOGY

Minimum Credits: 0

Maximum Credits: 0

This fourth year level elective will conduct a systematic, hands-on review, covering many organ systems, of gross and microscopic pathology. Cpc cases will be studied representing a wide variety of medical, surgical, pediatric and ob/gyn problems. Gross and microscopic specimens will be used. Various pathology facilities will be visited and students will be invited to attend regularly scheduled conferences in anatomic and clinical pathology.

Academic Career: Medical School

Course Component: Practicum

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSPTH 5425 - INTRODUCTION TO AUTOPSY PATHOLOGY

Minimum Credits: 0

Maximum Credits: 0

The autopsy remains an enigma in the medical community. Myths and misconceptions continue to be pervasive. This course will introduce the student to the field of autopsy pathology, teaching them to communicate the benefits and expectations of the autopsy to their clinical colleagues and patient's families. Each student will participate in the UPMC hospital autopsy service, working with pathology residents, attending physicians and pathology assistants as we attempt to answer difficult medical questions, correlate clinical and pathological findings, and present this information to the clinical services. Activities include review of hospital charts and case discussions with clinical services prior to the autopsy; observing autopsy gross dissections; review of histologic slides to make pathologic diagnoses; interpretation of clinical laboratory tests as they relate to the autopsy; and completion of autopsy reports and death certificates. There will also be opportunities for participation in clinical conferences and active presentation at pathology meetings. Objective are to: 1. To learn the policies and procedures for UPMC hospital autopsies. 2. To learn the various myths and misconceptions about autopsies. 3. To learn how to communicate autopsy findings to clinical services and patient's families. 4. To understand how pathologists use clinical information, autopsy gross and microscopic examinations, and clinical testing to conclude a patient's cause of death.

Academic Career: Medical School

Course Component: Workshop

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSPTH 5427 - INTEGRATED ENDOCRINE ELECTIVE THE NODULAR THYROID

Minimum Credits: 0

Maximum Credits: 0

This elective is intended for MSIII and IV level medical students. The student will follow patients through three phases of predominantly outpatient thyroid nodule management including preoperative assessment, operative procedures and postoperative follow-up. Cooperation of the departments of surgery, radiology, endocrine medicine and pathology will be required. The student will maintain a patient log (learning log) and at the conclusion of the rotation will give a 10-15 minute focused presentation on a relevant topic of the student's choice. The student will gain an in depth understanding of the multi-disciplinary approach to thyroid disease. Preoperative phase will include: thyroid interdisciplinary conference; non-gynecologic cytology sign out; molecular anatomic pathology; endocrine clinic; surgery clinic, clinical chemistry; immunopathology; radiologic us guided FNA biopsies; and medical management of non-surgical thyroid disease. Goals of the preoperative phase include: clinical assessment of patients with thyroid nodules and correlation with radiologic, pathologic and molecular data; understanding of thyroid related laboratory values; and applications and limitations of fna of the thyroid. Operative phase will include intraoperative involvement in thyroidectomies; understanding of indications; and complications and postoperative care. Goals of the operative phase include: understanding of the indications and complications of thyroidectomy; lymph node dissection; follow through of thyroid surgical specimens; gross evaluation; microscopic features of specific thyroid processes; and staging of carcinomas. Postoperative phase will include: surgery clinic; discussion with patients regarding thyroid disease; follow-up of surgical pathology cases; and presentation of a relevant topic. Goals for the postoperative phase include: completion of clinical-radiologic-pathologic-molecular correlation of data as applied to diseases of the thyroid.

Academic Career: Medical School

Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

MSPTH 5430 - CLINICAL IMMUNOLOGY

Minimum Credits: 0

Maximum Credits: 0

This four or eight week elective is designed to provide a broad exposure to both clinical and laboratory immunology. The student will become familiar with the diagnostic evaluations and clinical management of a variety of patients with immunodeficiency diseases or autoimmune disorders. Daily teaching sessions will be held covering patient and laboratory aspects of immunology.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSPTH 5441 - SURGICAL AND PERINATAL PATHOLOGY

Minimum Credits: 0

Maximum Credits: 0

The course meets student current or future career objectives in general surgical, gynecological, obstetrical and perinatal pathology. It includes participation in department activity as patient diagnostic workup, teaching conferences, research project with emphasis on clinico-pathological correlation studies, immunohistochemical, DNA analysis and cytogenetic studies of gynecological tumors, breast tumors, trophoblastic disease, pregnancy loss, placental pathology, perinatal pathology and sexually transmitted disease.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSPTH 5442 - CLINICOPATHOLOGIC APPROACH TO INTERSTITIAL LUNG DISEASE

Minimum Credits: 0

Maximum Credits: 0

This elective is designed to give students a stronger foundation in interstitial lung disease for internship and residency training. It emphasizes three core concepts: (1) the sine qua non of an interdisciplinary approach to lung disease (during this elective involving physicians from at least four different specialties), (2) the indications, benefits and limitations of laboratory testing including blood tests and histologic examination in the setting of lung disease, and (3) the importance of confirming or excluding interstitial lung disease as the cause of shortness of breath, since some interstitial lung diseases are readily curable with intervention while others are potentially devastating. The lungs possess two noteworthy properties. First, their large surface area forms the most extensive interface between the human organism and the environment. However, this interface with is the one most difficult to protect and often even voluntarily exposed to noxious stimuli. Secondly, the lungs are the only organs that encounter the entire cardiac output of blood, and are theoretically exposed to hematogenous factors of all other tissues in the body. It is therefore not surprising that the lungs are often involved in systemic diseases. Despite its anatomic complexity, histologically the lung only exhibits a rather limited repertoire of reaction patterns to injury. The three most important ones are airspace organization, inflammatory infiltrates and fibrosis. Each one has characteristic radiographic and physical examination correlates. Although most clinical entities of lung disease have well described histopathologic findings, many of these entities show significant histopathologic overlap. It is therefore of high importance to integrate the findings and impressions of primary caregivers, radiologists and pathologists in order to arrive at the correct diagnosis and formulate the most appropriate treatment plan. This constitutes the rationale and strength of this elective. While many medical school rotations emphasize and encourage interdisciplinarity, the primary responsibilities of the student usually lies within a single specialty. This elective, although initiated by pathologists, is meant to be a true multidisciplinary and in-depth experience. Students will be held accountable by faculty from all participating specialties. The focus shall be the need for diagnosis and treatment of a patient with lung disease utilizing pathology, radiology and medicine as tools, rather than teaching pathology, radiology or medicine utilizing patients as ways and means.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSPTH 5450 - PEDIATRIC PATHOLOGY

Minimum Credits: 0

Maximum Credits: 0

This four or eight week course is to introduce the student to a range of procedures used in diagnostic anatomic pathology as well as in research. This includes anatomic, histologic and histochemical techniques. The student would be expected to take full part in the diagnostic work and daily departmental teaching conferences. Each student will be given a defined research or clinically-oriented problem to be completed by the end of the elective.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSPTH 5460 - NEUROPATHOLOGY

Minimum Credits: 0

Maximum Credits: 0

This four or eight week course is offered as an introduction to special aspects of pathology, neurology and neurosurgery. The student will participate in the major academic activities of the unit including multidisciplinary conferences and seminars, brain dissections, microscopic review and investigations in progress within the division.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSPTH 5471 - HEMATOPATHOLOGY

Minimum Credits: 0

Maximum Credits: 0

An introduction to diagnostic hematopathology introducing a state-of-the-art approach to diagnosing disorders of the hematopoietic/lymphoid system, evaluation of proliferations, in-depth exposure to selected disorders, evaluation of peripheral smears and biopsies, a variety of hematologic laboratory tests, and the utility of bone marrow and lymph node examinations.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSPTH 5480 - PATHOLOGY PRACTICE

Minimum Credits: 0

Maximum Credits: 0

In this four-week clerkship, the student will become familiar with the activities of both clinical and anatomical pathology. The former will encompass brief tours of duty in the hematology, microbiology and clinical chemistry sections of the laboratory. The student assigned to anatomical pathology will visualize the activities of surgical pathology including frozen section diagnosis. Students will also attend autopsies when performed.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSPTH 5485 - LABORATORY MEDICINE

Minimum Credits: 0

Maximum Credits: 0

This four-week elective is designed to provide a broad exposure to the clinical laboratories. The student is exposed to chemistry, hematology, microbiology, immunology, histocompatibility, transfusion medicine, coagulation, point-of care testing, information systems, laboratory administration and quality assurance. The student learns testing basics, result interpretation, clinical correlation and principles of transfusion

medicine. The student also has an opportunity to undertake a small research project. Attendance at all teaching sessions is expected.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSPTH 5487 - MUSCULOSKELETAL ONCOLOGY

Minimum Credits: 0

Maximum Credits: 0

This medical school elective is intended for MS3 and MS4 levels. The goal of the experience is increased awareness of multidisciplinary modalities in the diagnosis of musculoskeletal disease, particularly oncologic processes. The student will rotate through the three main components of the course each week: outpatient orthopedics, musculoskeletal radiology and bone/soft tissue pathology. The student will evaluate patients in outpatient orthopedic clinics with Drs. Goodman, McGough and Weiss. Opportunities to scrub in and participate in operative procedures will be incorporated. Review of pertinent radiographic imaging will occur both in clinic and in the UPMC Shadyside radiology department with subspecialty musculoskeletal radiologists. The student will participate in evaluation of musculoskeletal imaging and observe procedures performed by interventional radiologists in order to obtain diagnostic tissue for cytologic and/or histologic examination. The student will also attend surgical pathology sign-out in the upmc department of pathology bone and soft tissue center of excellence. During these exposures to orthopedics, radiology and pathology, the student will maintain a log of patients seen, imaging reviewed and pathology case material reviewed with differential diagnoses and plans for further workup as necessary. Patient follow-up correlation with radiologic and pathologic data and cost effective diagnostic strategies will be emphasized. Experiences in the frozen section laboratory and in the fluorescence in situ hybridization (FISH) laboratory are included. Weekly orthopedic conference is also an important component allowing for complete clinical, radiologic and pathologic correlation. At the conclusion of the rotation, the student will give a 15 minute oral presentation on a relevant topic. The purpose of this course is to outline the diagnostic evaluation of musculoskeletal diseases encountered with attention to cost effective strategies, demonstrate understanding of history and physical examination findings and integrate radiographic and pathologic data where appropriate and demonstrate understanding of the pathologic basis of the disease process and how the pathologic information impacts treatment.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSPTH 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0

Maximum Credits: 0

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSPTH 5860 - IMMUNOLOGY

Minimum Credits: 0

Maximum Credits: 0

The immunology program in the division is oriented toward basic and clinical immunology genetics. These problems focus on the structure and function of the major histocompatibility complex and the genetic and immunological interactions that occur between the mother and the fetus. The student will learn some of the basic principles of transplantation immunobiology and how basic research in this area impinges on a variety of problems in clinical medicine. A minimum of 2 four-week blocks is required.

Academic Career: Medical School

Course Component: Practicum

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSPTH 5861 - BIOLOGY OF CANCER

Minimum Credits: 0

Maximum Credits: 0

This four or eight week course will stress the investigations relevant to clinical oncology. Subjects include carcinogen target cell interactions, analysis of tumor progression and regression, tumor metastasis, cell differentiation and therapeutic responses. Students will be exposed to various experimental techniques such as electron microscopy, tissue and cell cultures, animal models and selected biochemical studies.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSPTH 5862 - BIOCHEMISTRY PATHOLOGY

Minimum Credits: 0

Maximum Credits: 0

This four or eight week elective is to provide students with an experience studying the biochemical basis for both clinical and experimental disease. Students will have a brief rotation through selective areas of the clinical biochemistry laboratory and will then be assigned to work with a staff pathologist, providing review of laboratory data and consultation on unusual clinical problems.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSPTH 5863 - TUMOR IMMUNOLOGY

Minimum Credits: 0

Maximum Credits: 0

This elective is designed to provide exposure to basic and clinical aspects of tumor immunology. Students may elect to spend up to four weeks on this rotation. During this elective the student will have the opportunity to investigate various aspects of tumor immunology as it relates to pathophysiology of tumor invasion and metastasis. The student may also have the opportunity of rotating through clinical labs.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSPTH 5865 - HEAD, NECK AND ORAL PATHOLOGY

Minimum Credits: 0

Maximum Credits: 0

The student participates in slide sign-out in the morning and afternoon with the attending pathologists. The slide readings offer a focused review of head, neck and oral histology and histopathology as well as integrate the related case histories. The student also takes part in frozen section call for the operating room with the head and neck pathologist to learn evaluation of gross specimens and appropriate margins of resection. A portion of the rotation will also include participation in clinical consultations in the hospital or outpatient clinics, where experience will be gained in assessment and diagnosis of head and neck pathology. The student also plans a review of slides from the pathology case files to ensure a comprehensive review of head, neck and oral histopathology is obtained. The student attends relevant pathology conferences and ENT tumor board as time and schedule permit. The student will also construct an oral presentation on a pertinent head and neck pathology topic agreed upon between the attending and student.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: Grad LG/SU5

Course Attributes: School of Medicine Year 4

MSPTH 5869 - INDEPENDENT STUDY IN PATHOLOGY

Minimum Credits: 0

Maximum Credits: 0

Opportunity for flexible independent study in anatomic, clinical or investigative pathology for a maximum of 3 months. Must be arranged and

approved in advance.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

MSPTH 5900 - EXTRAMURAL PATHOLOGY

Minimum Credits: 0

Maximum Credits: 0

A clinical experience in pathology may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Pediatric Dentistry

PEDENT 2010 - GRADUATE PEDIATRIC DENTAL CLINIC 1

Minimum Credits: 1

Maximum Credits: 1

This clinic will provide training and experience in principles of preventive dentistry, cavity preparations and restorative procedures, interceptive orthodontic appliance fabrication, and treatment of the handicapped patient for newly enrolled advanced pediatric dentistry specialty residents.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

PEDENT 2020 - GRADUATE PEDIATRIC DENTAL CLINIC 2

Minimum Credits: 1

Maximum Credits: 3

This clinic will provide training and experience for the first year advanced pediatric dentistry specialty resident in the treatment of pediatric dental patients. Patients with handicapping conditions, and patients requiring limited orthodontic therapy.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

PEDENT 2030 - GRADUATE PEDIATRIC DENTAL CLINIC 3

Minimum Credits: 1

Maximum Credits: 3

This clinic will provide training and experience for the first year advanced pediatric dentistry specialty resident in the treatment of pediatric dental patients, patients with handicapping conditions, and patients requiring limited orthodontic therapy.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

PEDENT 2040 - GRADUATE PEDIATRIC DENTAL CLINIC 4

Minimum Credits: 1

Maximum Credits: 1

This clinic will provide training and experience for the first year advanced pediatric dentistry specialty resident in the treatment of pediatric dental patients. Patients with handicapping conditions, and patients requiring limited orthodontic therapy.

Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

PEDENT 2050 - GRADUATE PEDIATRIC DENTAL CLINIC 5

Minimum Credits: 1

Maximum Credits: 3

This clinic will provide training and experience for the second year advanced pediatric dentistry specialty resident in the dental treatment of patients with cleft lip, cleft palate, and orofacial abnormalities, patients requiring general anesthesia for dental treatment, and pediatric dental patients with advanced restorative and orthodontic treatment needs will be managed in this clinic.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

PEDENT 2060 - GRADUATE PEDIATRIC DENTAL CLINIC 6

Minimum Credits: 1

Maximum Credits: 3

This clinic will provide training and experience for the second year advanced pediatric dentistry specialty resident in the dental treatment of patients with cleft lip, cleft palate and orofacial abnormalities. Patients requiring general anesthesia for dental treatment and pediatric dental patients with advanced restorative and orthodontic treatment needs will be managed in this clinic.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

PEDENT 2070 - GRADUATE PEDIATRIC DENTAL CLINIC 7

Minimum Credits: 1

Maximum Credits: 1

This clinic will provide training and experience for the second year advanced pediatric dentistry specialty resident in the dental treatment of patients with cleft lip, cleft palate and orofacial abnormalities. Patients requiring general anesthesia for dental treatment, and pediatric dental patients with advanced restorative and orthodontic treatment needs will be managed in this clinic.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

PEDENT 2110 - GRADUATE PEDIATRIC DENTAL SEMINAR 1

Minimum Credits: 1

Maximum Credits: 1

This course will provide an introduction to the specialty of pediatric dentistry. Material on preventive principles, restorative techniques, and dental materials will be provided. Seminars on physical and mental handicapping conditions will be given.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PEDENT 2120 - GRADUATE PEDIATRIC DENTAL SEMINAR 2

Minimum Credits: 1

Maximum Credits: 1

This course will provide an introduction to advanced pediatric dentistry. Various topics on pediatric dentistry are included for discussion. Diagnosis, case presentation and case review will be included in this seminar.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PEDENT 2130 - GRADUATE PEDIATRIC DENTAL SEMINAR 3

Minimum Credits: 1

Maximum Credits: 3

This course will provide material to the first year advanced pediatric dentistry specialty resident on pulp biology. Topics on pulp morphology, response and treatment are discussed. Diagnosis, case presentation and case review will be included in this course.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

PEDENT 2140 - GRADUATE PEDIATRIC DENTAL SEMINAR 4

Minimum Credits: 1

Maximum Credits: 1

This course will provide material to the first year advanced pediatric dentistry specialty resident on the diagnosis and treatment of traumatic injuries. The use of pharmacotherapeutic agents in the management of the pediatric dental patient will also be discussed in this course.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PEDENT 2150 - GRADUATE PEDIATRIC DENTAL SEMINAR 5

Minimum Credits: 1

Maximum Credits: 1

This course will provide the second year advanced pediatric dentistry specialty resident material on the dental treatment of patients with cleft lip, cleft palate and/or other craniofacial abnormalities. Topics on genetics, epidemiology, pathogenesis, growth and development, speech, and syndromes will be included in this course.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PEDENT 2160 - GRADUATE PEDIATRIC DENTAL SEMINAR 6

Minimum Credits: 1

Maximum Credits: 3

This course will provide material to second year advanced pediatric dentistry specialty residents on the maintenance of the dental arch through the use of space maintaining appliances. Additional topics on systemic diseases, fluorides and general anesthesia are discussed.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

PEDENT 2170 - GRADUATE PEDIATRIC DENTAL SEMINAR 7

Minimum Credits: 1

Maximum Credits: 1

This course will provide material to the third year advanced pediatric dentistry specialty resident on pediatric dental practice management. Office design, practice finance and payment options are discussed in this course. Computer utilization and practice alternatives are also presented.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PEDENT 2230 - SPECIAL WORK

Minimum Credits: 1

Maximum Credits: 3

This course will provide the opportunity for the advanced specialty resident to pursue the independent study of a topic of interest in pediatric dentistry.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad Letter Grade

PEDENT 5211 - PEDIATRIC DENTISTRY 1

Minimum Credits: 1

Maximum Credits: 1

In this course, students will be presented with material specific to the specialty of pediatric dentistry. The goal of the course is to introduce the second year predoctoral student to foundational knowledge in pediatric dentistry and provide information on various topics concerning the pediatric dental patient, including: morphology and eruption of teeth; oral habits; evaluation of the developing occlusion; clinical management of arch length; physical growth and development; prenatal and infant oral health; caries disease prevention and management; adolescent oral health care dentistry; behavior guidance and modification; and advanced behavior management. This course includes lectures and class discussions.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

PEDENT 5242 - PEDIATRIC DENTISTRY 2 LAB

Minimum Credits: 2

Maximum Credits: 2

A preclinical course introducing the second year dental student to current concepts of clinical pediatric dentistry including restorative and space maintenance treatment modalities. A second goal of the course is to present skills and techniques to develop motor coordination in anticipation of clinical care for the pediatric dental patient.

Academic Career: Dental Medicine

Course Component: Practicum

Grade Component: Grad HSU Basis

PEDENT 5253 - PEDIATRIC DENTISTRY 2

Minimum Credits: 1

Maximum Credits: 1

A lecture course presenting concepts of pulpal therapy, information regarding child abuse and neglect, and restorations for the pediatric dental patient.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

PEDENT 5315 - PEDIATRIC DENTISTRY 3

Minimum Credits: 1

Maximum Credits: 1

In this course, students will be presented material specific to the specialty of pediatric dentistry. The goal of the course is to enhance the foundational knowledge from the two previous didactic courses in pediatric dentistry (PEDENT 5211 and 5253) and to provide information on various topics concerning the pediatric dental patient including trauma to primary and permanent dentitions; oral medicine and oral-facial pathology; patients with special health care needs; and interdisciplinary case management, the theme of the third year curriculum. This course includes lectures and class discussions.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF with +/- Values

PEDENT 5379 - CLINICAL PEDIATRIC DENTISTRY 1

Minimum Credits: 2

Maximum Credits: 2

This course is designed to provide clinical experiences in the area of pediatric dentistry for predoctoral dental students. By the end of the fourth year of the curriculum, students will be able to demonstrate competence in providing care to pediatric dental patients at the level of a general dentist and will participate in a variety of additional experiences to increase skills in caring for the pediatric patient.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

PEDENT 5447 - CLINICAL PEDIATRIC DENTISTRY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

PEDENT 5449 - CLINICAL PEDIATRIC DENTISTRY 2

Minimum Credits: 2

Maximum Credits: 2

This course will focus on preventive and restorative procedures for the pediatric dental patient. Clinical experiences in the diagnosis and treatment planning of children and adolescents will be provided.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

PEDENT 5900 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 1

This course will provide the opportunity for the first professional dental student to pursue the independent study of a topic of interest in pediatric dentistry.

Academic Career: Dental Medicine

Course Component: Independent Study

Grade Component: Grad HSU Basis

PEDENT 5915 - ADVANCED PEDIATRIC DENTISTRY

Minimum Credits: 1

Maximum Credits: 1

The advanced pediatric dentistry elective is a clinical rotation in the graduate pediatric clinic where the student has the opportunity of treating advanced pediatric restorative and management cases. Treatment of children requiring advanced management techniques including, but not limited to, premedication, N2O/O2, and general anesthesia will be provided by the dental students under the direct supervision of attending faculty. Advanced treatment planning and restorative procedures will also be undertaken.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

Pediatrics

PEDS 5345 - PEDS CLERKSHIP REPEAT COURSE

Minimum Credits: 0

Maximum Credits: 0

This course will be registered when the necessity to record a student's makeup of an unsatisfactory clerkship is required. This course will be used only in those instances when the clerkship is repeated in a shorter or longer time frame than the previous course taken and failed. The specific title given the course will reflect the number of weeks repeated.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

PEDS 5351 - PEDIATRIC INPATIENT MEDICINE

Minimum Credits: 0

Maximum Credits: 0

A 4 week inpatient pediatric clerkship in which students will participate in all aspects of patient care and management. Expectations are to read both the current literature and the standard pediatric textbooks in order to understand childhood growth and development and important pediatric disease processes. Attendance at conferences, lectures and rounds is expected. Students are part of the floor medical team and take call every 4 days. Each student will present a clinicopathologic conference (CPC). At the end of the rotation a 3 hour multiple choice exam is given.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

PEDS 5386 - INDIVIDUAL STUDY OR RESEARCH

Minimum Credits: 0

Maximum Credits: 0

The department of pediatrics will arrange an individual study or research experience for third year medical students in an area of their interest.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

PEDS 5401 - ADV PEDIATRIC IN-PATIENT (AI)

Minimum Credits: 0

Maximum Credits: 0

Four week acting internship at children's hospital. Students have same responsibility as intern-total patient care including complete history, physical exam, assessment lab data, case formulation, communication with attending and referring physician, formulation of discharge plans, discharge summary. Performance of procedures including lumbar punctures, iv and intra-arterial punctures, bladder tap, bone marrow aspiration, performance and interpretation gram stain of CSF, blood smear for red cell, white cell platelet morphology. Interpret routine films and urinalysis.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PEDS 5406 - EXTRAMURAL ACTING INTERNSHIP

Minimum Credits: 0

Maximum Credits: 0

Students will register for this course when participating in a pediatric acting internship at an institution outside of the University of Pittsburgh School of Medicine. This experience will not fulfill the required acting internship experience to meet graduation requirements

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PEDS 5410 - PRIMARY CARE PEDIATRICS

Minimum Credits: 0

Maximum Credits: 0

The general purpose of this elective is to provide students with component experiences of a primary care physician. To this end, the student will 1) examine newborn infants in a neonatal high-risk setting, counsel parents regarding well baby issues and help formulate plans for common newborn problems; 2) develop management plans for children who present for initial neonatal visits, acute illnesses and chronic problems; 3) enhance knowledge of common pediatric behavioral and developmental issues and diagnosis and follow-up of otitis media & 4) learn how to provide telephone advice.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PEDS 5421 - ALLERGY AND IMMUNOLOGY

Minimum Credits: 0

Maximum Credits: 0

This four week elective offers an opportunity to participate in the clinical evaluation and management of ambulatory patients who present with a large variety of immunologically mediated diseases of either hypersensitivity or deficient immune response origin. Under supervision, students will carry out the initial evaluation and subsequent re-evaluation of patients with asthma, allergic rhinitis, urticaria, drug allergy, insect allergy, immunodeficiency syndromes, as well as a large variety of clinical immunology and/or collagen-vascular diseases.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PEDS 5425 - PEDIATRIC RHEUMATOLOGY

Minimum Credits: 0

Maximum Credits: 0

The students will get outpatient and inpatient exposure in the field of pediatric rheumatology with a particular emphasis on outpatient clinics. There is in-depth one-on-one teaching through the pediatric rheumatology attending physicians. Students will generally work with one particular attending physician for a clinic section, but will be exposed to different attending physicians throughout the rotation. The student will be directly involved in patient care, assessment and decision-making. Participation in academic conferences and selected lectures is mandatory.

Academic Career: Medical School

Course Component: Clinical

Grade Component: Grad LG/SU5

Course Attributes: School of Medicine Year 4

PEDS 5430 - PEDIATRIC CARDIOLOGY

Minimum Credits: 0

Maximum Credits: 0

Four week elective at children's hospital. Diagnosis and management of child with congenital and rheumatic heart disease. Interpret EKG, echocardiograms and chest roentgenograms. Observe cardiac catheterization lab, take pediatric cardiac history, attend cardiac catheterization and cardiac surgery conferences. Pursue basis of selection of patients for cardiac catheterization and cardiac surgery.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PEDS 5440 - ENDCRN LGY, METBL SM & DIABETES

Minimum Credits: 0

Maximum Credits: 0

Four week elective at children's hospital. Out-patient evaluation of children with endocrine or metabolic disease. Participate in clinic and research activities, teaching rounds on endocrine ward and clinical research unit. Clinical diagnostic and management of endocrine disorders, metabolic bone

disease, parathyroid and adrenal disorders, diabetes mellitus. Interpret endocrine and metabolic studies.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PEDS 5450 - PEDIATRIC INFECTIOUS DISEASES

Minimum Credits: 0

Maximum Credits: 0

Four week elective at children's hospital of consult experience on infectious disease of hospitalized pediatric patients including rounds, lectures, conferences and seminars. Study antibiotic therapy, diagnosis and management of CNS, pulmonary and urinary tract infections. Evaluate gram-stained smear, urine cult results and antibiotic tests.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PEDS 5455 - PEDIATRIC DERMATOLOGY

Minimum Credits: 0

Maximum Credits: 0

Medical students will be exposed to both common and rare skin disorders seen in both outpatient and inpatient settings. Objectives: 1) develop a familiarity with terminology used to describe primary and secondary skin lesions; 2) develop a familiarity with both the diagnosis and treatment of common skin disorders such as, acne and eczema, lesions, such as hemangiomas and nevi, as well as rare skin conditions such as Geno dermatoses including ichthyoses and epidermolysis bullosa; 3) develop interviewing skills with pediatric patients and their families; 4) obtain experience in performing cutaneous physical exams in pediatric patients.

Academic Career: Medical School

Course Component: Clinical

Grade Component: Grad LG/SU5

Course Attributes: School of Medicine Year 4

PEDS 5460 - NEONATOLOGY

Minimum Credits: 0

Maximum Credits: 0

Four week elective at Magee Women's Hospital neonatal intensive care unit joining residents as acting intern. Experience in all areas of newborn care including recognition and treatment of critical infants. Perform exams, utilize basic lab procedures and x-ray, perform umbilical vessel catheterization, arterial and venous puncture, bladder tap, endotracheal intubation. Discuss dynamics of sick, premature and dying infants.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PEDS 5465 - BREASTFEEDING ELECTIVE

Minimum Credits: 0

Maximum Credits: 0

This elective will prepare future physicians, especially those pursuing careers in OB/GYN, family physicians, pediatrics and internal medicine, to support women to breastfeed. During this four week elective, students will see mother-infant dyads in the newborn follow-up clinic in primary care center, seeing patients with other providers of lactation services in the hospital and community setting and completing directed readings.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PEDS 5470 - GENETICS

Minimum Credits: 0

Maximum Credits: 0

Four week clinic and laboratory elective at children's hospital. Diagnostic and genetic counseling of common and rare hereditary disorders, syndromes of congenital anomalies, evaluation of in-and-out patients. Lab experience in cytotechnology techniques including interpreting karyotypes.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PEDS 5480 - NEPHROLOGY

Minimum Credits: 0

Maximum Credits: 0

Four week elective at children's hospital. In- and outpatient rounds and consults, participation in hypertension and pathology conferences. Understanding of urinalysis; evaluation of laboratory studies and radiology of renal disease, electrolyte disorders and pediatric hypertension.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PEDS 5490 - HEMATOLOGY/ONCOLOGY

Minimum Credits: 0

Maximum Credits: 0

Four week elective at children's hospital. Clinic exposure to pediatric hematology and oncology problems in outpatient chemotherapy unit and various inpatient services. Participate in hematology/oncology clinics and sickle cell clinics. Instruction in peripheral blood and marrow morphology. Participate in rounds and lectures and extensive reading.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PEDS 5491 - NEONATOLOGY

Minimum Credits: 0

Maximum Credits: 0

The clinical elective in neonatology at Children's Hospital is designed to provide the student with an experience in neonatology that emphasizes the multidisciplinary care of the critically ill newborn. The CHP unit is the region's only level IIIC NICU, and offers the highest level of neonatal care, including surgical services and ECMO. As a referral center, the CHP NICU cares for a unique population of high-acuity, medically-complex infants with a wide variety of problems, including cardiorespiratory failure, infections, surgical issues, genetic disorders and congenital anomalies. Currently, the newborn medicine program only offers an elective in the Magee Women's Hospital NICU, which cares for a very different population of infants, with an emphasis on premature infants and infants with transient problems related to the neonatal transition. The elective rotation in the CHP NICU will offer students exposure to a one-of-a-kind patient population, a full-spectrum of neonatal medicine, and a level of multidisciplinary care not available anywhere else in the region. Students will join the CHP NICU team under the direct supervision of neonatology faculty. The NICU team is made up of attending neonatologists, neonatal-perinatal medicine fellows, neonatal nurse practitioners, pediatric residents, neonatal nurses, and specialized ancillary providers, including pharmacists, nutritionists and therapists. The student will be involved in all aspects of care, including initial assessment, stabilization, diagnostic evaluation and ongoing ICU management. The student will perform procedures such as arterial puncture, umbilical arterial or venous catheterization, lumbar puncture, thoracentesis, paracentesis and endotracheal intubation under the supervision of NICU staff. The student will gain experience in family-centered care. Students will be supervised directly by newborn medicine faculty, with one-on-one precepting throughout the rotation. Newborn medicine fellows and neonatal nurse practitioners will be available as teaching resources. The course director is available in the NICU should the student require additional support. Educational methods will include bedside teaching focused on the student's panel of patients, daily NICU rounds, demonstration of clinical skills and procedures, and didactic sessions (the newborn medicine program's seminars in neonatal medicine, core lecture series, and newborn grand rounds). Key references will be provided. Students may attend

sessions of the AAP/AHA neonatal resuscitation program (scheduled bimonthly). The course director will provide an updated schedule of educational activities on the first day of the rotation. This 4 week inpatient rotation takes place in the neonatal intensive care unit at CHP. Students will assume the care of a panel of 2-4 NICU patients, selected according to their interests

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PEDS 5500 - EMERGENCY PEDIATRICS

Minimum Credits: 0

Maximum Credits: 0

Four week elective at children's hospital in emergency department. Experience in assessment and management of acute illnesses and injuries. Technical skills such as drawing blood, starting IVs, lumbar punctures. Interpret lab studies and x-rays in acute situations. Distinguish mildly acute from serious in emergency situations. Interaction skills with acutely ill and injured child.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PEDS 5510 - PEDIATRIC GASTROENTEROLOGY

Minimum Credits: 0

Maximum Credits: 0

Four week elective at children's hospital involves supervised direct patient contact and formal didactic sessions including inpatient consults, outpatient clinics and assisting in all GI procedures. Eight week research elective provides opportunity to gain skills in clinical or basic investigation of bilea cid metab, gastroesophageal reflux or GI immunology.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PEDS 5520 - DEVELOPMENTAL PEDIATRICS

Minimum Credits: 0

Maximum Credits: 0

Four week elective in child development unit. Focuses on normal child development and development and behavioral disabilities. Includes didactic sessions, reading, field experience and team assessments in outpatient clinic setting. Develop assessments of inpatients at children's hospital and in the ICU at Magee Women's Hospital.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PEDS 5521 - TRIPLE BOARD PEDIATRICS

Minimum Credits: 0

Maximum Credits: 0

This elective is designed to provide an exposure to the interface of pediatrics and child psychiatry. This four-week internship will focus on the psychiatric consultation-liaison service at Children's Hospital of Pittsburgh. Students will participate in clinical activities specific to either pediatrics, medicine or psychiatry with attendance at pediatric outpatient continuity clinic for the triple board residents and the child psychiatry outpatient continuity clinic. Attendance at the pediatric noon conference and the didactic psychiatry sessions and both the pediatric and psychiatry grand rounds series is required.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PEDS 5524 - CHILD ADVOCACY

Minimum Credits: 0

Maximum Credits: 0

This elective will teach medical students how to recognize the signs and symptoms of children who may have been physically sexually abused and/or neglected and become familiar with the basic approach to the medical evaluation of each type of maltreatment

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

PEDS 5525 - CHILD ADVOCACY

Minimum Credits: 0

Maximum Credits: 0

THE PHYSICAL AND SOCIAL ASPECTS OF CHILD SEXUAL AND PHYSICAL ABUSE WILL BE EXPLORED. THE STUDENT WILL HAVE THE OPPORTUNITY TO OBSERVE AND LEARN HOW TO EXAMINE A CHILD SUSPECTED OF BEING ABUSED AND HOW TO DOCUMENT FINDINGS. OBSERVATIONS ON HOW THE CHILD AND ITS FAMILY ARE INTERVIEWED WILL OCCUR. EXPERIENCES MAY INCLUDE JUVENILE AND CRIMINAL COURTS AS WELL AS FOSTER CARE AND HOMELESS SHELTER SITUATIONS.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PEDS 5530 - POISON CENTER

Minimum Credits: 0

Maximum Credits: 0

4 week elective at poison center. Basic principles of managing cases of exposure to toxic materials. Under close supervision, manage poison case via the telephone. Exposure to principals of development and operation of a poison center. Includes rounds on toxicology patients at Children's Hospital. 8 week elective includes independent research.

Academic Career: Medical School

Course Component: Practicum

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PEDS 5540 - PEDIATRIC PULMONOLOGY

Minimum Credits: 0

Maximum Credits: 0

4 week elective at Children's Hospital. Includes history taking, physical exam, choice of diagnostic procedures, perform pulmonary lab tests, reading chest radiographs. Inpatient, outpatient and ICU patients seen. Basic review of pulmonary physiology. Observe and participate in lab testing procedures, interpret results with staff. Observe and help in research projects and clinical investigation.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PEDS 5550 - ADOLESCENT MEDICINE

Minimum Credits: 0

Maximum Credits: 0

4 week elective at children's hospital. Includes normal and abnormal adolescent development, reading and discussion. Learn exam skills and lab testing. Diagnosing sexually-related problems. Participate in psychosocial assessments of teens. Work in outpatient clinic and inpatient consults.

Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PEDS 5560 - AMBULATORY PEDIATRICS

Minimum Credits: 0

Maximum Credits: 0

This four-week elective is designed to provide a primary care pediatric experience in a community setting. The hours and specific duties will be determined by each practice. The student is responsible for contacting and setting up the elective and then obtaining approval from the medical student program director in the department of pediatrics. Supervision and evaluation is provided by the primary care physicians in the practice.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PEDS 5570 - ADOLSCNT AND YOUNG ADULT MEDICN

Minimum Credits: 0

Maximum Credits: 0

This four week elective encompasses a diverse offering in adolescent and young adult medicine. Its clinical content is based at an urban teaching hospital and its college health affiliates. Daily rounds, preceptorships and conferences are part of the rotation with supervision by mercy's full-time pediatric faculty.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PEDS 5580 - SCHOOL HEALTH

Minimum Credits: 0

Maximum Credits: 0

This elective is designed to provide a unique school health experience utilizing urban and suburban schools including school based clinics for teaching sites. This specialized experience will include experience with health education, team meetings and school consultation.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PEDS 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0

Maximum Credits: 0

An individualized course of study may be arranged with the department of pediatrics to fit the student's needs. The student will meet with a department faculty person to design a clinical course of study for a four-week period of time. A written proposal must be approved by the faculty member as well as the student's scheduling advisor. When approvals have been received, the school registrar will schedule the course and notify the department student coordinator.

Academic Career: Medical School

Course Component: Lecture

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PEDS 5720 - MOLECULAR MEDICINE (ILS)

Minimum Credits: 0

Maximum Credits: 0

This course is designed to teach the fourth year medical student some basics of molecular biology and how molecular techniques are being employed to diagnose and treat disease. This course will focus on several single-gene diseases. Forensic use of DNA will also be featured. This course will have 3 lectures and 3 clinics per week and each student will be obliged to give a presentation on a topic selected.

Academic Career: Medical School

Course Component: Lecture

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PEDS 5750 - GET READY FOR RESIDENCY BOOT CAMP

Minimum Credits: 0

Maximum Credits: 0

This elective is an intensive preparation for students who are about to enter residency. Students will be provided with a combination of general and specialty-specific, clinically relevant content in a variety of modalities. The focus will be on content that will prepare the student to function at the starting level of an intern (and meet the expected intern-level milestones) after graduation. Teaching modalities will include simulation, small group sessions, skills workshops, standardized patient cases, and a limited number of high-yield lectures.

Academic Career: Medical School

Course Component: Clinical

Grade Component: S/U Basis

PEDS 5845 - PEDIATRIC RESEARCH

Minimum Credits: 0

Maximum Credits: 0

4 week research elective available with individual pediatric faculty members at children's hospital.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PEDS 5899 - INDEPENDENT STUDY PEDIATRIC

Minimum Credits: 0

Maximum Credits: 0

The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

PEDS 5900 - EXTRAMURAL PEDIATRICS

Minimum Credits: 0

Maximum Credits: 0

A clinical experience in pediatrics may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Periodontics

PERIO 2110 - PERIODONTICS SPECIALTY CLINIC 7

Minimum Credits: 1

Maximum Credits: 1

This course is the clinical practice of periodontics for the first year residents. It includes training in examination, diagnosis and periodontal therapy which includes scaling and root planing and periodontal surgery.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

PERIO 2111 - PERIODONTAL LITERATURE REVIEW 1

Minimum Credits: 2

Maximum Credits: 2

The literature review seminars are designed to provide the graduate student with a review of the classical and up-to-date literature in the periodontal journals. The review of the literature also includes basic science literature and its relationship to periodontal disease.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2112 - SPECIAL TOPICS IN PERIODONTICS 1

Minimum Credits: 0

Maximum Credits: 0

This seminar will feature guest lecturers invited to present specific topics related to the practice of periodontics and periodontal therapy.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2114 - MINERALIZED TISSUE BIOLOGY

Minimum Credits: 1

Maximum Credits: 1

Understanding the present efforts to elucidate mechanisms for bone healing encompasses study of numerous growth factors and signaling molecules. The role of each factor will be described and related to potential therapeutic products. At the completion of the course the student will be familiar with bone biology; given the opportunity to demonstrate capacity for critical evaluation of a paper on tissue engineering and its foundation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

PERIO 2119 - PERIODONTICS SPECIALTY CLINIC 1

Minimum Credits: 3

Maximum Credits: 3

This course is the clinical practice of periodontics for the second year resident. The residents are trained in the treatment of advanced types of periodontal disease. The resident will be trained in the use of bone grafts, soft tissue grafting, guided tissue regeneration and implants.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

PERIO 2120 - PERIODONTICS SPECIALTY CLINIC 8

Minimum Credits: 1

Maximum Credits: 1

This course is the clinical practice of periodontics for the first year residents. It includes training in examination, diagnosis and periodontal therapy

which includes scaling and root planing and periodontal surgery.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

PERIO 2130 - PERIODONTICS SPECIALTY CLINIC 9

Minimum Credits: 3

Maximum Credits: 3

This course is the clinical practice of periodontics for the first year residents. It includes training in examination, diagnosis and periodontal therapy which includes scaling and root planing and periodontal surgery.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

PERIO 2140 - PERIODONTAL TREATMENT PLANNING 1

Minimum Credits: 1

Maximum Credits: 1

This course is the clinical practice of periodontics for the second year resident. The residents are trained in the treatment of advanced types of periodontal disease. The resident will be trained in the use of bone grafts, soft tissue grafting, guided tissue regeneration, and implants.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2141 - PERIODONTAL TREATMENT PLANNING 5

Minimum Credits: 1

Maximum Credits: 1

This course is the clinical practice of periodontics for the second year resident. The residents are trained in the treatment of advanced types of periodontal disease. The resident will be trained in the use of bone grafts, soft tissue grafting, guided tissue regeneration, and implants.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2142 - PERIODONTICS JOURNAL CLUB - 1

Minimum Credits: 0

Maximum Credits: 0

This course encompasses a review of the latest dental and medical journals for the most recent information related to the art, science and practice of periodontics. It will focus on correlating and comparing new information with established concepts.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2144 - PERIODONTICS ASPECTS OF DENTAL IMPLANTS

Minimum Credits: 1

Maximum Credits: 1

This course is designed to present to the graduate resident the different implants systems, selection criteria of implant cases, and guided tissue regeneration as it applies to implantology. The management of failing implants will be also discussed.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2146 - PERIODONTAL RESEARCH 1

Minimum Credits: 1

Maximum Credits: 3

The graduate periodontal program leads to a Master of Science degree. The residents enrolled in this program must do research and write and defend a thesis as part of their degree requirements. This course is designed to help the resident select a research topic, finalize protocols and initiate pilot studies.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

PERIO 2147 - IMPLANT PROSTHODONTICS SEMINAR 2

Minimum Credits: 2

Maximum Credits: 2

This is a multidisciplinary didactic course planned to address advanced topics in oral and maxillofacial implant procedures; guided tissue regeneration in implant dentistry, management of failing implants, and advanced implant reconstructive procedures.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2148 - PERIODONTAL RESEARCH 2

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2149 - PERIODONTICS SPECIALITY CLINIC 2

Minimum Credits: 3

Maximum Credits: 3

This course is the clinical practice of periodontics for the first year resident. The residents are trained in the treatment of advanced types of periodontal disease. The resident will be trained in the use of bone grafts, soft tissue grafting, guided tissue regeneration and implants.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

PERIO 2150 - PERIODONTICS SPECIALITY CLINIC 10

Minimum Credits: 3

Maximum Credits: 3

This course is the clinical practice of periodontics for the second year resident. The residents are trained in the treatment of advanced types of periodontal disease. The resident will be trained in the use of bone grafts, soft tissue grafting, guided tissue regeneration, implants.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

PERIO 2151 - PERIODONTAL LITERATURE REVIEW 2

Minimum Credits: 2

Maximum Credits: 2

Literature review seminars are designed to provide the graduate student with a review of the classical and up-to date literature in the periodontal journals. The review of the literature also includes basic science literature and its relationship to periodontal disease.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2160 - PERIODONTICS SPECIALTY CLINIC 11

Minimum Credits: 1

Maximum Credits: 1

This course is the clinical practice of periodontics for the second year resident. The residents are trained in the treatment of advanced types of periodontal disease. The resident will be trained in the use of bone grafts, soft tissue grafting, guided tissue regeneration, implants.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

PERIO 2180 - PERIODONTIC LITERATURE REVIEW 7

Minimum Credits: 2

Maximum Credits: 2

The literature review seminars are designed to provide the graduate student with a review of the classical and up-to date literature in the periodontal journal. The review of the literature also includes basic science literature and its relationship to periodontal disease.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2181 - PERIODONTAL LITERATURE REVIEW 8

Minimum Credits: 2

Maximum Credits: 2

The literature review seminars are designed to provide the graduate student with a review of the classical and up-to date literature in the periodontal journal. The review of the literature also includes basic science literature and its relationship to periodontal disease.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2182 - PERIODONTICS LITERATURE REVIEW 9

Minimum Credits: 2

Maximum Credits: 2

The literature review seminars are designed to provide the graduate student with a review of the classical and up-to date literature in the periodontal journal. The review of the literature also includes basic science literature and its relationship to periodontal disease.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2190 - ADVANCED PERIODONTAL CONCEPTS

Minimum Credits: 2

Maximum Credits: 2

This advanced periodontal concepts course is designed to familiarize the graduate student with advanced concepts in the science and art of clinical periodontics through intensive study of textbooks and by means of clinical demonstrations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PERIO 2199 - INTRODUCTION TO PERIODONTICS SPECIALTY CLINIC

Minimum Credits: 3

Maximum Credits: 3

This course allows the resident to select a special project.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

PERIO 2210 - SPECIAL TOPICS IN PERIODONTICS 4

Minimum Credits: 1

Maximum Credits: 1

This course is a treatment planning seminar attended by the first year residents. The residents present all of their cases at the seminar. The presentation includes a medical and dental history, diagnosis, prognosis and a detailed treatment plan.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2211 - PERIODONTAL LITERATURE REVIEW 3

Minimum Credits: 2

Maximum Credits: 2

The literature review seminars are designed to provide the graduate student with a review of the classical and up-to date literature in the periodontal journals. The review of the literature also includes basic science literature and its relationship to periodontal disease.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2212 - SPECIAL TOPICS IN PERIODONTICS 2

Minimum Credits: 1

Maximum Credits: 1

This seminar will continue the guest lecture series related to specific topics in periodontics.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2213 - HOSPITAL PERIODONTICS - 1

Minimum Credits: 1

Maximum Credits: 1

This course is designed to provide hospital training in the management of periodontal problems in patients with chronic medical conditions. The graduate periodontics student will interact with VA Residents in the periodontal care of VA patients.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

PERIO 2216 - PERIODONTAL RESEARCH 3

Minimum Credits: 1

Maximum Credits: 3

The graduate periodontal program leads to a Master of Science degree. The residents enrolled in this program must do research and write and defend a thesis as part of their degree requirements. This course is designed to help the resident select a research topic, finalize protocols and initiate pilot studies.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

PERIO 2219 - PERIODONTICS SPECIALTY CLINIC 12

Minimum Credits: 1

Maximum Credits: 1

This course is the clinical practice of periodontics for the first year residents. It includes training in examination, diagnosis and periodontal therapy which includes scaling and root planing and periodontal surgery.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

PERIO 2223 - PERIODONTICS JOURNAL CLUB - 3

Minimum Credits: 1

Maximum Credits: 1

This course provides a continuing review of current dental and medical literature related to the art, science and practice of periodontics. Discussion will focus on the correlation of new information with established concepts.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2230 - SPECIAL TOPICS IN PERIODONTICS 3

Minimum Credits: 1

Maximum Credits: 1

This course is a treatment planning seminar attended by the first year residents. The residents present all of their cases at the seminar. The presentation includes a medical and dental history, diagnosis, prognosis and a detailed treatment plan.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2240 - PERIODONTAL TREATMENT PLANNING 2

Minimum Credits: 1

Maximum Credits: 1

This course is a treatment planning seminar attended by the second year residents. The residents present all of their cases at the seminar. The presentation includes a medical and dental history, diagnosis, prognosis and a detailed treatment plan.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2241 - HOSPITAL PERIODONTICS 2

Minimum Credits: 1

Maximum Credits: 1

This course is designed to provide hospital training in the management of periodontal problems in patients with chronic medical conditions. The graduate periodontics student will interact with VA residents in the periodontal care of VA patients.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

PERIO 2242 - PERIODONTICS JOURNAL CLUB 2

Minimum Credits: 1

Maximum Credits: 1

This course provides a continuing review of current dental and medical literature related to the art, science and practice of periodontics. Discussion

will focus on the correlation of new information with established concepts.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2244 - PERIODONTAL LITERATURE REVIEW 4

Minimum Credits: 2

Maximum Credits: 2

A literature review seminar designed to provide the graduate student with a review of the classical and up-to-date literature in the periodontal journals. The review of the literature also includes basic science literature and its relationship to periodontal disease.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2246 - PERIODONTAL RESEARCH 4

Minimum Credits: 1

Maximum Credits: 1

Continuation of ongoing research to finalize protocols and initiate pilot studies.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2247 - PERIODONTAL TREATMENT PLANNING 3

Minimum Credits: 1

Maximum Credits: 1

This course is a treatment planning seminar attended by the second year residents. The residents present all of their cases at the seminar. The presentation includes a medical and dental history, diagnosis, prognosis and a detailed treatment plan.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2249 - PERIODONTICS SPECIALTY CLINIC 4

Minimum Credits: 1

Maximum Credits: 1

This course is the clinical practice of periodontics for second year residents. It includes training in examination, diagnosis and periodontal therapy which includes scaling and root planning and periodontal surgery.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

PERIO 2250 - SPECIAL TOPICS IN PERIODONTICS 5

Minimum Credits: 1

Maximum Credits: 1

This course is a treatment planning seminar attended by the second year residents. The residents present all of their cases at the seminar. The presentation includes a medical and dental history, diagnosis, prognosis and a detailed treatment plan.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2251 - CONCEPTS OF MODERN SEDATION

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2252 - INTRAOPERATIVE MANAGEMENT OF COMORBIDITIES

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2253 - PERIODONTICS TREATMENT PLANNING 4

Minimum Credits: 1
Maximum Credits: 1
This is a multidisciplinary didactic and clinical course planned to provide periodontic residents with a systematic approach to diagnosis, treatment planning and management of patients.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2254 - PERIODONTICS JOURNAL CLUB 4

Minimum Credits: 1
Maximum Credits: 1
This course provides a continuing review of current dental and medical literature related to the art, science and practice of periodontics. Discussion will focus on the correlation of new information with established concepts.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2260 - SPECIAL TOPICS IN PERIODONTICS 6

Minimum Credits: 1
Maximum Credits: 1
This course is a treatment planning seminar attended by the second year residents. The residents present all of their cases at the seminar. The presentation includes a medical and dental history, diagnosis, prognosis and a detailed treatment plan.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PERIO 2280 - SPECIAL WORK

Minimum Credits: 1
Maximum Credits: 3
This course allows the resident to select a special project.
Academic Career: Graduate
Course Component: Clinical
Grade Component: Grad Letter Grade

PERIO 2289 - PERIODONTICS SPECIALTY CLINIC 3

Minimum Credits: 1

Maximum Credits: 1

Continuation of previous periodontics specialty clinic courses involving increasing complexity of case types and treatments.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

PERIO 2313 - HOSPITAL PERIODONTICS 3

Minimum Credits: 1

Maximum Credits: 1

This course is designed to expose the graduate periodontic student to different hospitals and interact residents in periodontal care of Montefiore University hospital patients. The graduate periodontic student will also interact with oral surgery residents and will perform implant procedures.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2314 - PERIODONTICS JOURNAL CLUB 5

Minimum Credits: 0

Maximum Credits: 0

Periodontics journal club 5 provides a continuing review of the recent dental and medical journals.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2315 - PERIODONTICS JOURNAL CLUB 6

Minimum Credits: 1

Maximum Credits: 1

Periodontics journal club 6 provides a continuing review of recent dental and medical literature related to the art, science and practice of periodontics. Discussion will focus on the correlation of new information with established concepts.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2316 - PERIODONTICS RESEARCH 5

Minimum Credits: 1

Maximum Credits: 1

Continuation of ongoing research to finalize and complete the data and start writing a thesis.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2317 - PERIODONTICS RESEARCH 6

Minimum Credits: 1

Maximum Credits: 1

Continuation of ongoing research to finalize the research project and complete writing a thesis.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2318 - PERIODONTICS SPECIALTY CLINIC 5

Minimum Credits: 3

Maximum Credits: 3

This course is the clinical practice of periodontics for the third year residents. The resident will be trained in the use of bone grafts, soft tissue grafting, guided tissue regeneration and implants.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

PERIO 2319 - PERIODONTICS SPECIALTY CLINIC 6

Minimum Credits: 3

Maximum Credits: 3

This course is the clinical practice of periodontics for the third year residents. The resident will be trained in the use of bone grafts, soft tissue grafting, guided tissue regeneration and implants. The course involves increasing complexity of case types and treatments.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

PERIO 2320 - PERIODONTAL LITERATURE REVIEW 5

Minimum Credits: 2

Maximum Credits: 2

The periodontal literature review 5 seminars are designed to provide the graduate student with a review of the classical and current literature in the periodontal journals.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2321 - PERIODONTICS LITERATURE REVIEW 6

Minimum Credits: 2

Maximum Credits: 2

The literature review 6 seminars are designed to provide the graduate student with a review of the classical and current literature in the periodontal journals. The review of the literature also includes basic science literature and its relation to treatment.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2322 - PERIODONTAL TREATMENT PLANNING 6

Minimum Credits: 1

Maximum Credits: 1

This is a multidisciplinary didactic and clinical course planned to provide periodontic residents with a systematic approach to diagnosis, treatment planning and management of patients.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PERIO 2341 - HOSPITAL PERIODONTICS 4

Minimum Credits: 1

Maximum Credits: 1

This course is designed to expose the graduate periodontic student to different hospitals and interact residents in periodontal care of Montefiore University hospital patients. The graduate periodontic student will also interact with oral surgery residents and will perform implant procedures.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

PERIO 5141 - PERIODONTOLOGY 1

Minimum Credits: 1

Maximum Credits: 1

The 21st century dentist will see a shifting paradigm toward a more significant and possibly dominant role of bioscience in our biochemical profession. The course continuum of periodontology i and ii will review and show application of the relevant basic science principles utilized in the field of periodontology. It will then build upon those basic principles in helping to achieve diagnostic, therapeutic, and preventive skills in the management of periodontal diseases. A major emphasis will be placed on the effect of oral health/disease on the systemic health/disease of our patients. Finally, in light of current, ongoing, and expanding research in the area of oral/systemic relationships, emphasis will be placed on the combined and cooperative roles of both the dentist and physician in providing comprehensive healthcare to our patients.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

PERIO 5149 - PERIODONTAL INSTRUMENTATION 1

Minimum Credits: 0.5

Maximum Credits: 0.5

This course is intended to introduce the dental student to the instrumentation utilized in the performance of periodontal procedures via lectures and simulation clinic exercises. Topics such as instrument grasp(s), operator positioning, and an introduction to the proper use of scalers will be covered.

Academic Career: Dental Medicine

Course Component: Practicum

Grade Component: Grad HSU Basis

PERIO 5171 - PERIODONTAL INSTRUMENTATION 1

Minimum Credits: 1

Maximum Credits: 1

In this course, students will be introduced to the instrumentation utilized in the performance of periodontal procedures via lectures and simulation clinic exercises. Topics such as instrument grasp(s), operator positioning, and an introduction to the proper use of scalers will be covered. This course will prepare students for Periodontal Instrumentation 2, where advanced techniques including scaling and root planing procedures will be addressed.

Academic Career: Graduate

Course Component: Practicum

Grade Component: ABCF

PERIO 5172 - PERIODONTOLOGY 2

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad Letter Grade

PERIO 5178 - INTRODUCTION TO CLINICAL PERIODONTICS

Minimum Credits: 1

Maximum Credits: 1

This course will provide students with information and training in all phases of periodontal screening and evaluation, basic demonstration of oral hygiene procedures and professional tooth cleaning by polishing teeth and basic supragingival scaling. The teaching methods employed will include lectures and discussion, one-on-one instruction and demonstration and hands-on student participation.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad HSU Basis

PERIO 5210 - PERIODONTAL INSTRUMENTATION 2

Minimum Credits: 1

Maximum Credits: 1

This course is a continuation of PERIO 5149, Periodontal Instrumentation 1. In this course, students will continue to develop skills in the proper use of instrumentation for the performance of scaling and root planing procedures. Topics such as rest position, fulcrums, instrument grasp(s), and operator positioning will be covered. Ultrasonic instrumentation techniques, Naber's probe, and EHR charting will also be introduced and practiced. This course includes lecture and small group simulation clinic exercises and graded evaluations.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: ABCF

PERIO 5212 - PERIODONTOLOGY 2

Minimum Credits: 1

Maximum Credits: 1

In this course, students will build upon concepts learned in Periodontology 1 to develop foundational knowledge associated with the clinical aspects of periodontology. We begin by exploring various diseases and conditions affecting the periodontium. Students will then begin to understand periodontal defense mechanisms and how different etiologies and risk factors lead to development of periodontal disease. Students will learn the periodontal clinical examination parameters and how they relate to diagnosis, prognosis, treatment planning, and maintenance therapies. Emphasis is placed on both the basic and clinical science knowledge necessary in the diagnosis, treatment, and prevention of periodontal diseases relative to the students introduction to the dental clinics. This course includes lectures, quizzes, and, exams.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

PERIO 5213 - PERIODONTAL CLINIC 1

Minimum Credits: 0

Maximum Credits: 0

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad LG/SU3 Basis

PERIO 5243 - PERIODONTAL CLINIC

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

PERIO 5319 - CLINICAL PERIODONTICS 2

Minimum Credits: 2

Maximum Credits: 2

Procedures will include clinical diagnostic methods, treatment decision making and periodontal treatment planning, patient communication, patient home care instructions, subgingival scaling and root planing, instrument sharpening, selective occlusal grinding, assessment of treatment outcomes, and periodontal maintenance procedures. Additionally, the student will have the opportunity to be exposed to periodontal surgical procedures such as gingivectomy, flap procedures, regenerative procedures and grafts.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

PERIO 5343 - PERIODONTOLOGY 3

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF with +/- Values

PERIO 5349 - CLINICAL PERIODONTICS 3

Minimum Credits: 2

Maximum Credits: 2

Procedures will include clinical diagnostic methods, treatment decision-making and periodontal treatment planning, patient communication, patient home care instructions, subgingival scaling and root planning, instrument sharpening, selective occlusal grinding, assessment of treatment outcomes, and periodontal maintenance procedures. Additionally, the student will have the opportunity to be exposed to periodontal surgical procedures such as gingivectomy, flap procedures, regenerative procedures and grafts.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

PERIO 5376 - PERIODONTOLOGY 6

Minimum Credits: 1

Maximum Credits: 1

This course will introduce the fourth year dental student to some of the more recent advances in periodontics and periodontal research. Topics covered will include mechanisms of bacterial infectious disease, concepts of disease activity, new diagnostic tests, antimicrobial therapies, efficacy of non-surgical vs. Surgical therapy, implantology, and periodontics in the practice of dentistry.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: Grad Letter Grade

PERIO 5379 - CLINICAL PERIODONTICS 1

Minimum Credits: 2

Maximum Credits: 2

This course is designed to provide clinical experiences in the area of periodontics for predoctoral dental students. By the end of the fourth year of the curriculum, students will be able to demonstrate competence in providing care to dental patients with periodontal needs at the level of a general dentist and will participate in a variety of additional experiences to increase skills in caring for the patient with periodontal needs.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: ABCF

PERIO 5419 - CLINICAL PERIODONTICS 5

Minimum Credits: 2

Maximum Credits: 2

Procedures will include clinical diagnostic methods, treatment decision making and periodontal treatment planning, patient communication, patient home care instructions, subgingival scaling and root planing, instrument sharpening selective occlusal grinding, assessment of treatment outcomes, and periodontal maintenance procedures. Additionally, the student will have the opportunity to be exposed to periodontal surgical procedures such as gingivectomy, flap procedures, regenerative procedures and grafts.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

PERIO 5449 - CLINICAL PERIODONTICS 2

Minimum Credits: 2

Maximum Credits: 2

Procedures will include clinical diagnostic methods, treatment decision-making and periodontal treatment planning. Patient communication, patient home care instructions, subgingival scaling and root planning, instrument sharpening, selective occlusal grinding, assessment of treatment outcomes, and periodontal maintenance procedures. Additionally, the student will have the opportunity to be exposed to periodontal surgical procedures such as gingivectomy, flap procedures, regenerative procedures and soft tissue grafts.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: ABCF

PERIO 5800 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 3

Academic Career: Dental Medicine

Course Component: Directed Studies

Grade Component: Grad HSU Basis

PERIO 5847 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 3

This directed study is designed for the undergraduate dental student who desires to pursue research interests in basic science. These areas include any one of the following: immunology, microbiology, nutrition or oral biology. The content of the course is specified by the student and approved by the course director. The teaching format is designed to teach the student specific knowledge or skills of research using enhanced faculty interaction and personal contact.

Academic Career: Dental Medicine

Course Component: Directed Studies

Grade Component: Grad HSU Basis

PERIO 5900 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 3

This course is designed to provide the student with an opportunity to conduct in-depth study in a particular subject area of their choice.

Academic Career: Dental Medicine

Course Component: Independent Study

Grade Component: Grad HSU Basis

PERIO 5910 - ADVANCED PERIODONTICS

Minimum Credits: 3

Maximum Credits: 3

Dental students will have the opportunity to become familiar with periodontal surgical concepts and techniques through study of the periodontal literature and through participation in mentor - resident and faculty supervised periodontal flap procedures.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

PERIO 5940 - ADVANCED PERIODONTICS - 2

Minimum Credits: 3

Maximum Credits: 3

This course has an overall goal of allowing hands-on exposure to flap access surgery. The student will participate in pre-surgical evaluation and surgical treatment planning of patients with mild and/or moderate periodontal disease, and patients in need of crown elongation surgery. Through observation and participation with their mentor-resident and faculty, they will learn to apply proper flap design, periodontal flap incisions and reflection, surgical debridement and flap closure.

Academic Career: Dental Medicine

Course Component: Clinical
Grade Component: Grad HSU Basis

Pharmacy

PHARM 2001 - PHARMACEUTICAL ANALYSIS

Minimum Credits: 4

Maximum Credits: 4

Current methods utilized in pharmaceutical research for the analysis and isolation of drugs and their metabolites. Theories of extraction, solvent partition and forms of chromatography (adsorption, partition, gas, liquid, counter current, ion exchange, gel-filtration and electrophoresis) are discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: School of Pharmacy students only.

PHARM 2003 - PHARMACOEPIDEMIOLOGY

Minimum Credits: 2

Maximum Credits: 2

Introduction to the field of pharmacoepidemiology which uses epidemiologic methods to examine the benefits or risks of medications in the population.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Pharmacy students only.

PHARM 2005 - RESEARCH DISCUSSION COURSE

Minimum Credits: 2

Maximum Credits: 2

Course is designed for students enrolled in the non-thesis MS program. The focus of the course is enhancement of the students' understanding of scientific literature and research methodologies. It will also provide an opportunity for students to learn about and discuss research careers, challenges of clinical vs. Preclinical research, research ethics, and professional development.

Academic Career: Graduate

Course Component: Colloquium

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 2010 - MASTER OF SCIENCE THESIS

Minimum Credits: 1

Maximum Credits: 12

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: School of Pharmacy students only.

PHARM 2015 - COMPREHENSIVE EXAM: NON-THESIS MASTER OF SCIENCE

Minimum Credits: 1

Maximum Credits: 3

Students will be assigned several research papers to study and review independently. The research papers will serve as the base for an in-class comprehensive examination to assess the student's critical thinking skills, writing competence, and ability to synthesize and integrate knowledge

acquired during the MS program.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 2510 - EXECUTIVE BOARDROOM

Minimum Credits: 1

Maximum Credits: 1

This interactive course brings in top pharmaceutical and health care executives and builds on the business and management concepts and principles learned in previous courses. Students are engaged in a structured understanding of the "business of pharmacy in health care" and related fields that impact the profession in an executive boardroom format. This course follows the dollar from patient to product and service in the following manner: patient->health insurance pharmacy benefit->PBM->pharmaceutical industry->pharmacies. The selection process requires a one-page narrative on the potential contribution(s) of this course to the student's education and/or career goals.

Academic Career: Graduate

Course Component: Colloquium

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 3000 - TOPICS IN NEUROSCIENCE

Minimum Credits: 1

Maximum Credits: 1

The objectives of the course are to strengthen the abilities of research-directed, pre- and postdoctoral students to understand and evaluate current research and to describe that research to others in a concise and meaningful way and to broaden students' understanding of fundamental workings of the central nervous system so as to increase their understanding and appreciation for the basic science which under lies and supports current research in the therapeutic treatment of behavioral and psychiatric disorders.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 3002 - ADVANCED PHARMACOKINETICS

Minimum Credits: 4

Maximum Credits: 4

This course deals with fundamental aspects of pharmacokinetic concepts from model building, data analysis and parameter estimates after various routes of drug administration.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 3009 - ADVANCES IN PHARMACEUTICAL SCIENCES

Minimum Credits: 1

Maximum Credits: 1

Discussion series on contemporary topics that have direct or indirect impact in the field of pharmaceutical sciences. Each topic will be presented by a speaker and will serve as the basis for detailed discussion.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

Course Requirements: School of Pharmacy students only.

PHARM 3010 - PHD DISSERTATION RESEARCH

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis
Course Requirements: School of Pharmacy students only.

PHARM 3011 - PRINCIPLES OF BIOCHEMISTRY

Minimum Credits: 1
Maximum Credits: 1
The Principles of Biochemistry course provides a basic underpinning of the biochemical and molecular biology principles that are critical to understand disease states and drug discovery, and mechanisms of action and disposition of pharmaceutical agents. The course provides basic insights into the chemical, physical, thermodynamic and genetic foundations of life. The course complements other required core courses taken: Pharmacology and Foundations of Pharmaceutical Sciences. In addition, the course provides the required background for other elective graduate courses.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 3024 - PHARMACEUTICAL SCIENCES SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Weekly program in which graduate students, faculty and invited speakers present seminars on topics of current interest.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 3025 - PHARMACEUTICAL SCIENCES SEMINAR

Minimum Credits: 1
Maximum Credits: 1
Weekly program in which graduate students, faculty and invited speakers present seminars on topics of current interest.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad HSU Basis
Course Requirements: School of Pharmacy students only.

PHARM 3028 - PHARMACOLOGY AND THERAPEUTICS

Minimum Credits: 4
Maximum Credits: 4
Topics include analgesics, antibiotics, antihistamines, autonomic drugs, CNS drugs, cardiovascular drugs, digestive pharmacology, drug abuse, drug laws, hypoglycemics, principles of drug action and reproductive pharmacology.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Pharmacy students only.

PHARM 3032 - MEDICINAL CHEMISTRY

Minimum Credits: 3
Maximum Credits: 3

The course is designed for graduate students starting the second year of a Ph.D. program in chemistry and pharmacy. It teaches the basics of medicinal chemistry and will endow the students with the necessary skills to understand medicinal chemistry scientific literature and to make meaningful proposals of the design/synthesis of drug-like compounds. Topics include energetics of drug-protein interactions, introduction to different types of target classes, introduction to structure based design, including computational chemistry, as well as optimization of hit into leads compound. The course incorporates an extensive exercising part where students are asked to propose and (virtually) perform small target oriented drug discovery projects. Students are required to verbally present twice during this course. Additionally, students are tested twice in written.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 3034 - TOPICS IN TRANSLATIONAL RESEARCH

Minimum Credits: 1

Maximum Credits: 1

This course is structured as a journal club focused on translational investigations and is being offered jointly with the universities of Minnesota, North Carolina, and Pittsburgh for 1st and 2nd year graduate students from all three programs who will participate in discussions by live video teleconferencing. Articles emphasizing methods which allow for translation from preclinical to clinical investigation will be discussed in several different therapeutic areas with emphasis on pharmacometrics, genomics, biomarker validation, and drug discovery.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: School of Pharmacy students only.

PHARM 3036 - ADVANCES IN DRUG DELIVERY AND REGENERATIVE MEDICINE

Minimum Credits: 1

Maximum Credits: 1

Course is designed to provide the recent developments in the field of drug delivery and regenerative therapies to graduate students. This course, structured as a journal club, will introduce different concepts in drug/gene delivery research through analyzing recent scientific literature. It will also expose students to novel regenerative therapies under development and their role in personalized medicine. If possible, we will also introduce some clinical examples where such regenerative therapies have been successfully used in patients. The course will use scientific research articles from high impact factor journals to introduce these concepts. The course is intended primarily for first/second year graduate students enrolled in the MS or Ph.D. program specifically in the pharmaceuticals track. Postdoctoral researchers may participate with prior approval from the course coordinators.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 3038 - ESSENTIALS COMPETITIVE GRANT WRITING 1

Minimum Credits: 2

Maximum Credits: 2

Course teaches basic skills of competitive grant writing. Topics include grant structure, grant writing, and preparation of a grant budget.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 3039 - ESSENTIALS COMPETITIVE GRANT WRITING 2

Minimum Credits: 2

Maximum Credits: 2

Course teaches basic skills of competitive grant writing. Topics include grant structure, grant writing, and preparation of a grant budget.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 3040 - STATISTICAL METHODS

Minimum Credits: 3

Maximum Credits: 3

Course is designed to teach graduate students standard and advanced statistical methods of data analysis. Where appropriate and consistent with the students' educational background, theoretical foundations for statistical methods will be discussed. Students will obtain skills necessary to analyze simple as well as complex data sets and to identify and apply methods appropriate for solving statistical problems presented during class sessions, homework assignments, and exams. At the end of this course, students will have skills to construct and test statistical models and will be able to understand statistical methods used in research articles and critique the methods selected.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 3042 - RESEARCH PRACTICUM

Minimum Credits: 1

Maximum Credits: 12

Course provides practical training in advanced research methodology and skills. Students will be engaged in active research with a faculty member or designate as approved by the student's doctoral committee or by the graduate program director. Students enrolled in the graduate program may register to earn 1-12 units per term until they have advanced to candidacy for the Ph.D. Degree.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 3043 - TEACH ME TO TEACH YOU

Minimum Credits: 1

Maximum Credits: 1

Course is designed to introduce graduate students to the art and science of teaching. Course will essentially consist of a brief presentation by faculty on different aspects and approaches to teaching followed by a 30 minutes presentation of basic concepts related to individual research carried out by graduate students.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 3045 - ADVANCED STATISTICAL METHODS

Minimum Credits: 3

Maximum Credits: 3

Course is designed to teach graduate students advanced statistical methods of data analysis. Where appropriate and consistent with the students' educational background, theoretical foundations for statistical methods will be discussed. Students will obtain skills necessary to analyze complex data sets and to identify and apply methods appropriate for solving statistical problems presented during class sessions, in homework assignments, and in exams. At the end of the course, students will have skills to construct and test complex statistical models and will be able to understand statistical methods used in research articles and critique the methods selected.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 3048 - DRUG DESIGN AND DEVELOPMENT JOURNAL CLUB

Minimum Credits: 1

Maximum Credits: 1

Course is designed to provide an opportunity for the students to informally learn and discuss concepts and applications in the area of drug discovery, design and development.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Pharmacy students only.

PHARM 3049 - SCIENTIFIC WRITING SKILLS

Minimum Credits: 2

Maximum Credits: 2

Course is designed to provide the systematic approach of reading and writing a scientific paper to graduate students. Writing a review or a research paper in the peer reviewed journals is an integral part of the graduate curriculum. Course will introduce different components of a scientific paper, how to read and summarize a scientific paper, methodical approach towards writing a paper and managing references using endnote software.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 3050 - RESEARCH PREPARATION

Minimum Credits: 1

Maximum Credits: 1

Course is designed to provide an opportunity for the students to learn applications, guidelines, regulations, and procedures necessary for safe, ethical, and accountable research. Required course for all non-thesis MS students. Elective for all others.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 3051 - SOCIAL & BEHAVIORAL THEORIES IN PHARMACEUTICAL OUTCOMES & POLICY RESEARCH

Minimum Credits: 3

Maximum Credits: 3

This course provides a comprehensive study of the major social/behavioral theories and models that are relevant to pharmaceutical outcomes and policy research (POPR). Students will critically evaluate and apply social and behavioral science theories from medical sociology, health psychology, engineering, health services research, and related fields to understand utilization of prescription and non-prescription medications, provider prescribing behavior, and patient medication-taking behavior. A focus is placed on helping students apply their knowledge of relevant theories/models to guide the investigation of pharmaceutical outcomes and policy research questions, including hypothesis generation, study design, methodology, and appropriate interpretation of results. Part 1 of the course will introduce and critically evaluate the predominant theories, models, and frameworks used in POPR. Part 2 will evaluate how these theories and models have been applied to address specific topics in POPR, drawing heavily on research studies that have been published in the peer-reviewed literature.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 3052 - TOPICS AND METHODS IN PHARMACEUTICAL OUTCOMES AND POLICY RESEARCH

Minimum Credits: 1

Maximum Credits: 1

Topics and Methods in Pharmaceutical Outcomes and Policy Research is structured as a journal club and is designed to introduce recent developments in pharmaceutical outcomes and policy research, with a focus on observational study design and methodology. Students on the 2nd,

3rd or 4th year of graduate training will have the opportunity to discuss present scientific findings of their own.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 3062 - ADVANCED METHODS IN PHARMACEUTICAL OUTCOMES & POLICY RESEARCH

Minimum Credits: 3

Maximum Credits: 3

Graduate level course designed to develop student understanding and skills related to research designs and analytic methods for conducting population-based studies drawn from large observational survey and claims databases.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 3063 - GRADUATE RESEARCH ROTATION

Minimum Credits: 3

Maximum Credits: 3

Special research projects are conducted under the supervision of a faculty member to acquaint the graduate student with advanced research techniques.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 3067 - CLINICAL PHARMACY ENVIROMENTS

Minimum Credits: 2

Maximum Credits: 2

The successful completion of clinical research is dependent upon an understanding of how healthcare is delivered in the environment where it is conducted. A significant number of clinical studies involve drugs and/or the acquisition of drug concentrations. This course is designed for students who do not have clinical pharmacy experience within the U.S. Healthcare system. The goal is to improve these students' abilities to design clinical/translational research studies by introducing fundamental concepts of how pharmaceutical care is delivered in a U.S. Academic health system. To meet this objective, students will gain an appreciation of how pharmaceutical care is delivered through didactic lectures and guided exposures to multiple clinical pharmacy environments with experienced clinical pharmacists. During each field observation, students will be expected to identify the application of pharmacy and therapeutics interventions. Students will also learn how clinical data is generated and stored to deliver daily patient care and how databases may be used for research purposes. Additionally, students are expected to gain an appreciation for the privacy regulations that are associated with accessing protected health information (phi) for research and their implications for designing and conducting clinical/translational research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 3068 - COMPUTATIONAL SYSTEMS PHARMACOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course will teach the fundamentals of computational systems pharmacology (CSP) modeling and their applications to study drug actions and rational development of new drugs through network analysis. Theoretical concepts pertaining to computational systems pharmacology, such as drug target identification and computer aided drug design (CADD), will be taught. The course also includes hands-on training with the mainstream network analysis and CADD software, such as Symbiology of Matlab, Tetrad, drug discovery package of Schrodinger. This is a mandatory course to be taken for the PSP program.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 3069 - PHARMACOMETRICS

Minimum Credits: 3

Maximum Credits: 3

This course will provide training in the fundamentals of pharmacometrics & systems pharmacology (PSP) modeling and their applications to study drug actions through multiscale modeling and simulations [mechanism-driven] and data analysis [data-driven]. Theoretical concepts pertaining to PSP, such as population pharmacokinetics/pharmacodynamics (pop PK/PD) modelling both from mechanistic and statistical points of view, physiologically-based pharmacokinetics (PBPK) data analysis, will be taught. The course covers the advanced pharmacokinetics/pharmacodynamics (PK/PD) topics, such as drug-drug interactions, disease progression, as well as multi-scaling PK/PD modeling of drug actions for selected diseases, including cancers, type 2 diabetes, etc. The course also offers hands-on training on using mainstream population PK/PD and PBPK modeling and simulation software. This is a mandatory course to be taken for the PSP program.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 3070 - GENOMICS & CANCER THERAPEUTICS

Minimum Credits: 1

Maximum Credits: 1

This course, structured as a journal club, is designed to provide an opportunity for students to informally learn and discuss concepts and applications in the area of genomics and cancer therapeutics.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

Course Requirements: School of Pharmacy students only.

PHARM 3071 - FOUNDATIONS IN PHARMACEUTICAL SCIENCES

Minimum Credits: 4

Maximum Credits: 4

The discovery and development of new drugs and dosage forms, elucidating mechanisms of drug metabolism and assessing drug effects, therapeutic response, and patient outcomes is the cornerstone of pharmaceutical sciences. To continue advancing the field, future pharmaceutical researchers must develop broad knowledge of the identification and validation of human disease targets, screening approaches to new drug discovery, preclinical drug compound evaluation, drug delivery, preclinical to clinical drug development, and the impact of drugs on patient population outcomes. This course will provide students with an overview of the principles of pharmaceutical sciences and contemporary methodologies of drug discovery and development. Emphasis is placed on understanding how pharmaceutical research is influenced by which drugs are developed, formulated, and evaluated during the drug development process from discovery to clinical efficacy and ultimately to the impact on patient disease populations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 3072 - TOPICS IN PHARMACOKINETICS/PHARMACODYNAMICS JOURNAL CLUB

Minimum Credits: 1

Maximum Credits: 1

Course involves a discussion of current topics of interest in pharmacokinetics and pharmacodynamics.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

Course Requirements: School of Pharmacy students only.

PHARM 3073 - APPLIED MULTIVARIATE STATISTICAL ANALYSIS IN PHARMACEUTICAL SCIENCES

Minimum Credits: 3

Maximum Credits: 3

This course is designed to teach graduate students multivariate statistical methods. Where appropriate and consistent with the students'™ educational background, theoretical foundations for multivariate statistical methods will be discussed. Students will obtain skills necessary to analyze complex data sets and to identify and apply multivariate statistical methods appropriate for analyzing complex data sets and statistical problems presented during class sessions, in homework assignments, and in an exam. At the end of this course, they will have skills to construct and test and analyze complex statistical models. Furthermore, they will be able to understand multivariate statistical methods used in research articles and critique the methods selected. The major topics covered in this course will be (1) matrix and vector algebra, (2) measures of central tendency, dispersion, and association, (3) graphical display of multivariate data, (4) multivariate normal distribution, (5) inference for means, (6) multivariate regression, (9) multivariate analysis of variance, (10) canonical correlation coefficient, (11) repeated measures analysis, (12) principal component analysis, (13) factor analysis, (14) cluster analysis, (15) discriminant analysis, classification and pattern recognition. Students will be required to apply statistical software packages, such as STATA, SPSS, SAS, R or other appropriate programs.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 3140 - INTRODUCTION TO TRANSLATIONAL RESEARCH IN THE HEALTH SCIENCES

Minimum Credits: 2

Maximum Credits: 2

Course will provide students with a comprehensive survey of the processes involved in translating research discoveries into practices that promote health and prevent disease. The specific topics to be covered include five goals: 1) Introduce students to the NIH roadmap and to discuss the conceptual framework for multidisciplinary and interdisciplinary research. 2) Provide perspectives on objectives outlined at the national level in healthy people 2010/2020 and at the global level by organizations such as the world health organization. 3) Provide an understanding of the models of translational research. 4) Introduce students to the methods of clinical and translational research. 5) Interpret and explain the drug and therapeutic development process. Also, topics include the implementation of new therapies as standards of care and the application of innovative preventive services. Various research methodologies, including those encompassed in the drug development process will be discussed. Course will offer lectures via electronic media and will use a collaborative learning approach to classroom activities.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

PHARM 4999 - FULL TIME STATUS

Minimum Credits: 0

Maximum Credits: 0

Designed to accommodate summer billing for pharmacy students.

Academic Career: Graduate

Course Component: Clinical

Grade Component: No Grade Required

Course Requirements: School of Pharmacy students only.

PHARM 5110 - PHARMACIST PATIENT CARE 1: PROCESS AND SKILLS

Minimum Credits: 3

Maximum Credits: 3

First of six semester sequence of courses that support the students' development of competence in four major areas- clinical skills, the psychosocial dimensions of pharmacy practice, managing as a professional pharmacist, and professional inquiry.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5111 - PHARMACIST PATIENT CARE 2: SKILLS AND ENVIRONMENTS

Minimum Credits: 4

Maximum Credits: 4

The second of six courses that support the students' development of competence in clinical skills, the psychosocial dimensions of pharmacy practice, managing as a professional pharmacist, and professional inquiry.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5112 - COMMUNITY HEALTH 1: COMMUNICATION AND WELLNESS

Minimum Credits: 1

Maximum Credits: 1

Provides students with field-based experience in which they can examine the role of the pharmacy and pharmacists in a variety of practice settings, develop basic dispensing and counseling skills, collect and interpret data from the practice site.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 5113 - COMMUNITY HEALTH 2: CULTURAL AWARENESS AND BEHAVIOR

Minimum Credits: 1

Maximum Credits: 1

A continuation of experiential education from term 1. Provides students with field-based experience in which they can examine the role of the pharmacy and pharmacists in a variety of practice settings, develop basic dispensing and counseling skills, collect and interpret data from the practice site.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 5114 - ANATOMY AND PHYSIOLOGY 1

Minimum Credits: 3

Maximum Credits: 3

First part of a two course sequence that provides an integrated presentation of human anatomy and physiology. Information about each system is presented to explain the processes involved in homeostasis so that students will develop an understanding of the working of the entire human body. Wherever appropriate, information about mechanisms of action of selected drugs is presented.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Pharmacy students only.

PHARM 5115 - ANATOMY AND PHYSIOLOGY 2

Minimum Credits: 3

Maximum Credits: 3

Second part of a two course sequence that provides an integrated presentation of human anatomy and physiology. Information about each system is presented to explain the processes involved in homeostasis so that students will develop an understanding of the working of the entire human body. Wherever appropriate, information about mechanisms of action of selected drugs is presented.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: School of Pharmacy students only.

PHARM 5116 - BIOCHEMISTRY 1

Minimum Credits: 3

Maximum Credits: 3

First of two course sequence that enables students to appreciate the chemical process which govern the function of living systems, the molecular basis of disease, the rationale behind use of certain drug classes, and the biochemical basis of clinical diagnostic procedures.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5117 - BIOCHEMISTRY 2

Minimum Credits: 3

Maximum Credits: 3

Course builds on principles introduced in biochemistry 1. First portion of course covers topics in molecular biology and gene regulation, particularly as they relate to the etiology and treatment of disease. Second portion of course covers the intermediary metabolism of carbohydrates, proteins, and lipids. Emphasis is placed on errors of intermediary metabolism responsible for human disease.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5118 - PRINCIPLES OF DRUG ACTION

Minimum Credits: 4

Maximum Credits: 4

To enable students to apply principles of drug-receptor interactions, conceptualize principles of medicinal chemistry with regard to drug design and development, understand the relationship between drug action and chemical structure, understand the relationship between dosage forms and oral bioavailability, understand basic pharmacokinetic and pharmacodynamic concepts.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5119 - DRUG DEVELOPMENT 1

Minimum Credits: 4

Maximum Credits: 4

Course examines sources of drugs and the process of drug development and the drug approval process. Since drug metabolites may play an important role in the activity or toxicity of a drug, early phases of the approval process require extensive metabolism studies. Course also covers the biochemistry of drug metabolism and chemical pathways of metabolism.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5120 - THE EMERGING PROFESSIONAL

Minimum Credits: 1

Maximum Credits: 1

The emerging professional is designed to stimulate the development of professional attitudes and behaviors and an understanding of the opportunities within the pharmacy profession. Professionalism, ethics, management of self, and the profession of pharmacy are themes of the course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5121 - CASE CONFERENCE SERIES 2

Minimum Credits: 1

Maximum Credits: 1

The Case Conference Series is developed in collaboration with term courses to provide additional opportunities for each student to develop and enhance a cohesive, consistent and comprehensive approach to the patient care process. Knowledge and skills for emphasis include, but are not limited to, retrieval and critical evaluation of quality health care information, patient assessment, clinical decision making, development of pharmaceutical care plans, verbal and written communication with patients and other health care providers, and professional behaviors. Patient case activities reinforce the knowledge and skills introduced in concurrent courses within the term, as well as reinforcing previously-learned scientific and patient care principles, skills, and knowledge.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 5122 - CASE CONFERENCE SERIES 1

Minimum Credits: 1

Maximum Credits: 1

The Case Conference Series is developed in collaboration with term courses to provide additional opportunities for each student to develop and enhance a cohesive, consistent and comprehensive approach to the patient care process. Knowledge and skills for emphasis include, but are not limited to, retrieval and critical evaluation of quality health care information, patient assessment, clinical decision making, development of pharmaceutical care plans, verbal and written communication with patients and other health care providers, and professional behaviors. Patient case activities reinforce the knowledge and skills introduced in concurrent courses within the term, as well as reinforcing previously-learned scientific and patient care principles, skills, and knowledge.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 5210 - NONPRESCRIPTION THERAPIES AND SELF-CARE PRACTICE

Minimum Credits: 3

Maximum Credits: 3

The third of a six course sequence that supports students' development of competence in four major areas: clinical skills, social science in pharmacy, managing as a professional pharmacist, and professional inquiry.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5211 - DRUG LITERATURE ANALYSIS AND EVALUATION

Minimum Credits: 3

Maximum Credits: 3

The fourth of a six-course sequence that supports students' development of competence in four major areas: clinical skills, psychosocial dimensions of practice, managing as a professional pharmacist, and professional inquiry.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5212 - COMMUNITY PHARMACIST PRACTICE 1: PATIENT-CENTERED CARE AND SILVER SCRIPTS

Minimum Credits: 1

Maximum Credits: 1

Provides students with field-based experience in which they can examine the psychosocial dimensions of pharmacy practice as well as principles of organizational management. Students continue to develop proficiency in carrying out the pharmaceutical care process and to practice inquiry skills by generating questions from their practice experiences and using drug information and literature to formulate answers to the questions.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 5213 - COMMUNITY PHARMACIST PRACTICE 2: MEDICATION THERAPY MANAGEMENT-IMMERSION IN PRACTICE

Minimum Credits: 1

Maximum Credits: 1

Provides students with field-based experience in which they can examine the psychosocial dimensions of pharmacy practice as well as principles of organizational management. Students continue to develop proficiency in carrying out the pharmaceutical care process and to practice inquiry skills by generating questions from their practice experiences and using drug information and literature to formulate answers to the questions.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 5214 - PHARMACOTHERAPY OF INFECTIOUS DISEASE 1

Minimum Credits: 4

Maximum Credits: 4

Introduces students to the organisms responsible for infectious diseases, the epidemiology and pathophysiology of infection, the immunology of host defenses, the major classes of antibiotics and anti-infectives useful in the therapy and prophylaxis of disease, and the thought process leading to cost-effective and safe antimicrobial drug use. At the end of the course, students are expected to be able to select and monitor treatments of various bacterial, fungal, and viral infections.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5215 - PHARMACOTHERAPY OF INFECTIOUS DISEASE 2

Minimum Credits: 4

Maximum Credits: 4

Introduces students to the organisms responsible for infectious diseases, the epidemiology and pathophysiology of infection, the immunology of host defenses, the major classes of antibiotics and anti-infectives useful in the therapy and prophylaxis of disease, and the thought process leading to cost-effective and safe antimicrobial drug use. At the end of the course, students are expected to be able to select and monitor treatments of various bacterial, fungal, and viral infections.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5216 - PHARMCOTHERAPY OF CARDIOVASCULAR DISEASE

Minimum Credits: 4

Maximum Credits: 4

Provides a comprehensive evaluation of the pathophysiology and treatment of cardiovascular disease. The pharmacology and therapeutic use of cardiovascular drugs is presented in relation to the management of hypertension, coronary artery disease, heart failure, arrhythmia, thromboembolic disorders, and acute myocardial infarction.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5218 - PHARMACOKINETICS AND DRUG RESPONSE

Minimum Credits: 4

Maximum Credits: 4

Course provides students with a fundamental understanding of the mathematical relationships that are available to quantify the rate and extent of drug absorption, distribution, metabolism and excretion.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5219 - DOSAGE FORM DESIGN AND DELIVERY

Minimum Credits: 4

Maximum Credits: 4

Course provides students with a fundamental understanding of the physical-chemical properties of various drug dosage forms. Students will compound several different dosage forms in the laboratory portion of the course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5220 - CASE CONFERENCE SERIES 3

Minimum Credits: 1

Maximum Credits: 1

The Case Conference Series is developed in collaboration with term courses to provide additional opportunities for each student to develop and enhance a cohesive, consistent and comprehensive approach to the patient care process. Knowledge and skills for emphasis within this course series include but are not limited to patient assessment, development of pharmaceutical care plans, verbal and written communicating to patients and providers, and retrieval and critical evaluation of quality health care information with application to individual patient care settings. Patient case activities will be planned to reinforce the knowledge and skills introduced in concurrent courses within the semester, as well as reinforcing previously-learned scientific and patient care principles, skills and knowledge from preceding semesters. During the fall P2 year, each session will use skill building exercises in the context of concurrent courses listed above.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 5223 - GASTROENTEROLOGY/NUTRITION

Minimum Credits: 2

Maximum Credits: 2

Students demonstrate and apply concepts of pathophysiology, medicinal chemistry, pharmacology, and therapeutics in the evaluation and treatment of selected gastrointestinal diseases and states of nutritional deficiency. Students develop the ability to design, monitor, and refine safe and cost

effective treatment plans and provide appropriate information to patients, caregivers, and health professionals.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5225 - ADVANCED PHARMACEUTICAL CARE 1

Minimum Credits: 1

Maximum Credits: 1

Students integrate knowledge and skills to design, monitor, assess and refine safe and cost effective treatment plans, as well as design appropriate information materials for patients, caregivers, and health professionals. Expanding on knowledge of disease states and therapies reviewed in previous or concurrent courses, students will be challenged in 'capstone' experiences to manage pharmaceutical care problems in ambulatory and acute care settings.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5227 - CASE CONFERENCE SERIES 4

Minimum Credits: 1

Maximum Credits: 1

The Case Conference Series is developed in collaboration with term courses to provide additional opportunities for each student to develop and enhance a cohesive, consistent and comprehensive approach to the patient care process. Knowledge and skills for emphasis include, but are not limited to, retrieval and critical evaluation of quality health care information, patient assessment, clinical decision making, development of pharmaceutical care plans, verbal and written communication with patients and other health care providers, and professional behaviors. Patient case activities reinforce the knowledge and skills introduced in concurrent courses within the term, as well as reinforcing previously-learned scientific and patient care principles, skills, and knowledge.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 5310 - PROFESSION OF PHARMACY 5

Minimum Credits: 3

Maximum Credits: 3

Course provides knowledge and experience in the major areas of clinical skills, psychosocial dimensions, pharmacy management, and professional inquiry. Specific topics include pharmacy law, pharmacoeconomics, drug use and disease state management, and institutional pharmacy systems and practice. Individual and group presentations will be used to critically examine recent clinical trials and enhance the communication skills of students.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5311 - SAFE MEDICATION USE AND PHARMAECONOMICS

Minimum Credits: 2

Maximum Credits: 2

Provides the knowledge, skills and attitudes necessary to practice pharmacy. Will focus on clinical skills, psychosocial dimensions of practice, pharmacy management and professional inquiry. Topics include principles of pharmacoeconomics, pharmacoeconomic decision making, quality improvement and total quality management, and population-based decision making. Individual and group presentations, case analyses and projects will be used to incorporate pharmacoeconomic principles into therapeutic decision-making and enhance the communication skills of students.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5312 - HEALTH SYSTEM PHARMACY 1: OPERATIONS AND DISPENSING

Minimum Credits: 1

Maximum Credits: 1

Students will experience and develop professional skills and abilities in the setting of institutional pharmacy practice through observation and participation in activities such as drug distribution and preparation, evaluation and monitoring of patient-specific therapies, pharmacy system, quality assessment, and formulary control.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 5313 - HEALTH SYSTEM PHARMACY 2: ADVANCED PRACTICE & MANAGEMENT

Minimum Credits: 1

Maximum Credits: 1

Students will experience and develop professional skills and abilities in the setting of institutional pharmacy practice through observation and participation in activities such as drug distribution and preparation, evaluation and monitoring of patient-specific therapies, pharmacy system, quality assessment, and formulary control.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 5314 - IMMUNOLOGY

Minimum Credits: 2

Maximum Credits: 2

Students will demonstrate and apply core concepts of physiology, pharmacology, chemistry, and therapeutics in the evaluation and treatment of selected diseases of the immune system. Students will develop their abilities to design, monitor and refine cost-effective and safe treatment plans and provide appropriate information to patients, caregivers and health professionals.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5315 - ONCOLOGY/HEMATOLOGY

Minimum Credits: 2

Maximum Credits: 2

Students will demonstrate and apply core concepts of pathophysiology, medicinal chemistry, pharmacology, and therapeutics in the evaluation and treatment of various types of cancer and diseases of the blood. Students will develop the abilities required to design, monitor, and refine effective, safe, and cost-effective treatment plans and be able to provide appropriate information to patients, caregivers, and health professionals.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5316 - PULMONOLOGY/RHEUMATOLOGY

Minimum Credits: 2

Maximum Credits: 2

Students will demonstrate and apply core concepts of physiology, pharmacology, chemistry and therapeutics in the evaluation and treatment of

selected pulmonary and rheumatic diseases. Students will develop their abilities to design, monitor and refine cost-effective and safe treatment plans and appropriate information to patients, caregivers and health professionals.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5318 - ENDOCRINOLOGY

Minimum Credits: 3

Maximum Credits: 3

Students will demonstrate and apply core concepts of physiology, pharmacology, chemistry and therapeutics in the evaluation and treatment of selected disorders of the endocrine system. Students will develop their abilities to design, monitor and refine cost-effective and safe treatment plans and appropriate information to patients, caregivers and health professionals.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5319 - NEUROLOGY/PSYCHIATRY

Minimum Credits: 4

Maximum Credits: 4

Students will demonstrate and apply core concepts of pathophysiology, medicinal chemistry, pharmacology, and therapeutics in the evaluation and treatment of selected neurological and psychiatric disorders. Students will develop the abilities required to design, monitor, and refine effective, safe, and cost-effective treatment plans and be able to provide appropriate information to patients, caregivers, and health professionals.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5320 - POPULATION HEALTH AND MANAGEMENT

Minimum Credits: 2

Maximum Credits: 2

The course focuses on the United States health system and its connection to the pharmacist, principles of management and business for the pharmacist, and public health pharmacy. Core concepts addressed will include: health disparities, program development and evaluation, health literacy, health behavior change, access to essential medicines, health care reform, payment structures, business planning, personal and professional management, human resources, advocacy, emergency preparedness, safety nets, cultural competency, and global health.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5321 - CRITICAL CARE & NEPHROLOGY

Minimum Credits: 2

Maximum Credits: 2

Students integrate knowledge and skills to design, monitor, assess and refine safe and cost effective treatment plans, as well as design appropriate information materials for patients, caregivers, and health professionals. Expanding on knowledge of disease states and therapies reviewed in previous or concurrent courses, students will be challenged in "capstone" experiences to manage pharmaceutical care problems in ambulatory, acute care, and critical care settings.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5322 - PHARMACY LAW

Minimum Credits: 2

Maximum Credits: 2

This course is focused on pharmacy law, with a focus on general concepts of constitutional law and an overview of the legal process in the United States. Students will learn by analyzing statutes, regulations, and case law examples. The areas covered will include laws and regulations relevant to pharmacy practice, civil liability including malpractice, and some business-related legal material.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5323 - CASE CONFERENCE SERIES 6

Minimum Credits: 1

Maximum Credits: 1

The Case Conference Series is developed in collaboration with term courses to provide additional opportunities for each student to develop and enhance a cohesive, consistent and comprehensive approach to the patient care process. Knowledge and skills for emphasis include, but are not limited to, retrieval and critical evaluation of quality health care information, patient assessment, clinical decision making, development of pharmaceutical care plans, verbal and written communication with patients and other health care providers, and professional behaviors. Patient case activities reinforce the knowledge and skills introduced in concurrent courses within the term, as well as reinforcing previously-learned scientific and patient care principles, skills, and knowledge.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 5324 - CASE CONFERENCE SERIES 5

Minimum Credits: 1

Maximum Credits: 1

The Case Conference Series is developed in collaboration with term courses to provide additional opportunities for each student to develop and enhance a cohesive, consistent and comprehensive approach to the patient care process. Knowledge and skills for emphasis within this course series include but are not limited to patient assessment, development of pharmaceutical care plans, verbal and written communicating to patients and providers, and retrieval and critical evaluation of quality health care information with application to individual patient care settings. Patient case activities will be planned so as to reinforce the foundational knowledge and skills introduced in concurrent courses within the semester, as well as reinforcing previously-learned scientific and patient care principles, skills and knowledge from preceding semesters. During the fall P3 year, each Case Conference session will use skill building exercises in the context of concurrent courses. Additionally, two comprehensive Capstone Cases will challenge students to demonstrate the desired comprehensive skills in patient care through patient assessment, care plan development, ability to communicate with patients and providers, and provide quality patient care recommendations with evidence-based justifications.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 5400 - PHARMD SEMINAR

Minimum Credits: 1

Maximum Credits: 1

Students learn communication and organizational skills necessary to present professional seminars.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 5401 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 1

Minimum Credits: 5

Maximum Credits: 5

Field-based experiences that provide students with opportunities to develop mastery of the pharmaceutical care process in patient-care settings. Students are required to register for 1 acute care, 1 ambulatory care, an additional acute or ambulatory care, 1 advanced institutional practice, 1 advanced community pharmacy practice, and 2 elective rotations.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 5402 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 2

Minimum Credits: 5

Maximum Credits: 5

Field-based experiences that provide students with opportunities to develop mastery of the pharmaceutical care process in patient-care settings. Students are required to register for 1 acute care, 1 ambulatory care, an additional acute or ambulatory care, 1 advanced institutional practice, 1 advanced community pharmacy practice, and 2 elective rotations.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 5403 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 3

Minimum Credits: 5

Maximum Credits: 5

Field-based experiences that provide students with opportunities to develop mastery of the pharmaceutical care process in patient-care settings. Students are required to register for 1 acute care, 1 ambulatory care, an additional acute or ambulatory care, 1 advanced institutional practice, 1 advanced community pharmacy practice, and 2 elective rotations.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 5404 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 4

Minimum Credits: 5

Maximum Credits: 5

Field-based experiences that provide students with opportunities to develop mastery of the pharmaceutical care process in patient-care settings. Students are required to register for 1 acute care, 1 ambulatory care, an additional acute or ambulatory care, 1 advanced institutional practice, 1 advanced community pharmacy practice, and 2 elective rotations.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 5405 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 5

Minimum Credits: 5

Maximum Credits: 5

Field-based experiences that provide students with opportunities to develop mastery of the pharmaceutical care process in patient-care settings. Students are required to register for 1 acute care, 1 ambulatory care, an additional acute or ambulatory care, 1 advanced institutional practice, 1 advanced community pharmacy practice, and 2 elective rotations.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 5406 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 6

Minimum Credits: 5

Maximum Credits: 5

Field-based experiences that provide students with opportunities to develop mastery of the pharmaceutical care process in patient-care settings. Students are required to register for 1 acute care, 1 ambulatory care, an additional acute or ambulatory care, 1 advanced institutional practice, 1 advanced community pharmacy practice, and 2 elective rotations.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 5407 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 7

Minimum Credits: 5

Maximum Credits: 5

Field-based experiences that provide students with opportunities to develop mastery of the pharmaceutical care process in patient-care settings. Students are required to register for 1 acute care, 1 ambulatory care, an additional acute or ambulatory care, 1 advanced institutional practice, 1 advanced community pharmacy practice, and 2 elective rotations.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 5408 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 8

Minimum Credits: 5

Maximum Credits: 5

Field-based experiences that provide students with opportunities to develop mastery of the pharmaceutical care process in patient-care settings. Students are required to register for 1 acute care, 1 ambulatory care, an additional acute or ambulatory care, 1 advanced institutional practice, 1 advanced community pharmacy practice, and 2 elective rotations.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 5409 - PHARMD ADVANCED PHARMACY PRACTICE EXPERIENCE 9

Minimum Credits: 5

Maximum Credits: 5

Field-based experiences that provide students with opportunities to develop mastery of the pharmaceutical care process in patient-care settings. Students are required to register for 1 acute care, 1 ambulatory care, an additional acute or ambulatory care, 1 advanced institutional practice, 1 advanced community pharmacy practice, and 2 elective rotations.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 5410 - ADVANCED PHARMACY PRACTICE EXPERIENCE 1 - INTERNATIONAL

Minimum Credits: 5

Maximum Credits: 5

Field-based experience that provides students with the opportunity to gain an understanding of how healthcare and pharmaceutical care are delivered

in countries other than the United States. Examples of areas that have hosted students include Australia, England, Ghana, Honduras, Ireland, Italy, and Malawi. The school continuously seeks to expand these opportunities. International rotations are considered elective experiences.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 5411 - ADVANCED PHARMACY PRACTICE EXPERIENCE 2 - INTERNATIONAL

Minimum Credits: 5

Maximum Credits: 5

Field-based experience that provides students with the opportunity to gain an understanding of how healthcare and pharmaceutical care are delivered in countries other than the United States. Examples of areas that have hosted students include Australia, England, Ghana, Honduras, Ireland, Italy, and Malawi. The school continuously seeks to expand these opportunities. International rotations are considered elective experiences.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 5412 - ADVANCED PHARMACY PRACTICE EXPERIENCE 3 - INTERNATIONAL

Minimum Credits: 5

Maximum Credits: 5

Field-based experience that provides students with the opportunity to gain an understanding of how healthcare and pharmaceutical care are delivered in countries other than the United States. Examples of areas that have hosted students include Australia, England, Ghana, Honduras, Ireland, Italy, and Malawi. The school continuously seeks to expand these opportunities. International rotations are considered elective experiences.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 5413 - ADVANCED PHARMACY PRACTICE EXPERIENCE 4 - INTERNATIONAL

Minimum Credits: 5

Maximum Credits: 5

Field-based experience that provides students with the opportunity to gain an understanding of how healthcare and pharmaceutical care are delivered in countries other than the United States. Examples of areas that have hosted students include Australia, England, Ghana, Honduras, Ireland, Italy, and Malawi. The school continuously seeks to expand these opportunities. International rotations are considered elective experiences.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: School of Pharmacy students only.

PHARM 5800 - SPECIAL TOPICS

Minimum Credits: 1

Maximum Credits: 3

Student has the opportunity to explore a pharmaceutical research or pharmaceutical care topic on an individual or small group basis with the oversight of a faculty member. Generally, the successful completion of a project is required.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5801 - PHARMACEUTICAL CARE TO UNDERSERVED POPULATIONS

Minimum Credits: 1

Maximum Credits: 6

A sequence of courses that address issues related to providing pharmaceutical care to underserved populations. Topic areas that will be addressed include: psychosocial factors impacting health, political and economic influences on health care access, community advocacy and resources, patient assessment, clinical problem solving skills, pharmacotherapy management, and patient education. Students will have opportunities for interdisciplinary care and educational sessions.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5805 - COMMUNITY PHARMACY MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

Discussion of the principles and procedures of management involved in community pharmacy practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5806 - PEDIATRIC PHARMACEUTICAL CARE

Minimum Credits: 2

Maximum Credits: 2

Provides students with opportunities to acquire the knowledge and skills necessary to provide pharmaceutical care to pediatric patients of all ages.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5808 - COMPREHENSIVE DIABETES MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

This internet-based course provides students with a multidisciplinary foundation in the principles of diabetes management. Students will develop their knowledge and ability to assess, manage, educate and monitor patients with diabetes. Pathophysiology, monitoring, complications, and treatment including pharmacotherapy, medical nutrition therapy, and exercise therapy will be explored.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5809 - PRINCIPLES AND TECHNIQUES FOR TEACHING

Minimum Credits: 1

Maximum Credits: 1

Students will explore the art and science of teaching and careers in higher education. After an introduction to the literature in higher education and the principles of instructional design, participants will have opportunities to design and deliver a unit of instruction on a current healthcare topic, facilitate learning in a laboratory setting, and apply principles of assessment to the evaluation of teaching by peers. Students must be able to attend practica sessions on selected dates at the Bidwell Training Center (1650 Metropolitan Street, Pittsburgh, PA 15233).

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5811 - CLINICAL NUTRITION

Minimum Credits: 1

Maximum Credits: 1

Course examines the provision of adequate nutrition and nutritional support to ambulatory and hospitalized patients as well as the relationships between nutrition and disease and drug therapy and nutrition.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5812 - HEALTHCARE INNOVATIONS 1

Minimum Credits: 1.5

Maximum Credits: 1.5

Students will be able to effectively participate in a healthcare innovation application team as either a leader or participant that results in the application of an evidence-based healthcare innovation, which leads to improved patient care. Students will be able to develop detailed and effective strategic frameworks from which they can outline and track their progress in implementing a healthcare innovation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5813 - ACUTE CARE PHARMACOTHERAPY SIMULATION

Minimum Credits: 3

Maximum Credits: 3

Course is designed to allow students to apply clinical knowledge, skills and attitudes gained in previous courses to care for patients with advanced cardiovascular diseases and those that are critically ill. Students will expand on the concepts gained throughout the pharmacotherapy of cardiovascular disease course. Course utilizes simulation based learning to enhance clinical decision-making processes. A major component of the course is self-study requiring an adult learning approach to education. The adult learning concept will require students to be responsible for and highly interactive in achieving the objectives of the course. This learning environment will foster clinical decision making and reinforce concepts learned throughout the school's curriculum. Also, it will provide an excellent source for objective assessment of student knowledge and performance.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5814 - GLOBAL HEALTH: DETERMINANTS AND APPLICATION

Minimum Credits: 3

Maximum Credits: 3

This course for third professional year pharmacy students will introduce and discuss important topics in global health, focusing specifically on care of the underserved in a global context. Topics discussed will include health policy and economics, determinants of health, essential medicines, community-oriented primary care, structural violence, malnutrition and tropical medicine. In addition to readings and weekly discussion groups, students will have the opportunity to gain valuable practice-based skills by working in underserved clinics in Pittsburgh.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5815 - CONCEPTS OF MANAGED CARE PHARMACY

Minimum Credits: 2

Maximum Credits: 2

The purpose of this course is to understand the fundamental concepts in managed care pharmacy and the relation to the healthcare system. This

course supports the school's mission by enabling students to better navigate and understand the healthcare system from the perspective of different stakeholders to help optimize pharmaceutical care.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5816 - NEPHROLOGY PATIENT CARE

Minimum Credits: 1

Maximum Credits: 1

The purpose of this course is to introduce students to the delivery of pharmaceutical care to end-stage renal disease (ESRD) patients receiving outpatient hemodialysis therapy. The course is structured as a longitudinal patient-centered experience. It integrates nephropharmacology-related concepts and continuous, direct patient care. This is accomplished via critical evaluation of all clinical data and involvement in patient care activities, multidisciplinary patient rounds, case studies, oral presentations, pharmacotherapeutic discussions, literature evaluations, and other selected exercises. Patient and interprofessional communication is a fundamental aspect of this course. Participating students are expected to be self-motivated, self-directed individuals who embrace independent learning and self-assessment.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5817 - ADVANCED INFECTIOUS DISEASES

Minimum Credits: 1

Maximum Credits: 1

Students will expand upon and apply knowledge and skills developed in the required Infectious Diseases 1 and 2 course sequence and Advanced Pharmaceutical Care 1 to new and complex infectious disease case scenarios, be introduced to the principles of antimicrobial stewardship, learn basic skills relevant to performing antimicrobial stewardship activities in a health system, and explore current controversies in infectious diseases to optimize the health of patients with complex infectious diseases.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5818 - MEDICAL PARASITOLOGY

Minimum Credits: 1

Maximum Credits: 1

Course offers a concise presentation of the protozoan and helminthic parasites of medical importance, with an emphasis on parasitic morphology and life cycle, disease transmission, pathogenesis, prophylaxis, therapy and epidemiology.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5819 - COMMUNITY LEADERSHIP INNOVATION & PRACTICE (CLIP)

Minimum Credits: 3

Maximum Credits: 3

Course is designed especially for students interested in advancing and leading change in community pharmacy practice. The objective is to mentor and support students in effective and meaningful community pharmacy-based patient care research. Students will engage in a combination of on-line lecture content and small group; weekly discussions throughout the summer months. Students will initiate and complete a research project in the community. The purpose of the project is to: 1. Familiarize students with the key components in carrying out a valid research project from conceptualization to final report (abstract; meeting presentation). 2. Develop research problem solving skills through working group discussions and by working research problem solving skills through working group discussions and by working closely with project mentor. 3. Enhance verbal and

written communication skills through formal and informal presentations and scientific writing. 4. Contribute to the diversity of the students' expertise through meeting and discussing with experts in community practice and research nationally.

Academic Career: Graduate

Course Component: Workshop

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5820 - PHARMACY INNOVATION 1

Minimum Credits: 1

Maximum Credits: 1

The course provides basic insights into issues that affect the care of patients in the community through discussions of contemporary topics and further develops the student's skills in research by continuing the analysis and reporting of projects from community pharmacy health service research 1. Specifically, students will enhance their critical thinking skills by examining the drivers for specific contemporary issues (e.g. pharmacist role in an accountable-care organization) and by learning to ask testable scientific questions.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5821 - PHARMACY INNOVATION 2

Minimum Credits: 1

Maximum Credits: 1

The course provides basic insights into issues that affect the care of patients in the community through discussions of contemporary topics and further develops the student's skills in research by continuing the analysis and reporting of projects from community pharmacy health service research 1. Specifically, students will enhance their critical thinking skills by examining the drivers for specific contemporary issues (e.g. pharmacist role in an accountable-care organization) and by learning to ask testable scientific questions.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5822 - RESEARCH FUNDAMENTALS

Minimum Credits: 2

Maximum Credits: 2

Course is designed to provide students with a comprehensive survey of research. The topics covered encompass specific topics related to research. Course content includes an introduction to: hypothesis generation, writing the introduction, design of study, report on a technique and various additional topics related to research. The overall goal of the course will be practical applied discussion of the steps involved in the process of generating new knowledge through research. Students completing this course will gain the design, conduct and report their research in the form of a poster and/or podium presentation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5823 - WOMEN'S HEALTH: GLOBAL AND LOCAL PERSPECTIVE

Minimum Credits: 2

Maximum Credits: 2

This semester long elective course for third professional year pharmacy students will introduce and discuss important topics pertaining to the health of women within the United States and globally. The curriculum is designed in a timeline fashion, beginning from the gender disparities that start at birth through adolescence and womanhood and ending with aging. Topics discussed will include female feticide/infanticide, eating disorders, cosmopharmaceuticals, midwifery, maternity leave, domestic violence, menopause and more. In addition to readings and weekly discussion groups, students enrolled in this course will also volunteer with a women's clinic in a domestic violence shelter as a serving learning experience once per

semester.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5824 - MENTORED RESEARCH

Minimum Credits: 1

Maximum Credits: 3

The purpose of this course is to give PharmD students an experiential educational offering within a research laboratory. This course is available to all students including (but not limited to) those in the Research Area of Concentration. The general focus of the course is to provide students with mentored research experiences to answer hypothesis-driven questions within the pharmaceutical sciences. Ongoing studies include but are not limited to in vitro synthesis, mechanistic studies, in vivo animal models of disease, and large population studies in order to bridge the bench to bedside to improved public health through research.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5825 - HEALTHCARE INNOVATIONS 2

Minimum Credits: 2

Maximum Credits: 2

Course is to provide the students who have successfully completed Healthcare Innovations 1 the opportunity to apply what they have learned by observing successful and unsuccessful innovation applications within the VA health system in Pittsburgh and using the innovation model master in Part 1 of this two-part course to provide evaluative insight as to why the innovations observed may have succeeded or failed to succeed. As part of this course, the students will also learn about the veterans engineering resource center (VERC) program at the VA and how it guides the development and implementation of innovations that aim to improve healthcare quality and outcomes for participating veterans.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5826 - ADVANCED PEDIATRIC PHARMACEUTICAL CARE

Minimum Credits: 2

Maximum Credits: 2

The purpose of this course is to extend knowledge and skills in intensive and/or advanced pediatric specialties, building on previously developed fundamental knowledge of pediatric physiology, pathophysiology, pharmacology and therapeutics, so as to advance pharmaceutical care for infants and children with selected disorders. The course will focus on integration of science and practice to achieve outcomes that enhance patient care and quality of life.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5827 - SMOKING CESSATION IN UNDERSERVED SETTINGS

Minimum Credits: 1

Maximum Credits: 1

This course for third professional year pharmacy students will allow the student real-life practice providing smoking cessation counseling and education in underserved settings. Students generally provide on-site smoking cessation services at either the salvation army harbor light, a 90 day inpatient alcohol and other drug program for homeless and low-income men in Allegheny county, or the Birmingham free clinic, a walk-in clinic on the South Side of Pittsburgh. Students will meet with clients weekly at their site to provide smoking cessation counseling, education, and support, including the provision of nicotine replacement therapy. Students will have monthly debriefs with the course coordinator throughout the semester to

supplement experiences on site with a focus on motivational interviewing skills.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5828 - BECOMING A LEADER

Minimum Credits: 1

Maximum Credits: 1

The course addresses the need for additional opportunities for interested students to build a depth of skill and experience in leadership, applicable across all facets of the profession. The purpose of this 5-week course is to expand upon the knowledge of leadership gained during the student pharmacist's first professional year, particularly in the emerging professional (pharm 5120). M.A. Soupios' and P. Mourdoukoutas' the ten golden rules of leadership: classical wisdom of modern leaders and other literature will serve as the primary references. Individual reflections and group discussions will allow students to master self-directed processes to continuously critique and improve their leadership abilities. The course will guide students through evaluating their own strengths and talents, shaping their own leadership styles, and understanding those of others. It will facilitate student preparation for leadership roles.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5829 - SELF-CARE PBL GAME

Minimum Credits: 1

Maximum Credits: 1

Course will serve to reinforce the concepts covered in PHARM 5210 related to safe, effective and appropriate self-care recommendations provided to patients in the community. Students will participate in a game that allows dynamic generation of patient cases in a competitive format that will test the student's knowledge and ability when triaging and assessing patients and ultimately recommending appropriate treatment strategies.

Academic Career: Graduate

Course Component: Workshop

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5830 - DISCOVERING SCIENTIFIC INQUIRY (DSI)

Minimum Credits: 2

Maximum Credits: 2

The primary purpose of the course is to adequately prepare learners to execute an outcomes research-based project during the P4 curriculum. As a required component of the pharmacotherapy scholars program, this course will enable P3 students in the spring semester to design a study, submit the required institutional review board documents, and strengthen their data analysis skills.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5831 - HEALTHCARE FOR LGBTQIA COMMUNITY

Minimum Credits: 2

Maximum Credits: 2

This course will prepare the student to assess and guide comprehensive medical treatment for LGBTQIA individuals. Students will learn about cultural competency and inclusive language, screening and diagnosis, gender affirmation, primary and preventative care, and advocacy.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5832 - LITERATURE AND FILM TO UNDERSTAND PATIENT-PRACTITIONER EXPERIENCES

Minimum Credits: 1

Maximum Credits: 1

This course is open to students from across the health sciences and will be directed by an interprofessional faculty team. This course emphasizes the importance of understanding the universal human aspects of health and disease to further develop empathetic and holistic skills among health professional students. The importance of interprofessional collaboration as a mechanism to improve patient outcomes will be explored. Students and faculty will read and/or view selected works that focus on the human condition that may impact the physical and/or psychological health of the patient, families, communities, and care providers - and their interaction with the health care system. Guided discussion that helps students to reflect on the humanistic aspects of health care will be conducted.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5834 - PYTHON FOR DATA MANAGEMENT AND ANALYTICS

Minimum Credits: 3

Maximum Credits: 3

This course will provide an introduction to programming, data processing, and data analytics using Python for highly motivated students with little or no prior experience in programming. The course will focus on learning the Python programming language in the context of working with data, planning and organizing programs, commonly-used algorithms, data management, data cleaning, and basic data mining.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5835 - REINVENTING THE INCUMBENT: DESIGNING AN INTRAPRENEURSHIP STRATEGY

Minimum Credits: 1

Maximum Credits: 1

The goal of this course series is to introduce didactic and experiential elements of entrepreneurship for pharmacy students. This course offers students the foundations required to successfully understand, create, and execute entrepreneurial ideas in pharmacy. This includes learning from success in other fields, understanding the components that comprise pharmacy, and identifying current opportunities in pharmacy. Concepts of business models, funding, consumer behavior in healthcare and landscape reviews of technology in healthcare will be reviewed in this course. Career focuses for students would benefit in learning about starting a new company to disrupt incumbents, starting and managing new projects within an existing corporation, and new Management within the field of innovation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5836 - SIDE PROJECT: BUILDING VALUE WITH YOUR SPARE TIME

Minimum Credits: 1

Maximum Credits: 1

The goal of this course series is to introduce didactic and experiential elements of entrepreneurship for pharmacy students. This course offers students the foundations required to successfully understand, create, and execute entrepreneurial ideas in pharmacy. This includes learning from success in other fields, understanding the components that comprise pharmacy, and identifying current opportunities in pharmacy. Concepts of start-up methodology, management/leadership, and company culture will be reviewed in this course. Career focuses for students would benefit in learning about starting a new company to disrupt incumbents, starting and managing new projects within an existing corporation, and new Management within the field of innovation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5851 - SPECIAL TOPICS 1

Minimum Credits: 1

Maximum Credits: 3

Student has the opportunity to explore a pharmaceutical research or pharmaceutical care topic on an individual or small group basis with the oversight of a faculty member. Generally, the successful completion of a project is required.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5852 - SPECIAL TOPICS 2

Minimum Credits: 1

Maximum Credits: 3

Student has the opportunity to explore a pharmaceutical research or pharmaceutical care topic on an individual or small group basis with the oversight of a faculty member. Generally, the successful completion of a project is required.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5853 - SPECIAL TOPICS 3

Minimum Credits: 1

Maximum Credits: 3

Student has the opportunity to explore a pharmaceutical research or pharmaceutical care topic on an individual or small group basis with the oversight of a faculty member. Generally, the successful completion of a project is required.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5854 - SPECIAL TOPICS 4

Minimum Credits: 1

Maximum Credits: 3

Student has the opportunity to explore a pharmaceutical research or pharmaceutical care topic on an individual or small group basis with the oversight of a faculty member. Generally, the successful completion of a project is required.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5855 - SPECIAL TOPICS 5

Minimum Credits: 1

Maximum Credits: 3

Student has the opportunity to explore a pharmaceutical research or pharmaceutical care topic on an individual or small group basis with the oversight of a faculty member. Generally, the successful completion of a project is required.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5856 - SPECIAL TOPICS 6

Minimum Credits: 1

Maximum Credits: 3

Student has the opportunity to explore a pharmaceutical research or pharmaceutical care topic on an individual or small group basis with the oversight of a faculty member. Generally, the successful completion of a project is required.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5857 - SPECIAL TOPICS 7

Minimum Credits: 1

Maximum Credits: 3

Student has the opportunity to explore a pharmaceutical research or pharmaceutical care topic on an individual or small group basis with the oversight of a faculty member. Generally, the successful completion of a project is required.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5858 - SPECIAL TOPICS 8

Minimum Credits: 1

Maximum Credits: 3

Student has the opportunity to explore a pharmaceutical research or pharmaceutical care topic on an individual or small group basis with the oversight of a faculty member. Generally, the successful completion of a project is required.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5890 - INTERNATIONAL PHARMACY SCHOLARLY EXPERIENCE 1 (IPSE)

Minimum Credits: 1

Maximum Credits: 3

Course allows the student to personalize their pharmd education by proposing, developing, and implementing a mentored scholarly project in an international setting. The goal of these international project experiences is to provide the student with an experience to build specific skills in research and practice while providing opportunities for cross-cultural learning and awareness. Projects will be developed in conjunction with an identified faculty mentor and should be developed to meet a site-specific need. Students will complete their project abroad during the summer and will present their project and experience when they return. Instructor's permission required.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5891 - INTERNATIONAL PHARMACY SCHOLARLY EXPERIENCE 2 (IPSE)

Minimum Credits: 1

Maximum Credits: 3

Course allows the student to personalize their pharmd education by proposing, developing, and implementing a mentored scholarly project in an international setting. The goal of these international project experiences is to provide the student with an experience to build specific skills in research and practice while providing opportunities for cross-cultural learning and awareness. Projects will be developed in conjunction with an identified faculty mentor and should be developed to meet a site-specific need. Students will complete their project abroad during the summer and will present their project and experience when they return. Instructor's permission required.

Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad Letter Grade
Course Requirements: School of Pharmacy students only.

PHARM 5892 - GLOBAL HEALTH: INTERNATIONAL PHARMACY EXPERIENCE

Minimum Credits: 1

Maximum Credits: 2

Course will introduce and discuss important topics in global health and pharmacy practice, culminating in a one-week experience over spring break to Lagos, Nigeria. The overarching goal of this course is for students to experience the practice of pharmacy in a global setting and learn ways to strengthen pharmacy systems locally and internationally. The rich multi-cultural patient population in varied settings will expand students' knowledge, skills, and attitudes in working with diverse health beliefs and practices.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: School of Pharmacy students only.

PHARM 5910 - US HEALTHCARE SYSTEM

Minimum Credits: 2

Maximum Credits: 2

The aim of this course is to provide students with an overview of the U.S. Health care delivery system. This course covers the structure of health care delivery systems and delivery of health care services including personnel and facilities; organization, financing, and quality assessment with special attention to medication distribution and management.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Pharmacy Business Admin (PHARMBA-MS) Students Only

PHARM 5911 - HEALTHCARE SALES AND MARKETING

Minimum Credits: 2

Maximum Credits: 2

This course educates students on contemporary healthcare sales and marketing as it directly applies to pharmacy. Sales concepts to be covered include understanding management prospects, developing your sales value proposition, finding management and penetrating the no-talk zone, generating leads: marketing to management, generating leads, cold calling management, meeting the prospect for the first time, presenting to prospects ' the executive briefing, preparing a management proposal that works, negotiating with management, selling to targeted key or major accounts, managing your sales cycle and forecasting, managing sales objections; using storytelling as a business sales tool; managing your competition, following up after the sale, and making a difference with business ethics. Health care marketing is undergoing dramatic reinvention and change because of emerging trends, reform uncertainties, the emergence of social marketing and a renewed focus on quality, outcome and prevention. Executives are demanding higher impact and bigger returns from marketing investments and marketing professionals are more closely aligning their efforts with strategic objectives, customer experience and the integration of communications across multiple platforms and channels. This course offers effective approaches to proactive health care marketing with specific action steps, strategies, techniques and tactics to move markets and increase visibility, awareness, understanding, market share and profitability.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Pharmacy Business Admin (PHARMBA-MS) Students Only

PHARM 5912 - LEADERSHIP AND ETHICS IN HEALTHCARE

Minimum Credits: 3

Maximum Credits: 3

This course provides a foundational introduction to pharmaceutical/health care leadership and ethics. An analysis of dominant methods in leadership theories and healthcare ethics will be discussed and analyzed from historical, systematic, and religious perspectives. Ethical dilemmas of leadership,

the foundation and context of moral choice, the moral implication of decision-making within healthcare organization and the impact on employees, morale, personal integrity, and the patients. Practical issues are engaged to illustrate effective leadership and ethical frameworks for sound decision making. Students will be able to understand and analyze health care leadership and ethics theory and methods as well as major applied topics; critically relate health care leadership and ethics with multi-disciplinary fields in health care as a diverse and national enterprise; integrate academic learning with experiential learning in clinical/organizational experiences; and demonstrate knowledge, skills, competencies and character traits to provide ethical leadership.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Pharmacy Business Admin (PHARMBA-MS) Students Only

PHARM 5914 - GRADUATE EXECUTIVE BOARDROOM

Minimum Credits: 2

Maximum Credits: 2

Following the healthcare dollar: this interactive offering will engage students in a structured understanding of the business side of medicines in the health care industry and other related fields. For instance, students will study different leadership styles and corporate cultures in an organization, follow health spending longitudinally and vertically on medicines from consumer to product and service, discover how market conditions affect operations and profitability and learn about the executive's career development path. Entrepreneurship in healthcare: students will engage in a structured understanding of the business side of medicines in the health care industry and other related fields. This course delves into entrepreneurship in medicines and health. The fundamentals of entrepreneurship medicines and health will be discussed and students will study and contrast the primary entrepreneurship styles including characteristics of those who succeed through discovery, adaptation, and fortitude. Entrepreneurship and intrapreneurship models will be utilized. Students will contrast methods of innovation and supporting business cultures. The impact of market conditions will be analyzed in terms of how they affect success of such endeavors and learn about the executive's career development path. Many past students have used the learning and networking opportunities from this course to shape and propel their careers.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Pharmacy Business Admin (PHARMBA-MS) Students Only

PHARM 5915 - EXECUTIVE HEALTHCARE INNOVATIONS

Minimum Credits: 1.5

Maximum Credits: 1.5

This course will give students an understanding of managing change through the lens of complexity theory using the principles of implementation science. They will understand the levers important in change and how to assess an organization for readiness to change. Students will be able to effectively participate in a health care innovation application team as either a leader or participant that results in the application of an evidence-based health care innovation, which leads to improved patient care. They will be able to develop detailed and effective strategic frameworks from which they can outline and track the progress in implementing a health care innovation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Pharmacy Business Admin (PHARMBA-MS) Students Only

PHARM 5916 - PREDICTIVE ANALYTICS IN PHARMACY AND KNOWLEDGE DISCOVERY FROM BIG DATA

Minimum Credits: 2

Maximum Credits: 2

The overall objective of this course in Predictive Analytics in Pharmacy is to familiarize students with sources of big data, large data analytic techniques, and their wide-applicability in guiding decisions in the areas of patient care, drug research & development, healthcare policy, and cost effectiveness. For the most common techniques, the objective is to acquire sufficient mastery through hands-on analyses of real world data so that students are prepared to apply these techniques in future career positions. For other, more advanced techniques, the objective will be to develop a familiarity about how these methods are used and what questions they can answer.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Pharmacy Business Admin (PHARMBA-MS) Students Only

PHARM 5924 - HEALTH SYSTEM PHARMACY MANAGEMENT 1

Minimum Credits: 3

Maximum Credits: 3

This is the first of two courses designed to provide focused learning in health system pharmacy management/leadership. Students will develop a basic understanding of organizational culture and how it affects personnel and performance, human resource management including hiring, training, assessment and development, and compensation strategies. The course will also address corporate pharmacy management functions; multi-site management and control; relevant accreditation standards (JCAHO, CMS, etc.)

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Pharmacy Business Admin (PHARMBA-MS) Students Only

PHARM 5925 - HEALTH SYSTEM PHARMACY MANAGEMENT 2

Minimum Credits: 3

Maximum Credits: 3

This is the second of two courses designed to provide focused learning in health system pharmacy management/leadership. The first course prepares students to plan and manage pharmacy operations in a hospital pharmacy. This course will address health system pharmacy organization quality standards; patient satisfaction; industry specific financial analysis (financial and managerial statements, cash flow, return on investment); health system reimbursement structure, contracting, purchasing and inventory management (supply chain), and finally the impact of health system informatics systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Pharmacy Business Admin (PHARMBA-MS) Students Only

PHARM 5926 - ADVANCED COMMUNITY PHARMACY MANAGEMENT 1

Minimum Credits: 3

Maximum Credits: 3

This is the first of two courses designed to provide an overview of contemporary management issues in pharmacy with a focus on community pharmacy. Students will develop a basic understanding of organizational culture and how it affects personnel and performance. The course will cover the basics of human resource management including hiring, training, assessment and development as well as compensation strategies. The course will also cover corporate pharmacy functions as well-as multi-site management and control. Students will use the "Pharmacy Management " Essentials for All Practice Settings, textbook, readings from publications, videos, and case studies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Pharmacy Business Admin (PHARMBA-MS) Students Only

PHARM 5927 - ADVANCED COMMUNITY PHARMACY MANAGEMENT 2

Minimum Credits: 3

Maximum Credits: 3

This is the second of two courses designed to provide an overview of contemporary management issues in pharmacy with a focus on community pharmacy. The first course prepares students to plan and manage pharmacy operations in a community pharmacy. Students will learn to develop a business model and to establish key production and quality metrics. Students will gain an understanding of financial analysis including how to construct and interpret operating statements, key financial measures, cash flow, and return on investment. Special emphasis will be given to understanding various reimbursement models and contracts for services in addition to prescription fulfillment. Students will learn to manage purchasing and inventory. Students will use the "Pharmacy Management - Essentials for All Practice Settings" textbook, readings from publications, videos, and case studies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Pharmacy Business Admin (PHARMBA-MS) Students Only

PHARM 5928 - SPECIALTY PHARMACY MANAGEMENT 1

Minimum Credits: 3

Maximum Credits: 3

This course offers students the first part of a focused learning in specialty pharmacy. The course will address specialty drug and clinical management; specialty pharmacy patient management (intake & outcomes); as well as address relevant accreditation standards (URAC, etc.).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Pharmacy Business Admin (PHARMBA-MS) Students Only

PHARM 5929 - SPECIALTY PHARMACY MANAGEMENT 2

Minimum Credits: 3

Maximum Credits: 3

This course offers students the second part of a focused learning in specialty pharmacy. The course will address specialty pharmacy organizational quality standards; specialty pharmacy customer service, communications, and disclosure standards; industry specific financial analysis (financial and managerial statements & indices); specialty pharmacy operations; specialty pharmacy contracting, purchasing and inventory management (supply chain), and finally specialty pharmacy informatics management.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Pharmacy Business Admin (PHARMBA-MS) Students Only

PHARM 5930 - PHARMACY BENEFITS MANAGEMENT 1

Minimum Credits: 3

Maximum Credits: 3

This is the first of two courses designed to provide focused learning in the practice of managed care pharmacy. Students will develop a basic understanding of how managed care pharmacy impacts the healthcare system. The course will focus on managed care, pharmacy benefit managers, prescription drug benefit, formulary management, impact of specialty pharmacy, and overall plan design.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Pharmacy Business Admin (PHARMBA-MS) Students Only

PHARM 5931 - PHARMACY BENEFITS MANAGEMENT 2

Minimum Credits: 3

Maximum Credits: 3

This is the second of two courses designed to provide focused learning in the practice of managed care pharmacy. This course will build on the framework from Pharmacy Benefits Management I, allowing students to confidently engage health and benefits decision makers as an informed advisor. Students will be exposed to various guest speakers, helping to broaden their scope of understanding as it relates to industry dynamics. Additionally, students will be expected to demonstrate their comprehensive knowledge through a plan design and contract exercise.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Philosophy

PHIL 2041 - STUDIES IN ARISTOTLE

Minimum Credits: 3

Maximum Credits: 3

Study of selected Aristotelian texts and topics (readings in Greek). Course may be repeated for credit if the material covered is different.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2050 - TOPICS IN HISTORY OF PHILOSOPHY

Minimum Credits: 3

Maximum Credits: 3

Study of selected texts and topics in the history of philosophy. Course may be repeated for credit if the material covered is different.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PHIL 2070 - ANCIENT PHILOSOPHY

Minimum Credits: 3

Maximum Credits: 3

This is a beginning to intermediate level graduate seminar in ancient philosophy, with emphasis on Plato and Aristotle, taken almost exclusively by students in the doctoral program, usually during their first or second year of residence. The exact contents of the course vary from one occasion to the next.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2071 - STUDIES IN ANCIENT PHILOSOPHY

Minimum Credits: 3

Maximum Credits: 3

Study of selected topics and texts in ancient philosophy (readings in Greek). Course may be repeated for credit if the material is different.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2075 - TOPICS IN ANCIENT PHILOSOPHY

Minimum Credits: 3

Maximum Credits: 3

Study of selected topics in the area of ancient philosophy. Course may be repeated for credit if the material covered is different.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

PHIL 2079 - FROM PHILO TO PHILOPONUS: AN INTRODUCTION TO THE HISTORY OF PHILOSOPHY IN LATE ANTIQUITY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2120 - SPINOZA

Minimum Credits: 3

Maximum Credits: 3

This is an intermediate to advanced graduate seminar in the philosophy of Spinoza, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2130 - LEIBNIZ

Minimum Credits: 3

Maximum Credits: 3

This is an intermediate to advanced graduate seminar in the philosophy of Leibniz, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

PHIL 2170 - KANT

Minimum Credits: 3

Maximum Credits: 3

This is an intermediate to advanced graduate seminar in the philosophy of Kant. The exact contents of the course vary from one occasion to the next.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

PHIL 2171 - KANTIAN ETHICS

Minimum Credits: 3

Maximum Credits: 3

This is an intermediate to advanced graduate seminar in Kantian ethics, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

PHIL 2175 - STUDIES IN KANT

Minimum Credits: 3

Maximum Credits: 3

Study of Kantian texts and topics. Course may be repeated for credit if the material covered is different.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2180 - HEGEL

Minimum Credits: 3

Maximum Credits: 3

This is an intermediate to advanced graduate seminar in the philosophy of Hegel, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

PHIL 2183 - MARX

Minimum Credits: 3

Maximum Credits: 3

This is an intermediate to advanced graduate seminar in the philosophy of Marx, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2200 - FREGE

Minimum Credits: 3

Maximum Credits: 3

This is an intermediate to advanced graduate seminar in the philosophy of Frege, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2210 - WITTGENSTEIN

Minimum Credits: 3

Maximum Credits: 3

This is an intermediate to advanced graduate seminar in the philosophy of Wittgenstein. The exact contents of the course vary from one occasion to the next.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

PHIL 2245 - ANALYTIC PHILOSOPHY

Minimum Credits: 3

Maximum Credits: 3

This is an intermediate to advanced graduate seminar on various topics in analytic philosophy. The subject matter will change.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2300 - ETHICS (CORE)

Minimum Credits: 3

Maximum Credits: 3

This is an introductory to intermediate level graduate seminar in ethics, required of all students in the doctoral program in philosophy, and taken in the first or second year of residence.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Philosophy (PHD)

PHIL 2305 - TOPICS IN ETHICS

Minimum Credits: 3

Maximum Credits: 3

A study of selected topics in ethics. Course may be repeated for credit if material is different.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PHIL 2310 - MORAL THEORY

Minimum Credits: 3

Maximum Credits: 3

This is an intermediate to advanced graduate seminar in moral theory, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2316 - ETHICS AND PUBLIC LIFE

Minimum Credits: 3

Maximum Credits: 3

This course will aid students in making and evaluating normative arguments and analyzing normative concepts as relevant to the formulation and administration of public policy. It will also present and discuss a number of substantive issues of ethical responsibility, rights and justice that are relevant to government officials, both in the U.S. and other countries.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PHIL 2330 - POLITICAL PHILOSOPHY

Minimum Credits: 3

Maximum Credits: 3

This is an intermediate to advanced graduate seminar in political philosophy, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2335 - TOPICS CONTEMPORARY PHILOSOPHY

Minimum Credits: 3

Maximum Credits: 3

This is an intermediate to advanced graduate seminar on various topics in contemporary philosophy. The subject matter will change.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2385 - RATIONALITY

Minimum Credits: 3

Maximum Credits: 3

This is an intermediate to advanced graduate seminar in philosophical issues related to rationality, taken almost exclusively by students in the doctoral program usually during their second or third year of residence. The exact contents of this course vary from one occasion to the next.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2400 - METAPHYSICS-EPISTEMOLOGY (CORE)

Minimum Credits: 3

Maximum Credits: 3

This is an introductory to intermediate level graduate seminar in metaphysics and epistemology, required of all students in the doctoral program in philosophy, and taken in the first or second year of residence.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Philosophy (PHD)

PHIL 2410 - PHILOSOPHY OF WILFRID SELLARS

Minimum Credits: 3

Maximum Credits: 3

This is an intermediate to advanced graduate seminar in the philosophy of Wilfrid Sellars, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2420 - PHILOSOPHY OF LANGUAGE

Minimum Credits: 3

Maximum Credits: 3

This is an intermediate to advanced graduate seminar in the philosophy of language, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Global Studies

PHIL 2421 - TOPICS IN PHILOSOPHY OF LANGUAGE

Minimum Credits: 3

Maximum Credits: 3

This is an intermediate to advanced graduate seminar in various topics in the philosophy of language taken by students in the doctoral program. The exact content of this course varies from one occasion to another.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2445 - PHILOSOPHY OF ACTION

Minimum Credits: 3

Maximum Credits: 3

This is an intermediate to advanced graduate seminar in the philosophy of action taken almost exclusively by students in the doctoral program.

Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2460 - EPISTEMOLOGY

Minimum Credits: 3

Maximum Credits: 3

This is an intermediate to advanced graduate seminar in epistemology, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2480 - METAPHYSICS

Minimum Credits: 3

Maximum Credits: 3

This is an intermediate to advanced graduate seminar in metaphysics. The exact contents of the course vary from one occasion to the next.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2500 - ADVANCED LOGIC (CORE)

Minimum Credits: 3

Maximum Credits: 3

This is the first term of an introductory graduate course in mathematical logic. Topics are completeness of propositional logic and quantification theory and elementary set theory.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Philosophy or History and Philosophy of Science (PHD)

PHIL 2505 - TOPICS IN PHILOSOPHICAL LOGIC

Minimum Credits: 3

Maximum Credits: 3

This is an intermediate to advanced graduate seminar in various topics in philosophical logic, taken almost exclusively by students in the doctoral program. The exact content of this course varies from one occasion to another.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2510 - TOPICS IN LOGIC

Minimum Credits: 3

Maximum Credits: 3

Study of selected topics in logic. Course may be repeated for credit if material covered is different.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2533 - DESCARTES

Minimum Credits: 3

Maximum Credits: 3

An examination of some of the major works of Descartes. Also a look at his precursors, his culture and his influences.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

PHIL 2547 - ARISTOTLE'S PHILOSOPHY OF SCIENCE

Minimum Credits: 3

Maximum Credits: 3

This seminar explores Aristotle's views on the nature of science, such as explanation, causation, demonstration, and necessity. We will study a number of Aristotle's works, including the analytics and physics.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2555 - ARISTOTLE'S CONCEPT OF NATURAL SCIENCE

Minimum Credits: 3

Maximum Credits: 3

Among theoretical forms of investigation and knowledge, Aristotle distinguishes mathematics, natural science and first philosophy (metaphysics).

This seminar explores Aristotle's understanding of the aims, methods and the conceptual and explanatory structure of natural science, and the relationship between it and the other forms of theoretical inquiry.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

PHIL 2565 - THE GENE:TRANSFRM/FRAGMNT CONCPNT

Minimum Credits: 3

Maximum Credits: 3

The course covers the period from Gregor Mendel to the molecular gene of the 1990s. We explore its status as a hypothetical construct, and as a spatial concept in terms of its localization in the cell. Discussion of its status as a fundamental unit in biology leads to consideration of its place in the theoretical biology, in speculations about the origin of life, and in debates over the levels at which natural selection acts.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2580 - PHILOSOPHY OF MATHEMATICS

Minimum Credits: 3

Maximum Credits: 3

This is an intermediate to advanced graduate seminar in the philosophy of mathematics, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2585 - TOPICS IN PHILOSOPHY OF MATH

Minimum Credits: 3

Maximum Credits: 3

This is an intermediate to advanced graduate seminar on topics in the philosophy of mathematics, taken almost exclusively by students in the doctoral

program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PHIL 2600 - PHILOSOPHY OF SCIENCE CORE SEM

Minimum Credits: 3

Maximum Credits: 3

This seminar is an intensive and advanced introduction to some of the main themes and problems in philosophy of science including the nature of evidence, theory comparison, the theory-observation distinction, the meaning of theoretical terms, scientific explanation and scientific change.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Philosophy (PHD) or History and Philosophy of Science (PHD)

PHIL 2610 - SPECIAL TOPICS IN THE HISTORY OF THE PHILOSOPHY OF SCIENCE

Minimum Credits: 3

Maximum Credits: 3

This course deals with selected special topics in the history of the philosophy of science. It is an intermediate to advanced graduate seminar, usually taken by students in the doctoral program. The exact contents of the course vary from one occasion to the next.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2625 - RECENT TOPICS IN PHIL OF SCIENCE

Minimum Credits: 3

Maximum Credits: 3

In this seminar we will read and discuss recent works in the philosophy of science. The choice of authors and topics will depend on who is doing the most interesting new work in the field.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2626 - TOPICS IN PHILOSOPHY OF PHYSICS

Minimum Credits: 3

Maximum Credits: 3

The course will examine some of the fascinating problems to which the modern physical theories of quantum mechanics and relativity have given rise. No previous formal training in physics or mathematics will be presupposed.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2627 - PHILOSOPHY OF QUANTUM MECHANICS

Minimum Credits: 3

Maximum Credits: 3

This course will review the Hilbert space formalism of quantum mechanics, consider interpretations of that formalism, (for instance, hidden variable theories, relative state formulations, stochastic reduction schemes), and the difficulties-empirical, logical, and conceptual- to which interpretations are prone.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2628 - PHILOSOPHY OF PHYSICS

Minimum Credits: 3

Maximum Credits: 3

This seminar investigates philosophical issues in the foundations of fundamental theories of physics.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2630 - TOPICS IN HISTORY AND PHILOSOPHY OF BIOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course aims to examine a variety of philosophical issues that arise in the biological sciences in historical context. Topics that may be covered, depending on which faculty member is teaching it, include: teleological explanation in biology; the nature of selection and/or levels of selection; debates over the gene concept or the species concept; biological individuality; whether there are 'laws of nature' in the biological sciences; mechanistic explanation; biological classification and systematics; biological kinds and natural kinds; integration of development and evolution; etc.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2633 - PHILOSOPHY OF COGNITIVE SCIENCE

Minimum Credits: 3

Maximum Credits: 3

This course will survey the main philosophical questions provoked by cognitive science. Students will acquire a comprehensive grasp of the main issues in this field. We will discuss questions such as: is the mind modular? Is the mind embodied and situated? Do we ascribe mental states by simulation or by means of a theory? What is consciousness?

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2634 - TOPICS IN PHILOSOPHY OF COGNITIVE SCIENCE

Minimum Credits: 3

Maximum Credits: 3

This class focuses on advanced topics that have been recently debated in the philosophy of cognitive science. Students will acquire an in-depth understanding of these debates.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2652 - PHILOSOPHY OF PSYCHIATRY

Minimum Credits: 3

Maximum Credits: 3

This course examines conceptual, methodological, and some historical issues in psychiatry. General analyses of psychiatric disorders and classifications, and their reliability and validity, will lead to a consideration of the DSM and ICD. The function of etiological, reductive, and mechanical dimensions (including genetic and neuroimaging research) will be discussed. Historical topics include the contrast between and transition from psychoanalytical, narrative approaches to the rise of bio-chemical psychiatry. Extended consideration of schizophrenia and depressive disorder will be course themes. The seminar closes with a discussion of legal and ethical issues in psychiatry.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2657 - PHILOSOPHY OF BIOLOGY

Minimum Credits: 3

Maximum Credits: 3

Central issues in the philosophy of biology from Darwin to the present including essentialism, reductionism, theory structure and explanation. Topics may include debates on units of selection, species concept, relationship between classical and molecular genetics, relationship between developmental and evolutionary biology.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2662 - CAUSALITY

Minimum Credits: 3

Maximum Credits: 3

Consideration of various theories of causality and how the theories relate to questions of metaphysics, epistemology and explanation.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2663 - MODELS AND MODELING IN SCIENCE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2675 - SCIENTIFIC EXPLANATION

Minimum Credits: 3

Maximum Credits: 3

This is a graduate seminar in scientific explanation taken almost exclusively by students in the doctoral programs of philosophy and HPS usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2681 - REALISM

Minimum Credits: 3

Maximum Credits: 3

What, if anything, makes scientific claims true or false? Is scientific language about anything? If it is, can we know which scientific claims are true, or can we arrange our beliefs to converge towards the truths? If not, what purpose can the enterprise of science serve? This seminar will examine these and related questions.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2687 - THE EPISTEMOLOGY OF EXPERIMENTAL PRACTICES

Minimum Credits: 3

Maximum Credits: 3

Observation and experimentation have long been taken as central to the legitimacy of scientific claims. This seminar examines the assumptions and inferences involved in reasoning about experimental results.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHIL 2690 - THEORIES OF CONFIRMATION

Minimum Credits: 3

Maximum Credits: 3

This is an intermediate to advanced graduate seminar on the topic of induction and confirmation, taken almost exclusively by students in the doctoral program, usually during their second or third year of residence. The exact contents of the course vary from one occasion to the next.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2695 - PRAGMATISM

Minimum Credits: 3

Maximum Credits: 3

The course focuses on key pragmatic texts from C. S. Pearce to the present. But it will also give some consideration to the historical background of pragmatism and to later critical responses and reactions. Emphasis will be upon those pragmatic teachings, especially in semantics, epistemology, and philosophy of science, that bear on currently controverted issues.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2699 - EXPERIMENT & SCIENTIFIC PRACTICE

Minimum Credits: 3

Maximum Credits: 3

This will be a course on the epistemology of science. An honest way to do epistemology of science is to ask, given a theory and a set of evidence: to what extent does this evidence support this theory? In this course we will not investigate the topography of evidential warrant so directly. We will turn instead to some recent studies of the experimental practices through which particular pieces of evidence emerge as evidence.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHIL 2900 - TEACHING PHILOSOPHY

Minimum Credits: 1

Maximum Credits: 1

A practicum approach to train as an tfs wherein faculty and senior graduate students train the more junior tas on how to teach philosophy. This course has been approved as an alternative to FACDEV 2200 for philosophy graduate students.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

Course Requirements: PLAN: Philosophy (PHD)

PHIL 2902 - PRE-MA DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

This is a directed study course, taken by one or a few students at a time, on a pre-arranged topic. It involves close supervision by an instructor, including reading, discussion, and written work.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

PHIL 2950 - DISSERTATION SEMINAR

Minimum Credits: 3

Maximum Credits: 3

The purposes of this seminar (which has very successful counterparts at other top graduate programs in philosophy) are multifold. It gives students working on dissertation projects a community of others in the same boat. It provides them with feedback on work in progress, and practice presenting their work to an audience wider than their committee. (This is important for the impression they make on the job market.) Supposing that each student admitted to candidacy makes a seminar presentation each semester, it hastens time to completion by imposing interim deadlines on the road to a completed dissertation. The seminar gives students who have been comprehensively evaluated but not yet defended a prospectus examples of other students who have successfully negotiated the transition.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

Course Requirements: PLAN: Philosophy (PHD)

PHIL 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 9

This is a course through which students can receive graduate degree credit in philosophy for work that they undertake largely or entirely on their own, with little or no faculty supervision.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

PHIL 2999 - PROSPECTUS RESEARCH

Minimum Credits: 3

Maximum Credits: 3

Each doctoral student in philosophy, when he or she is ready to begin working on the doctoral dissertation in earnest, must submit to a prospective dissertation committee a document, called a "prospectus", outlining the proposed dissertation topic, the envisioned treatment of that topic, and a rough plan for how to proceed. This course is a special directed study course for preparing that document.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

PHIL 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1

Maximum Credits: 9

This course gives academic credit for research toward and writing of the doctoral dissertation.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

PHIL 3902 - POST-MA DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

This is a directed study course, taken by one or a few students at a time, on a pre-arranged topic. It involves close supervision by an instructor, including reading, discussion, and written work.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Physical Medicine and Rehabilitation

PMDREH 5410 - REHABILITATION SUB-INTERNSHIP

Minimum Credits: 0

Maximum Credits: 0

During this four-week elective for fourth year medical students, participants will function at an intern-level the student will be given intern-level responsibilities to manage inpatient rehabilitation patients. Student will be teamed with one attending and one or more PM&R residents and will be responsible for caring for their own patients, which includes rounding, writing notes, admitting and discharging patients, staffing team conferences with therapists, nurses, and other health care providers, and communicating with families under supervision of the team. Students will also be able to participate in therapy sessions and will gain exposure to prescription of orthoses. The student will be assigned to one team for the entire month to gain experience in the longitudinal care of rehab patients. Teaching will be bedside as well as small didactic sessions at the discretion of the attending. There is no exam and students will be evaluated on their participation and meeting the course objectives.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PMDREH 5450 - REHABILITATION MEDICAL CLERKSHIP

Minimum Credits: 0

Maximum Credits: 0

This four-week elective will demonstrate to the student the basic problems of patients and basic concepts of care for patients, referred to the division of rehab medicine. The student will be taught physical diagnostic techniques applicable to the disorders of musculoskeletal and neural systems. Students are expected to evaluate inpatients and develop a treatment plan under the supervision of division physicians. Common patient problems include hemiplegia, back pain, cervical spondylosis, arthritis and amputations. Electrodiagnostic studies will also be demonstrated.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PMDREH 5460 - PED PHYSCL MED/REHAB-INPATIENT

Minimum Credits: 0

Maximum Credits: 0

In this four-week elective the student will function in the capacity of an intern and care for hospitalized children with rehabilitation needs. Diagnosis will include cerebral palsy, myelomeningocele and other neuromuscular disorders. Skills in the physical and medical management of pediatric disability and an awareness of the other medical disciplines involved in the care of these children would be stressed.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PMDREH 5461 - PED PHYSCL MED/REHAB-OUTPATIENT

Minimum Credits: 0

Maximum Credits: 0

In this four-week elective the student will be involved in clinical evaluations of pediatric patients with multiple neuromuscular problems. This would include the differential diagnosis and physical exam as well as emphasis on electro diagnosis. In addition, some fundamentals of bracing and prosthesis prescriptions will be covered.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PMDREH 5465 - DISABILITIES CLERKSHIP

Minimum Credits: 0

Maximum Credits: 0

Students will participate in the medical care of patients in a variety of inpatient clinical settings and in both adult and pediatric outpatient settings. Teams consist of physiatrists, pediatricians, nurse practitioners, physical therapists, occupational therapists, and social workers. The student's role will include serving as liaison to the medical center, assisting in the daily care of individuals with disabilities, providing clients and staff with education about specific medical topics and advocating for the program and its clients within the medical center.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PMDREH 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0

Maximum Credits: 0

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PMDREH 5810 - PM&R RESEARCH

Minimum Credits: 0

Maximum Credits: 0

This four-week elective will allow the student to gain valuable experience in cutting edge research in physical medicine and rehabilitation (PM&R). The student will be precepted by faculty affiliated with the department of PM&R by meeting the following objectives: identify different sources of research funding; become familiar with effectively formulating grant proposals and budgets; learn to identify obstacles to performing productive research in an academic setting; assist in formulating effective research methodology; publication of an abstract.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PMDREH 5899 - INDEPENDENT STUDY IN PHYSICAL MEDICINE AND REHABILITATION

Minimum Credits: 0

Maximum Credits: 0

The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PMDREH 5900 - EXTRAMURAL PHYSICAL MEDICINE AND REHABILITATION

Minimum Credits: 0

Maximum Credits: 0

A clinical experience in Physical Medicine & Rehabilitation may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.

Academic Career: Medical School

Course Component: Clinical
Grade Component: H/HS/S/LS/U

Physical Therapy

PT 2025 - PHYSIOLOGY OF EXERCISE

Minimum Credits: 2

Maximum Credits: 2

Structures and function of muscle, principles of neuromuscular recruitment for physical work, excitation-contraction coupling, contractile biochemistry, including sources of fuel for muscular work, and shifts in energy demands and fuel sources with physical activity under conditions of steady state, fasting, exercise and stress will also be covered. Examples of the impact of structural and physiological change with growth, aging, disease, drugs, and performance enhancing substances are reviewed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2026 - CARDIOPULMONARY PT 1

Minimum Credits: 2

Maximum Credits: 2

Students gain a basic understanding of structure and function of cardiovascular and pulmonary systems, cardiorespiratory fitness and pulmonary physiology in both healthy and diseased state. Principles of physical training for persons with and without cardiopulmonary dysfunction are addressed through lecture, demonstrations, and student participation in monitoring and interpreting signs and symptoms of physical work in healthy and disease states. Interactions of skeletal muscle and the cardiovascular and respiratory systems are discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2027 - CARDIOPULMONARY PT 2

Minimum Credits: 2

Maximum Credits: 2

Evidence-based study of the application of physiological and clinical sciences to the physical therapy management of individuals with cardiopulmonary system dysfunction. Learning experiences include weekly literature review and directed professional discussions with colleagues (classmates, instructor and lecturers), and a case-based approach to applying knowledge and decision-making to examination, evaluation, prognosis, and intervention in cardiopulmonary pt.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2028 - HEALTH AND WELLNESS

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2029 - KINESIOLOGY AND INTRO TO

Minimum Credits: 3

Maximum Credits: 3

Introduction to the principles of the causes and treatment of musculoskeletal movement dysfunction. Basic principles of biomechanics and kinesiology of the musculoskeletal system with applications to the treatment of musculoskeletal dysfunction are also included. This material will be presented in lecture format and will be supplemented by direct laboratory experience.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2030 - ANATOMY

Minimum Credits: 6

Maximum Credits: 6

An overview of the musculoskeletal causes of movement dysfunction concentrating on the upper extremities. Basic principles of musculoskeletal evaluation, biomechanics, kinesiology and treatment are included. In depth study of the musculoskeletal and peripheral nervous system of the human body also included. Directed laboratory experience using prosected cadavers, skeletal material, models and audio-visual tapes. The adaptation of this knowledge and skills to diverse populations in a variety of practice populations emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2031 - MUSCULOSKELETAL PT 1

Minimum Credits: 6

Maximum Credits: 6

An overview of the musculoskeletal causes of movement dysfunction, concentrating on the lower extremities. Class room, laboratory and clinical sessions are used to facilitate the attainment of competencies in prevention, screening, diagnosing and designing and managing a PT plan of care for patients with physical dysfunction resulting from musculoskeletal causes. The adaption of this knowledge and skills to diverse populations in a variety of practice environments is emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: PT 2025 and 2029 and 2030 (All Courses MIN GRADE 'C'); PLAN: Physical Therapy (DPT)

PT 2032 - MUSCULOSKELETAL PATIENT 2

Minimum Credits: 5

Maximum Credits: 5

A continuation of PT 2031.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2033 - MUSCULOSKELETAL PT 3

Minimum Credits: 3

Maximum Credits: 3

A continuation of PT 2032.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2035 - CLINICAL BIOMECHANICS

Minimum Credits: 3

Maximum Credits: 3

Student will be introduced to quantitative methods for biomechanical analysis of gait and other human movement. Equipment and methods to be studied include automated motion analysis, videography, force platform, and kinesiological electromyography. The student will do a project involving the biomechanical analysis of movement using this equipment.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PT 2036 - CLINICAL BIOMECHANICS

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Health and Rehabilitation Sciences students only.

PT 2040 - SURVEY OF HUMAN DISEASE 1

Minimum Credits: 2

Maximum Credits: 2

A systematic approach to obtaining a pertinent history and identifying patient problems through interviews or other appropriate methods. Includes the recognition of signs and symptoms of systemic disease, cardiovascular, respiratory and neuromusculoskeletal causes of movement dysfunction. The recognition of patient problems that may require other professional attention in addition to that from a physical therapist is emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2041 - PATIENT MANAGEMENT 1

Minimum Credits: 4

Maximum Credits: 4

Provides an introduction to physical therapy interventions used to help alleviate patients' movement dysfunction and problems with pain that may be caused by a variety of pathologies. Developing knowledge and skills in proper patient and therapist body mechanics, transfer techniques, wheel chair design, patient positioning and draping and use of ambulatory assistive devices are stressed, as are the knowledge and skills of the physical modalities of heat, light, cold, water and massage.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2042 - PATIENT MANAGEMENT 2

Minimum Credits: 3

Maximum Credits: 3

Provides instruction in PT interventions used to help alleviate movement dysfunction and pain in a variety of patient populations. Content includes: upper and lower extremity orthotic and prosthetic intervention, pathological process and PT management for patients with amputations, cancer, wounds, burns and arthritis, and intervention for issues in women's health (prosthetics, osteoporosis).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2045 - SURVEY OF HUMAN DISEASE 2

Minimum Credits: 2

Maximum Credits: 2

An introduction to human diseases that affect the respiratory, hepatic, renal, and gastrointestinal systems. Environmental and psychogenic causes of diseases are also studied.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2050 - ADVANCED MANUAL THERAPY

Minimum Credits: 2

Maximum Credits: 2

This 2-credit elective course will introduce students to a variety of manual therapy techniques that are used to treat musculoskeletal conditions in the clinical practice of physical therapy. The course will include a combination of lecture and hands-on lab. The techniques will span the spectrum from soft tissue procedures such as transverse friction massage and manual trigger point therapy to mobilization procedures for the spine and extremity joints. Participants should have a basic working knowledge of the manual therapy procedures taught within the musculoskeletal tract.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

PT 2052 - PEDIATRIC PHYSICAL THERAPY

Minimum Credits: 3

Maximum Credits: 3

Lecture and laboratory activities focusing on the preparation of the student for a pediatric clinical affiliation and a possible career in physical therapy.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2055 - GROWTH AND DEVELOPMENT 1

Minimum Credits: 2

Maximum Credits: 2

Major emphasis is on the evaluation and treatment of children. General principles of growth and development of the major systems will be reviewed, in addition to common diseases and diagnoses affecting those systems. Students will learn to prioritize appropriate evaluation and treatment strategies for pediatric patients; interpret results of clinical findings; develop and prioritize problem lists; and formulate treatment goals that are functional and age appropriate.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2056 - GROWTH AND DEVELOPMENT 2

Minimum Credits: 2

Maximum Credits: 2

A continuation of PT 2055.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2059 - GERIATRICS

Minimum Credits: 2

Maximum Credits: 2

Course provides information and sources of information to enable students to appreciate changes in physical function (including physical, cognitive and social aspects) of the older adult and consider the potential impact the changes may have on health status and assessment and treatment in pt. An overview of systemic, behavioral and cognitive changes that typically occur with advanced age and the impact of the changes on physical function are also discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2060 - NEUROSCIENCE

Minimum Credits: 4

Maximum Credits: 4

Considers gross and cellular organization of central nervous system and its relationship to peripheral somatic and visceral systems; the physiological properties of neurons, their associated structures; and the problem mechanisms for reception, transmission, and integration of information at spinal, supraspinal and cortical levels. Concepts of normal sensory-motor integration, to include influence of neural centers on motor activity and postural control, and clinical manifestations of dysfunctions of major neural elements will be discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2061 - NEUROMUSCULAR PT 1

Minimum Credits: 3

Maximum Credits: 3

First of a three part series of courses which introduce the student to basic neurological rehabilitation principles. Course intended to provide the student with knowledge and understanding of human movement and function throughout the neuromuscular system. Students will be introduced to a neuromotor evaluation scheme for patients with neurologic impairments. Information presented regarding motor behavior, motor control as it relates to normal/abnormal movement and function. Case studies and problem solving format will be used throughout this course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2062 - NEUROMUSCULAR PT 2

Minimum Credits: 5

Maximum Credits: 5

A continuation of PT 2061.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2063 - NEUROMUSCULAR PT 3

Minimum Credits: 3

Maximum Credits: 3

A continuation of PT 2062.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2071 - RESEARCH METHODS IN PT

Minimum Credits: 2

Maximum Credits: 2

Purpose of this course is to instruct students in the basic principles of research in physical therapy. Topics to be covered include research methodology and study design, hypothesis testing, and principles of data collection and outcome assessment.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2072 - EVIDENCE-BASED PRACTICE 1

Minimum Credits: 1

Maximum Credits: 1

Course designed to provide an introduction to the concepts of evidence-based practice in physical therapy. Course will integrate classroom lecture and discussion, and small-group forums to help students learn how research evidence impacts the practice of PT. Emphasis of course will be interpreting research evidence on PT interventions and adapting the evidence into clinical practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2073 - EVIDENCE-BASED PRACTICE 2

Minimum Credits: 1

Maximum Credits: 1

Course is to apply principles of evidence-based practice to decisions regarding selection of appropriate physical therapy treatments. Integrate lectures, discussion and research forums to help students learn how to appraise the research literature regarding treatments, and how to apply research evidence to treatment decisions for individual patients. Emphasis on interpreting research evidence on aspects of diagnosis and prognosis related to PT and adapting the evidence into clinical practice. Students will develop a summary data collection form for a specific patient population.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2074 - EVIDENCE-BASED PRACTICE 3

Minimum Credits: 1

Maximum Credits: 1

Primary objective of course will be presentation of the group information collected during the student's first full time clinical internship. Written and oral summaries collected data will be presented by the student groups assembled during PT 2073.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2075 - EVIDENCE-BASED PRACTICE 4

Minimum Credits: 2

Maximum Credits: 2

Primary objective of course will be benchmarking data presented in PT 2074 against anticipated outcomes in the literature. Students will work in groups assembled in PT 2073. Each group responsible for searching the literatures to determine expected outcomes for their particular patient-type.

Each group will perform a systematic review of the literature related to interventions for their patient-type and will document the usage of evidence-based interventions in their own data and its relationship to outcomes of care.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2076 - EVIDENCE-BASED PRACTICE 5

Minimum Credits: 1

Maximum Credits: 1

Course will run concurrent with student's full-time, yearlong clinical internship. Requirements will be completion of a personal portfolio of clinical outcomes for patients seen during the internship experience. A variety of patient types will be examined by each student depending on the clinical setting. Each student's portfolio will be evaluated by members of the PT faculty at 6 months and after completion of the year-long internship.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2077 - EVIDENCE-BASED PRACTICE 6

Minimum Credits: 1

Maximum Credits: 1

Course will run concurrent with student's full-time, yearlong clinical internship. Requirements will be completion of a personal portfolio of clinical outcomes for patients seen during the internship experience. A variety of patients' types will be examined by each student depending on the clinical setting. Each student's portfolio will be evaluated by members of the PT faculty at 6 months and after completion of the year-long internship.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2078 - EVIDENCE-BASED PRACTICE 7

Minimum Credits: 1

Maximum Credits: 1

Course will run concurrent with student's full-time, yearlong clinical internship. Requirements will be completion of a personal portfolio of clinical outcomes for patients seen during the internship experience. A variety of patients' types will be examined by each student depending on the clinical setting. Each student's portfolio will be evaluated by members of the PT faculty at 6 months and after completion of the year-long internship.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2079 - MANAGEMENT OF THE MEDICALLY COMPLEX PATIENT

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2081 - PT LEADERSHIP AND PROFESSIONAL DEVELOPMENT 1

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physical Therapy (DPT)

PT 2082 - PHYSICAL THERAPY LEADERSHIP AND PROFESSIONAL DEVELOPMENT 2

Minimum Credits: 1

Maximum Credits: 1

An introduction and overview of the profession of physical therapy including its scientific basis, standards of practice, ethical and legal responsibilities, and role in the delivery of health care by referral, delegation and consultation with a multidisciplinary health care team.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2083 - PT LEADERSHIP AND PROFESSIONAL DEVELOPMENT 3

Minimum Credits: 3

Maximum Credits: 3

Examination of management principles for effective and efficient patient care services by providing knowledge of health care systems, organizational structures and personnel management policies in the environments of practice. Introduction to the teaching-learning process for use in therapeutic intervention and in meeting the educational needs of patients, students, colleagues and the community. Discussion of opportunities and responsibility for continued professional development.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: PT 2082 (MIN GRADE 'C'); PLAN: Physical Therapy (DPT)

PT 2084 - SPECIAL TOPICS IN OSTEOARTHRITIS

Minimum Credits: 1

Maximum Credits: 2

The purpose of this course is to explore the literature on a variety of current issues related to osteoarthritis and the care of individuals with osteoarthritis.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

PT 2085 - ADVANCED THERAPEUTIC EXERCISE IN PT PRACTICE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

PT 2088 - SPECIAL TOPICS IN PT

Minimum Credits: 1

Maximum Credits: 1

This course will be divided into 2 separate and distinct modules. The purpose is to provide students with a fundamental understanding of 2 major areas that impact their future practice as physical therapists. The first module covers the clinical innovations and translation of emerging science(s) in the field of rehabilitation. In this portion students will be introduced to an understanding of the role of work being done in regenerative medicine and its impact on rehabilitation of musculoskeletal and neurological conditions. The second module covers the broad topic of psychologically informed physical therapy practice. Students will become familiar with cognitive behavioral therapy approaches as well as motivational interviewing

techniques with the goal of enhancing their awareness of psychosocial factors that influence the patient outcomes. The content will also include information and training on the SBIRT model, designed to identify individuals across a continuum of substance abuse. The course will be delivered in a seminar based format with the expectation of students being engaged and interactive during the discussions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

PT 2089 - CLINICAL EDUCATION SEMINAR

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PT 2092 - CLINICAL EDUCATION 2

Minimum Credits: 1

Maximum Credits: 8

Fourteen-week clinical education experiences conducted under the supervision of qualified physical therapists in a variety of practice settings to provide a wide range of professional learning opportunities in the provision of care and in teaching and where possible, opportunities to participate in the administration of services, quality assurance, clinical research activities, and supervision of physical therapist assistants and other supportive personnel.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: School of Health and Rehabilitation Sciences students only.

PT 2099 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 6

Provides students an opportunity to explore in depth an area of particular interest to them. It is the student's responsibility to find a faculty member willing to undertake such a tutorial.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis

PT 2102 - PHARMACOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course covers the principles of drug action for drugs related to: central nervous, respiratory, gastrointestinal, renal/cardiovascular, and endocrine systems. The mechanism of action and use of antibiotics will also be covered.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT or PTTRNS-DPT)

PT 2103 - RADIOLOGY-PHYSICAL THERAPISTS

Minimum Credits: 2

Maximum Credits: 2

This course will introduce the radiologic concepts with an emphasis on musculoskeletal and neurological imaging related to PT practice.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

PT 2107 - EVIDENCE BASED PRACTICE

Minimum Credits: 3

Maximum Credits: 3

This course examines best practice patterns in clinical care and emphasizes basic concepts related to research such as reliability, internal and external validity, and study design. Critical appraisal of studies related to various PT interventions will be reviewed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Physical Therapy (DPT or PTTRNS-DPT)

PT 2108 - EVIDENCE IN PRACTICE 1

Minimum Credits: 2

Maximum Credits: 2

This course will focus on the use of clinical information related to outcome and treatment in a series of patients with a common disorder.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Physical Therapy (DPT or PTTRNS-DPT)

PT 2109 - EVIDENCE IN PRACTICE 2

Minimum Credits: 2

Maximum Credits: 2

This course will focus on the use of clinical information related to outcome and treatment in a series of patients with a common disorder.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Physical Therapy (DPT or PTTRNS-DPT)

PT 2110 - EVIDENCE IN PRACTICE 3

Minimum Credits: 2

Maximum Credits: 2

This course will focus on the use of clinical information related to outcome and treatment in a series of patients with a common disorder.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PLAN: Physical Therapy (DPT or PTTRNS-DPT)

PT 2111 - DIFFERENTIAL DIAGNOSIS IN PT

Minimum Credits: 3

Maximum Credits: 3

This course will cover basic concepts of physical examination of the patient with neuro-musculoskeletal dysfunction. Fundamental examination skills and knowledge will be covered, including issues related to screening, review of systems, history, physical examination and clinical decision making.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT or PTTRNS-DPT)

PT 2127 - FALLS AND BALANCE DYSFUNCTION: PT MANAGEMENT AND INTERVENTION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT or PTTRNS-DPT)

PT 2130 - CLINICAL EDUCATION 1

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

PT 2131 - CLINICAL EDUCATION 2

Minimum Credits: 3

Maximum Credits: 3

This part-time clinical is focused on the development of professional skills. It will be a hands-on experience allowing the student to perform patient management skills that they are learning in the classroom. Clinical responsibilities will increase throughout the semester. Students must also regularly attend and participate in departmental clinical rounds. This weekly forum will provide the opportunity for faculty, clinicians, and students to present clinical case reports with an interactive group discussion. Students must meet specific clinical benchmarks in order to successfully pass this course.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

PT 2132 - CLINICAL EDUCATION 3

Minimum Credits: 4

Maximum Credits: 4

This is a full-time six-week clinical internship under the supervision of physical therapists that have met the qualifications for clinical faculty. It may occur in either an inpatient or outpatient setting. Students must meet specific clinical benchmarks in order to successfully pass this course.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

PT 2133 - CLINICAL EDUCATION 4

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

PT 2134 - CLINICAL EDUCATION 5

Minimum Credits: 1

Maximum Credits: 8

This full-time clinical internship is conducted under the supervision of qualified physical therapists in a variety of practice settings to provide a wide range of professional learning opportunities in the provision of patient care. Where possible, opportunities to participate in the administration of services, quality assurance, clinical research activities, and supervision of physical therapist assistants and other supportive personnel will be

provided. Students must meet specific clinical benchmarks in order to successfully pass this course.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

PT 2135 - CLINICAL EDUCATION 6

Minimum Credits: 1

Maximum Credits: 8

This full-time clinical internship is conducted under the supervision of qualified physical therapists in a variety of practice settings to provide a wide range of professional learning opportunities in the provision of patient care. Where possible, opportunities to participate in the administration of services, quality assurance, clinical research activities, and supervision of physical therapist assistants and other supportive personnel will be provided. Students must meet specific clinical benchmarks in order to successfully pass this course.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

PT 2136 - CLINICAL EDUCATION 7

Minimum Credits: 1

Maximum Credits: 8

This full-time clinical internship is conducted under the supervision of qualified physical therapists in a variety of practice settings to provide a wide range of professional learning opportunities in the provision of patient care. Where possible, opportunities to participate in the administration of services, quality assurance, clinical research activities, and supervision of physical therapist assistants and other supportive personnel will be provided. Students must meet specific clinical benchmarks in order to successfully pass this course.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

PT 2156 - CUR EVIDENCE IN NEUROMUS PRACT

Minimum Credits: 3

Maximum Credits: 3

This course will cover the neurologic concepts and principles related to sensory motor control and dysfunction.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT or PTTRNS-DPT)

PT 2157 - CUR EVIDNC CARDIOPULMONARY PRA

Minimum Credits: 2

Maximum Credits: 2

Theoretical frameworks underlying the examination, evaluation and treatment of patients with cardiopulmonary impairments will be discussed. The use of evidence-based clinical decision making will be emphasized in this course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT or PTTRNS-DPT)

PT 2158 - CUR EVIDENCE INTEGUMENTARY PRA

Minimum Credits: 2

Maximum Credits: 2

Theoretical frameworks underlying the examination, evaluation and treatment of patients with integumentary impairments will be discussed. The use of evidence-based clinical decision making will be emphasized in this course.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physical Therapy (DPT or PTTRNS-DPT)

PT 2161 - CUR EVIDENCE MUSCULSK PRACT 1

Minimum Credits: 3

Maximum Credits: 3

Theoretical frameworks underlying the examination, evaluation and treatment of patients with musculoskeletal impairments of the lumbo-pelvic spine will be discussed. The use of evidence-based clinical decision making will be emphasized in this course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT or PTTRNS-DPT)

PT 2162 - CUR EVIDENCE MUSCULSK PRACT 2

Minimum Credits: 3

Maximum Credits: 3

Theoretical frameworks underlying the examination, evaluation and treatment of patients with musculoskeletal impairments of the le will be discussed. The use of evidence based clinical decision making will be emphasized in this course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT or PTTRNS-DPT)

PT 2172 - ADVANCED CLINICAL PRACTICE: THE LOWER QUARTER

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT or PTTRNS-DPT)

PT 2173 - ADVANCED CLINICAL PRACTICE: THE UPPER QUARTER

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT or PTTRNS-DPT)

PT 2180 - CUR EVIDENCE MUSCULSK PRACT 3

Minimum Credits: 3

Maximum Credits: 3

Theoretical frameworks underlying the examination, evaluation and treatment of patients with musculoskeletal impairments of the C-T spine will be discussed. The use of evidence-based clinical decision making will be emphasized in this course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2181 - CUR EVIDENCE MUSCULSK PRACT 4

Minimum Credits: 3

Maximum Credits: 3

Theoretical frameworks underlying the examination, evaluation and treatment of patients with musculoskeletal impairments of the UE will be discussed. The use of evidence based clinical decision making will be emphasized in this course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physical Therapy (DPT)

PT 2555 - BIOMECHANICS OF BALANCE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Requirements: PROG: Sch Hlth & Rehabilitation Scs or School of Medicine or Swanson School of Engineering; LEVEL: Graduate

PT 2922 - TEACHING INTERNSHIP

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad SN Basis

Physicians Assistant Program

PAS 2101 - INTRODUCTION TO THE PHYSICIAN ASSISTANT PROFESSION

Minimum Credits: 1

Maximum Credits: 1

This course traces the history, development, and current status of the physician assistant profession. Students will explore the role of the physician assistant as part of the healthcare team. The student will research and investigate the state and national legislation that governs the profession. Topics will include a historical perspective of the profession, current trends, and issues of the profession; the PA role in health care delivery, competencies integral to the PA profession; political and legal factors that affect PA practice; importance of biomedical ethics, patient confidentiality, and professionalism, in relation to their role as health care providers; content reviewing the professional organizations, program accreditation, graduate certification, certification maintenance, license application, employment issues and professional liability will be discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physician Assistant Studies (MS)

PAS 2102 - HUMAN ANATOMY

Minimum Credits: 4

Maximum Credits: 4

This course with a lab studies the organization of the human body and the way in which anatomical relationships serve as a basis for function. The medical aspects of the structural and functional organization of the human body are also a focus of attention. The lectures are designed to provide guidance or explain difficult or conceptual material. The major learning experience occurs in the laboratory with cadaveric dissection.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physician Assistant Studies (MS)

PAS 2103 - MEDICAL PHYSIOLOGY

Minimum Credits: 4

Maximum Credits: 4

This course is an introduction to the physiology and microanatomy of the human body, and as such its major objectives are to give students an appreciation of both the normal functioning and the structure of tissues and organs. In accomplishing this goal, it is desirable for students to correlate lecture information pertaining to cell and organ system physiology with laboratory exposure to the histology and ultra structure of human tissues and organs.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physician Assistant Studies (MS)

PAS 2104 - GENETIC AND MOLECULAR MECHANISMS OF HEALTH AND DISEASE

Minimum Credits: 1

Maximum Credits: 1

This course introduces the student to the understanding of genetic and molecular medicine as it applies to clinical practice. A strong knowledge base of cell structure, genetic variation, inheritance patterns and specific genetic disorders is required. In addition to knowledge, the application of genetic knowledge and molecular medicine involves the development and integration of skills including but not limited to: accurate history taking; creation of precise documentation of and interpretation of the pedigree; integration of genetic understanding into patient assessment; comprehension of the role of genetic testing and counseling; and management and referral of patients with genetic issues. Physician assistant students must be familiar with the most common clinical genetic diseases, as well as the ethical, legal and social issues of genetics. Due to the constantly changing knowledge in this field, pa students must demonstrate the ability to utilize information literacy skills to ensure that as clinicians they are self-directed lifelong learners.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: PAS 2101 and 2102 and 2103 and 2105 and 2106 and 2205; Min Grade 'C'; PLAN: Physician Assistant Studies (MS)

PAS 2105 - HEALTH POLICY

Minimum Credits: 2

Maximum Credits: 2

This course introduces the student to how the health care system works. The focus is on basic principles of health policy, system failures. Topics include reimbursement, access to health care, workforce, quality assurance, long-term health care. In addition, topics will include public policy, funding issues, healthcare disparities, managed care and the medically underserved. The course will conclude with an opportunity to review and discuss moral and ethical issues in healthcare from the perspective of a physician assistant.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physician Assistant Studies (MS)

PAS 2106 - INTERPRETING AND EVALUATING THE MEDICAL LITERATURE

Minimum Credits: 1

Maximum Credits: 1

This course introduces the basic concepts, terminology and methodology of quantitative and qualitative research as it applies to medical practice. This course will stress the knowledge and skills necessary for locating, interpreting, evaluating and applying quality medical research to clinical practice and professional development; the ability to appropriately critique medical literature; and the basic comprehension needed for participation in research and the development of research and grant proposals. Assessment of understanding and skills will be conducted during the course as well as throughout the didactic program and clinical rotations.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physician Assistant Studies (MS)

PAS 2107 - PATIENT EDUCATION AND COUNSELING

Minimum Credits: 2

Maximum Credits: 2

This course is a practical approach to understanding how patients present, learn and change based on the research on theories, models and techniques of: personality and learning styles; how to assess patient knowledge, attitude and readiness to change; and the effects of literacy, health literacy, individual coping mechanisms, ecological barriers and culture on patient comprehension and adherence. The use of validated interpersonal skills improves the clinician/patient relationship, demonstrates respect for the patient's well-being and individuality, thereby reducing medical errors and lawsuits, and increasing patient adherence. Self-reflection on the student's own barriers, biases, stereotypes, culture and assumptions is required. Assessment of understanding and skills will be conducted during the course as well as throughout the didactic program and clinical rotations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: PAS 2101 and 2102 and 2103 and 2105 and 2106 and 2205; Min Grade 'C'; PLAN: Physician Assistant Studies (MS)

PAS 2108 - INTRODUCTION TO CLINICAL MEDICINE WITH LAB

Minimum Credits: 3

Maximum Credits: 3

This course is the first part of an intensive study of human disease processes and disorders in the broad scope of clinical medicine. Students will explore the epidemiology, etiology, pathophysiology, assessment, management and follow up of disease processes and disorders. The course will approach the condition from the perspective of history and physical examination, ordering and interpreting diagnostic studies, generation of a differential diagnoses and the development and implementation of treatment plans and prognosis. Preventative measures to assist in disease prevention will also be discussed. Presented by clinicians from various specialties these lectures provide comprehensive instruction that enables the student to understand the nature and problems experienced by both ambulatory and hospitalized patients. Students will also learn the head to toe physical examination. The laboratory component of this course will focus on patient interviewing, patient communication, and case-based learning.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PAS 2109 - MEDICAL PHYSIOLOGY AND PATHOPHYSIOLOGY

Minimum Credits: 4

Maximum Credits: 4

This course integrates the specific characteristics and mechanisms of normal and abnormal functioning of tissues and organs of the human body organized in a systems-based approach. This includes principles of cell and organ physiology, and the disruption of normal homeostatic mechanisms that progresses beyond the compensatory capabilities of the human body.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PAS 2201 - HISTORY TAKING AND PHYSICAL EXAMINATION 1

Minimum Credits: 3

Maximum Credits: 3

This course introduces the student to the basic interviewing, history taking and documentation skills which will include the chief complaint, history of present illness, past medical, surgical, social, allergy and family history, review of systems and medications. Students will learn the clinical significance of the physical examination, the components of the complete physical exam and will be able to perform these examination techniques. Topics in this course will include: a general overview of history taking and physical examination; clinical reasoning; documentation; interviewing skills; the general survey; skin; the head and neck; the lungs; and the abdomen.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: PAS 2101 and 2102 and 2103 and 2105 and 2106 and 2205; Min Grade 'C'; PLAN: Physician Assistant Studies (MS)

PAS 2202 - CLINICAL MEDICINE 1

Minimum Credits: 3

Maximum Credits: 3

This course is the first part of an intensive study of human disease processes and disorders in the broad scope of clinical medicine. As the course progresses students will explore the epidemiology, etiology, pathophysiology, assessment, management and follow up of disease processes and disorders. The course will approach the condition from the perspective of history and physical examination, ordering and interpreting diagnostic studies, generation of a differential diagnoses and the development and implementation of treatment plans and prognosis. Preventative measures to assist in disease prevention will also be discussed. Content includes infectious diseases, dermatology, disorders of the head, eyes, ears nose and throat, cardiopulmonary disorders, and endocrinopathies. Presented by physicians from various practice specialties these lectures provide comprehensive instruction that enables the student to understand the nature and problems experienced by both ambulatory and hospitalized patients. The laboratory component of this course focuses on case based learning.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: PAS 2101 and 2102 and 2103 and 2105 and 2106 and 2205; Min Grade 'C'; PLAN: Physician Assistant Studies (MS)

PAS 2203 - DIAGNOSTIC & THERAPEUTIC PROCEDURES I IN MEDICINE 1

Minimum Credits: 3

Maximum Credits: 3

This course provides a foundation of clinical skills and diagnostic procedures that are commonly performed in patient care. Instruction for selected procedures and diagnostic tools will be presented to the student by various methods including theory discussion, rationale for procedure, identification of necessary equipment, principles of appropriate skill technique, demonstration of skill when applicable, skill practice time, identification of special clinical considerations and precautions, documentation aspects and recommended elements of patient education. Opportunities to observe certain procedures and diagnostic tools will be correlated when possible. Topics include methods of wound care and closure, burns, hyper/hypothermia, assessment of pulmonary function, arterial blood gases, ENT procedures, bioterrorism, radiology. The laboratory component of this course will allow the student to practice the skills and procedures common to PA practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: PAS 2101 and 2102 and 2103 and 2105 and 2106 and 2205; Min Grade 'C'; PLAN: Physician Assistant Studies (MS)

PAS 2204 - PHARMACOLOGY 1

Minimum Credits: 3

Maximum Credits: 3

This course presents a study of drugs and their interactions with and within living tissue. This course introduces the student to general drug classifications and medicinal agents most likely encountered in primary care settings and the pharmacological principals, dosing, patient education, pharmacodynamics, and therapeutic parameters and indications, about commonly prescribed drugs. Areas covered include drug receptor theory, mechanisms of action, pharmacokinetics, pharmacodynamics, antimicrobial therapy, cardiovascular medications, and drugs affecting the autonomic nervous system, complimentary medicines. Each of these topics will be explored through lecture, class discussions, and case presentations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: PAS 2101 and 2102 and 2103 and 2105 and 2106 and 2205; Min Grade 'C'; PLAN: Physician Assistant Studies (MS)

PAS 2205 - PATHOPHYSIOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course examines the biological basis of common clinical disease states. Pathophysiology is treated as a disruption of normal homeostatic mechanisms that progresses beyond the normal compensatory capabilities of the human body.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Physician Assistant Studies (MS)

PAS 2301 - HISTORY TAKING AND PHYSICAL EXAMINATION 2

Minimum Credits: 3

Maximum Credits: 3

This course introduces the student to the interviewing, history taking and documentation skills which will include the chief complaint, history of present illness, past medical, surgical, social, allergy and family history, review of systems and medications as they pertain to the specific organ systems presented. The students will learn the clinical significance of the physical examination, the components of the physical exam and will be able to perform these examination techniques for the material introduced in this course. Topics in this course will include: a general overview of history taking and physical examination as it pertains to course content; clinical reasoning; documentation; interviewing skills; and the cardiovascular, female/male genitalia, musculoskeletal, neurological, and psychiatric systems; and assessment of the pregnant patient.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: PAS 2104, 2107, 2201, 2202, 2203, and 2204; PLAN: Physician Assistant Studies (MS)

PAS 2302 - CLINICAL MEDICINE 2

Minimum Credits: 3

Maximum Credits: 3

This course is a continuation of Clinical Medicine I and is an intensive study of human disease processes and disorders in the broad scope of clinical medicine. As the course progresses students will explore the epidemiology, etiology, pathophysiology, assessment, management and follow up of disease processes and disorders. The course will approach the condition from the perspective of history and physical examination, ordering and interpreting diagnostic studies, generation of a differential diagnoses and the development and implementation of treatment plans and prognosis. Preventative measures to assist in disease prevention will also be discussed. Content includes disorders of the GI system, obstetrics and gynecology, nephrology, disorders of the urinary tract, musculoskeletal diseases, neurology, behavioral medicine, and hematology/oncology. Presented by physicians from various practice specialties these lectures provide comprehensive instruction that enables the student to understand the nature and problems experienced by both ambulatory and hospitalized patients. The laboratory component of this course focuses on case based learning.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: PAS 2104, 2107, 2201, 2202, 2203, and 2204; PLAN: Physician Assistant Studies (MS)

PAS 2303 - DIAGNOSTIC AND THERAPEUTIC PROCEDURES IN MEDICINE 2

Minimum Credits: 3

Maximum Credits: 3

This course provides a foundation of clinical skills and diagnostic procedures that are commonly performed in patient care. Instruction for selected procedures and diagnostic tools will be presented to the student by various methods including theory discussion, rationale for procedure, identification of necessary equipment, principles of appropriate skill technique, demonstration of skill when applicable, skill practice time, identification of special clinical considerations and precautions, documentation aspects and recommended elements of patient education. Opportunities to observe certain procedures and diagnostic tools will be correlated when possible. Topics include GI procedures, NG tube placement, intravenous placement, central line monitoring, bladder catheterization, musculoskeletal procedures, immobilization, joint injection, lumbar puncture, electrocardiography, transfusion medicine. The laboratory component of this course will allow the student to practice the skills and procedures common to pa practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: PAS 2104, 2107, 2201, 2202, 2203, and 2204; PLAN: Physician Assistant Studies (MS)

PAS 2304 - PHARMACOLOGY 2

Minimum Credits: 3

Maximum Credits: 3

This course introduces the student to general drug classifications and medicinal agents most likely encountered in primary care settings and the pharmacological principals, dosing, patient education, pharmacodynamics, and therapeutic parameters and indications, about commonly prescribed drugs. Topics include drugs used in gastroenterology, obstetrics and gynecology, immunology, complementary medicine, psychotropic medications, opioid and non-opioid analgesia, chemotherapeutic agents. Each of these topics will be explored through lecture, class discussions, and case presentations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: PAS 2104, 2107, 2201, 2202, 2203, and 2204; PLAN: Physician Assistant Studies (MS)

PAS 2305 - HEALTH ISSUES ACROSS THE LIFESPAN

Minimum Credits: 2

Maximum Credits: 2

This course introduces the physician assistant student to diseases, exam findings and diagnostic evaluations, and treatments common to the pediatric and geriatric populations. Course content will be introduced using a variety of teaching techniques including both traditional lectures as well as cooperative and collaborative group work. Case studies will be presented to reinforce course content and form the discussion in class.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: PAS 2104,2107,2201,2202,2203,and 2204; PLAN: Physician Assistant Studies (MS)

PAS 2306 - FUNDAMENTALS OF SURGERY

Minimum Credits: 1

Maximum Credits: 1

A series of lectures introduces fundamental principles of peri-operative medicine, procedure oriented patient evaluations, preoperative assessment, prevention of post-operative complications, surgical instrumentation, operative techniques, anesthesia, pre- and post-operative management of patients, post-operative complications, co-morbid states, and documentation. The history of the physician assistant in surgery, including surgical reimbursement issues will be discussed. Selected topics will include the most commonly performed surgical procedures as well as issues relevant to various surgical sub-specialties.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Physician Assistant Studies (MS)

PAS 2701 - CLINICAL ROTATION 1

Minimum Credits: 4

Maximum Credits: 4

This 4 credit, five-week clinical rotation focuses on the evaluation and management of the ambulatory and hospitalized patient on an internal medicine service. Students learn how to take an accurate and pertinent history, conduct a physical examination, recognize patterns of illness, and acquire approaches to disease management. The student participates in the full range of inpatient care, formulating a problem list, taking part in daily rounds, performing technical skills, participating in the management of patient problems, and planning for discharge and follow-up care.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Physician Assistant Studies (MS)

PAS 2702 - CLINICAL ROTATION 2

Minimum Credits: 4

Maximum Credits: 4

This 4 credit, five-week clinical rotation focuses on the evaluation and management of the ambulatory patient in a primary care setting. The student

participates in the full range of outpatient care through the life span, including collecting patient data and information from diagnostic studies, developing a differential diagnosis, oral and written case presentations, and formulating management plans including patient education, appropriate referral and follow-up care. This clinical rotation encompasses the comprehensive and longitudinal care of patients with a special emphasis on care of individuals in the context of families and communities.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Physician Assistant Studies (MS)

PAS 2703 - CLINICAL ROTATION 3

Minimum Credits: 4

Maximum Credits: 4

This 4 credit, five-week clinical rotation focuses on the evaluation and management of patients in the emergency department setting. The student participates in the appropriate triage, stabilization, diagnosis and management of patients with urgent and emergent problems and develops skills in working with the pre-hospital emergency medical team and secondary referral systems.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Physician Assistant Studies (MS)

PAS 2704 - CLINICAL ROTATION 4

Minimum Credits: 4

Maximum Credits: 4

This 4-credit, five-week rotation focuses on the evaluation and care of infants and children in an ambulatory setting. The student participates in well-child preventative care, the evaluation and management of common pediatric problems, and the patient education of children and their care-givers.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Physician Assistant Studies (MS)

PAS 2705 - CLINICAL ROTATION 5

Minimum Credits: 4

Maximum Credits: 4

This 4 credit, five-week rotation focuses on the evaluation and management of surgical patients and become familiar with the clinical presentations and management of common surgical problems. The student is involved in pre-operative, intra-operative and post-operative patient care and develops an understanding of the pa as a member of the surgical team. The student will learn to develop skills necessary in evaluating patients in the perioperative period and to optimize patients' medical conditions in preparation for surgery. Students learn the natural history of common surgical diseases and the proper operative management and their postoperative treatment. The student will participate in developing the correct diagnoses and management of the surgical patient. The student will also participate in the management of acute pain and postoperative complications.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Physician Assistant Studies (MS)

PAS 2706 - CLINICAL ROTATION 6

Minimum Credits: 4

Maximum Credits: 4

This 4 credit, five-week rotation focuses on the evaluation and management of patients with psychiatric and behavioral health problems in ambulatory and/or inpatient settings. The student participates in psychiatric evaluations, monitoring of therapy, and appropriate referral to other health care professionals and facilities.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Physician Assistant Studies (MS)

PAS 2707 - CLINICAL ROTATION 7

Minimum Credits: 4

Maximum Credits: 4

This 4 credit, five-week rotation focuses on the evaluation and management of women patients, including prenatal care and gynecologic problems. The student participates in the collection of patient data and information from diagnostic studies, development of a differential diagnosis, oral and written case presentations, and formulating management plans including patient education, appropriate referral and follow-up care.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Physician Assistant Studies (MS)

PAS 2709 - CLINICAL ROTATION 9

Minimum Credits: 4

Maximum Credits: 4

This 4 credit, five-week clinical rotation focuses on the evaluation and management of the ambulatory and hospitalized patient on an internal medicine service. Students learn how to take an accurate and pertinent history, conduct a physical examination, recognize patterns of illness, and acquire approaches to disease management. The student participates in the full range of inpatient care, formulating a problem list, taking part in daily rounds, performing technical skills, participating in the management of patient problems, and planning for discharge and follow-up care.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Physician Assistant Studies (MS)

PAS 2712 - SUMMATIVE EVALUATION

Minimum Credits: 1

Maximum Credits: 1

The summative evaluation is designed to assure that each student has met ARC-PA and the program's defined cognitive and clinical skills performance objectives prior to graduation. In addition to assessing the student's proficiency by individual competencies we will be assessing student performance through the interaction of the program specific competencies. The summative evaluation includes measurement of the dimensions of cognition, technical skill, integration, rapport, behavior and attitude. The evaluation is comprised of an objective examination of medical knowledge, procedural skill through clinical skills evaluation, and objectively structured clinical examinations to evaluate interactions between the student and patient (history taking, physical examination and clinical reasoning) assessment of critical thinking and professional behavior. Students are required to pass this course in order to graduate from the program.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Physician Assistant Studies (MS)

PAS 2713 - CLINICAL ROTATION 8 ELECTIVE 2

Minimum Credits: 4

Maximum Credits: 4

This 4-credit clinical practicum is a five-week clinical rotation that designed to provide the Physician Assistant student with an elective opportunity in any of the previous rotation specialties or a rotation designed by the student, in conjunction with a faculty member, to enhance the students' knowledge or skill in a specific specialty.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad HSU Basis

Physics & Astronomy

PHYS 2000 - RESEARCH AND THESIS MS DEGREE

Minimum Credits: 1

Maximum Credits: 15

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

PHYS 2101 - SPECIAL TOPICS

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PHYS 2373 - MATHEMATICAL METHODS IN PHYSICS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PHYS 2513 - DYNAMICAL SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

The Lagrangian and Hamiltonian formulations of classical mechanics will be emphasized. Some of the topics that will be treated are conservation, theorem, small oscillations, rigid-body motion, canonical transformation, and an introduction to the theory of chaotic motions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PHYS 2541 - THERMODYNAMICS AND STATISTICAL MECHANICS

Minimum Credits: 3

Maximum Credits: 3

This is the first term of a 2-term course with emphasis on statistical mechanics. Discussion of microcanonical, canonical, and grand canonical ensembles, the passage to quantum mechanics, and the use of density matrix. The Gibbs approach to the second law. Fermi-Dirac and Bose-Einstein statistics, in both weak and strong degeneracy approximations. Transport phenomena including the fluctuation dissipation theorem and the master equation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PHYS 2555 - ADVANCED CLASSICAL ELECTRICITY AND MAGNETISM

Minimum Credits: 4

Maximum Credits: 4

This is the first term of a two-term study of Maxwellian electromagnetism. Both the physical concepts involved and the mathematical formulation of the theory will be explored. The theory will be applied to a variety of physical systems.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 2565 - NON-RELATIVISTIC QUNTM MECHANC 1

Minimum Credits: 3

Maximum Credits: 3

This is the first term of a two-term course. Subjects covered include the general principles of wave mechanics and matrix mechanics, Dirac notation, the solution of bound state problems, especially the central force problem.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PHYS 2566 - NON-RELATIVISTIC QUNTM MECHANC 2

Minimum Credits: 3

Maximum Credits: 3

The second term of this course applies the previously developed abstract form of quantum mechanics to more complicated systems. Angular momentum and permutation symmetries are discussed. Approximation methods for multiparticle and scattering problems are developed. Finally the theory of electromagnetic radiation by atoms is presented.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PHYS 2900 - GRADUATE INTERNSHIP

Minimum Credits: 1

Maximum Credits: 1

This course places the student in an "on-the-job" setting in which they receive practical experience in a supervised training environment.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad SN Basis

PHYS 2903 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

PHYS 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

PHYS 2997 - TEACHING OF PHYSICS

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 2998 - TEACHING OF PHYSICS-PRACTICUM

Minimum Credits: 1
Maximum Credits: 2
Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis

PHYS 2999 - PHYSICS AND ASTRONOMY COLLOQUIUM

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Colloquium
Grade Component: Grad SN Basis

PHYS 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 15
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

PHYS 3101 - SPECIAL TOPICS

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PHYS 3102 - SPECIAL TOPICS

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

PHYS 3274 - COMPUTATIONAL METHODS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 3373 - ADVANCED MATHEMATICAL METHODS

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 3542 - ADVANCED STATISTICAL PHYSICS

Minimum Credits: 3
Maximum Credits: 3

Statistical physics typically deals with the thermal properties of systems with large numbers of interacting dynamical variables, i.e., With many degrees of freedom, and the special techniques used to determine those properties. As such, the ideas, methodologies and results from the study of statistical physics inform virtually all fields of physics, from condensed matter and solid state to astrophysics and cosmology. This course is aimed at a wide audience of primarily second year (and more senior) graduate students with interests in experimental or theoretical physics and astrophysics/cosmology. The aim is to provide a broad perspective of the concepts and techniques of statistical physics, which, as noted, cut across many areas of active research. Depending on the composition of the class, an attempt will be made to include some examples from different disciplines. Topics to be covered (depending somewhat on the background and interests of individuals in the class) include: a review of ideal quantum gases (Sommerfeld model of a metal; Bose-Einstein condensation; magnetism in Fermi systems (Landau levels, Hall effect); white dwarf stars); fluctuations and response; phase transitions and critical phenomena (experimental survey; criticality = a new state of matter?); Phenomenology (mean field theories, Landau theory, classification); order parameters, scaling, fluctuations, response, universality, broken symmetry; renormalization group overview as a mechanism; interacting systems (brief introduction to second quantization; weakly interacting Bose gas (broken symmetry, excitation spectrum, superfluidity); BCS as a mean field theory; nonequilibrium, stochastic processes (Brownian motion and diffusion; fluctuation/dissipation; Markov processes, master equation; Boltzmann equation and fluid mechanics).

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 3707 - INTRODUCTION TO MANY-BODY PHYSICS

Minimum Credits: 3
Maximum Credits: 3

It is difficult to find a current topic in physics that doesn't deal with many interacting degrees of freedom. The universe of such problems is conveniently divided into ones in which quantum descriptions are essential and others in which a classical description will suffice. Despite this seeming division, the ideas and concepts cross over; an example is the idea of a field description. Very similar effective field theories describe a superconductor at low temperatures, a quantum system, and a classical system like a quantity of liquid argon coexisting with its vapor. Concepts, for example, of broken symmetry and gauge invariance are portable. Many of the same general concepts and techniques carry over from one subfield to another; a number of examples can be cited and will be mentioned at appropriate points during the course. This is a one-term nuts-and-bolts introduction to the quantum physics of interacting, many-particle systems. The course includes second quantization, many body physics and a brief introduction to relativistic quantum mechanics. The approach will generally be intuitive and hands-on. The course typically will begin with second quantization for fermionic and bosonic systems, with examples typically involving electrons, phonons and photons, arising from the quantization of the electromagnetic field. Applications will typically include (i) the interacting electron gas and plasmons (ii) the interaction of the radiation field and matter, (iii) electron phonon interaction, dressed electrons and the polaron problem. There will typically be some discussion of condensation phenomena and superfluidity (typically Bogoliubov theory, broken symmetry and Goldstone bosons); superconductivity (pairing, BCS and Landau-Ginzburg theories). There will generally be some exposure to Green's functions and Feynman diagrams. In addition the course will include a brief introduction to relativistic quantum mechanics and the Dirac equation. Throughout there will be discussion of applications of the techniques and concepts in various subfields of physics.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PHYS 3715 - SOLID STATE PHYSICS

Minimum Credits: 3
Maximum Credits: 3

This is a one-term course on the ideas of solid-state physics, emphasizing the special ways one must think about crystalline materials. This is a mature subject, but continuously, over more than seven decades, new ideas and phenomena have emerged. In one term we can only consider the basic ideas along with a few more recent developments to enable students working in solid state physics, condensed matter, nanoscience and related

fields to approach the voluminous literature and enhance their own research efforts, and also to allow other students to have an appreciation for an extremely large part of current research activity in physics. Roughly speaking, there will be three parts to the course: some variation on emphasis can be expected depending on the instructor and on the interests of the class. (I) phonons: crystal lattices; diffraction and scattering; reciprocal lattice; lattice vibrations, quantization; thermal properties. (II) electrons: free electron model; density of states; thermal properties; Bloch's theorem, electron states and energy bands; semiconductor statistics; quasi-classical electron dynamics; Boltzmann equation and transport. (III) additional topics: electron-electron and electron-phonon interactions; hall effect; Landau levels; superconductivity; electromagnetic response.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PHYS 3716 - ADVANCED SOLID STATE PHYSICS

Minimum Credits: 3

Maximum Credits: 3

This is a second, graduate level solid state course. The topics could be adjustable given the cross section of the department and topical developments in the field. Depending on the makeup of the department, the scope (and title) could be broadened. Topics suitable for this course include: a brief exposure to 'practical' group theory (1-2 weeks maximum); optics and spectroscopy relevant to the solid state (including linear and non-linear response and complex dielectric constant); coherence and correlation (including the density matrix, Bloch equations, optics); introduction to NMR (e.g. Two-level system, rotating reference frame, characteristic times); superconductivity II (e.g. Type II, magnetic effects) beyond the Ginsburgh-Landau theory (done in statistical physics II); magnetism II (more advanced topics: using model and phase transitions done in statistical physics II, spin waves and Landau levels in solid state physics I); transport theory II (i.e. Beyond the basic Boltzmann equation examples in solid state physics I).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PHYS 3717 - PARTICLE PHYSICS

Minimum Credits: 3

Maximum Credits: 3

This is the first term of a two term sequence exposing the student to basic methods and recent developments in high energy physics. Particle physics involves completely relativistic phenomena and requires the generalization of non-relativistic quantum concepts to the relativistic regime in order to develop the phenomenological and calculational methods suitable for relativistic processes in which the number and type of particles can change. The student will be taken out of the realm of the Schrodinger equation and into relativistic quantum fields. The first term is suitable as a one semester course for students not specializing in high energy physics. The course examines experimental and phenomenological foundations of particle physics. The known particles and fundamental interactions are investigated. Modern experimental techniques of particle physics are discussed (including basic properties of particle interactions with matter). General features of electromagnetic, weak, and strong interactions, and their associated symmetries, are explored.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PHYS 3718 - ADVANCED PARTICLE PHYSICS

Minimum Credits: 3

Maximum Credits: 3

This is the conclusion of the 2-term sequence PHYS 3717/3718. This course covers the standard model in detail and includes: the phenomenology of weak interactions; group theory and the quark model; the parton model for deep inelastic scattering and other high energy processes; an introduction to gauge theories of electroweak and strong interactions. Various topics of current interest in particle physics beyond the standard model will also be discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PHYS 3725 - GENERAL RELATIVITY 1

Minimum Credits: 3

Maximum Credits: 3

This course will cover the basic conceptual foundations of general relativity, calculational techniques, and current observational probes. Topics include the equivalence principle, geodesic deviation, tidal forces, the description of gravitation as spacetime curvature, and Einstein's equations. These ideas will be applied to current observations, including post-Newtonian parameters and solar system probes, the Schwarzschild metric and black holes, gravitational wave generation and detection, gravitational lensing, and gravitational explanations for dark energy phenomenology.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PHYS 3726 - GENERAL RELATIVITY 2

Minimum Credits: 3

Maximum Credits: 3

This is the second term of a two-term survey of general relativity. Subjects to be treated during the year include conservation laws, equations of motion, gravitational radiation, gravitation collapse, and cosmology.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PHYS 3730 - INTRODUCTION TO BIOPHYSICS

Minimum Credits: 3

Maximum Credits: 3

The post genomic age presents many new challenges and opportunities to physicists. This course will prepare the students to face those challenges and to work in this exciting multidisciplinary area of science. In this course we will review useful physical ideas and techniques that have contributed significantly to the recent development in biophysical research. This includes the use of statistical approaches for understanding gene regulation and signal transduction in biological and chemical networks; nonlinear dynamics for understanding biological pattern formation, ecology, and population dynamics; hydrodynamics for understanding cell motility and taxis; and information theory for signal processing in neuronal networks. The study of biophysics thus requires a broad range of physics knowledge and techniques. The course will also introduce basic concepts in biology that range from molecular to cellular biology. Topics to be covered include: introduction to biology; microscopy techniques; basics of cell biology; genetics (the genetic code, gene replication, gene expression, genetic networks); molecular biology techniques; energy in biological systems and the statistical view of biological dynamics; entropy and free energy in biology; two-state models in biology and neurobiology.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PHYS 3765 - FIELD THEORY 1

Minimum Credits: 3

Maximum Credits: 3

This is the first semester of a graduate course in quantum field theory. The assumed prerequisites are a basic graduate course in quantum mechanics, and familiarity with the rudiments of special relativity. The course develops the perturbative approach to relativistic field theory. It begins with a study of the Lorentz group and the method of second quantization. Scalar and spin-1/2 field theories are discussed, including an elementary introduction to renormalization (at the one-loop level). The theory of interacting electrons and photons (qed) is constructed, with applications to a number of physical processes. In more detail, the topics covered will be: Lorentz and poincare groups; free scalar field theory; free spin-1/2 field theory; field quantization; symmetries and conservation laws; interacting scalar field theories, Yukawa theory; perturbation theory and Fynman rules; elementary renormalization theory; quantum electrodynamics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PHYS 3766 - FIELD THEORY 2

Minimum Credits: 3

Maximum Credits: 3

This is the second semester of a graduate course in quantum field theory. It builds on the material covered in phys 3765 (field theory 1). The course further develops the techniques of relativistic quantum field theory, covering the path integral approach to field theory, additional topics in quantum electrodynamics, symmetry breaking, non-abelian gauge theories, and the standard model. In more detail, the topics covered will be: green's functions, asymptotic scattering theory, and the lsz formalism; functional integration and the path integral; quantization of abelian (qed) and non-abelian (yang-mills) fields; the renormalization group; spontaneous symmetry breaking of global and local symmetries; the standard model.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PHYS 3770 - TOPICS IN QUANTUM PHYSICS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PHYS 3790 - PARTICLE ASTROPHYSICS

Minimum Credits: 3

Maximum Credits: 3

Particle physics plays an increasingly important role in astrophysics. This class will cover areas of common interest between these fields. Topics may include dark matter (particle abundances, particle candidates, direct and indirect detection), neutrino masses and oscillations, high energy cosmic rays and detection schemes, high density matter in neutron stars, models for inflation, baryogenesis, cosmological phase transitions, and models for dark energy.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PHYS 3902 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 15

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

PHYS 3903 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 15

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

PHYS 3904 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 15

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

PHYS 3907 - DIRECTED RESEARCH

Minimum Credits: 1
Maximum Credits: 12
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

Plastic Surgery

PLSSURG 5450 - PLASTIC RECONSTRUCTIVE SURGERY

Minimum Credits: 0
Maximum Credits: 0

Four-week elective. Student participates in clinical care of patient on plastic surgical service, in acute management of facial and hand injuries in ER or OR. Also involved in pre- and post-operative care. Act as assistant in elective plastic surgery operations in wide variety of conditions. Instruction given in biology of wound healing and fundamental techniques of plastic surgery. Emphasis on scope and interaction of plastic surgery with other specialties and various methods of reconstruction available for various deformities.

Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PLSSURG 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0
Maximum Credits: 0

Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PLSSURG 5883 - SURGICAL RESEARCH

Minimum Credits: 0
Maximum Credits: 0

Student will be given the opportunity to learn research techniques and to participate in research in progress in surgical laboratory or in special circumstances, to carry on an independent project. Attendance at seminars and discussion groups is encouraged.

Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

PLSSURG 5899 - INDEPENDENT STUDY PLASTIC SURGERY

Minimum Credits: 0
Maximum Credits: 0

The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.

Academic Career: Medical School
Course Component: Independent Study
Grade Component: H/HS/S/LS/U

PLSSURG 5901 - EXTRAMURAL PLASTIC SURGERY

Minimum Credits: 0

Maximum Credits: 0

A clinical experience in plastic surgery may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Political Science

PS 2000 - THE PROFESSION OF POLITICAL SCIENCE

Minimum Credits: 1

Maximum Credits: 1

This course is a professionalization seminar in which first-year graduate students meet weekly with various faculty members to discuss various issues surrounding political science as a profession. Topics will include writing a dissertation, the publication process, teaching, work-life balance, and other issues.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad SN Basis

Course Requirements: PLAN: Political Science (MA or PHD)

PS 2010 - FOUNDATIONS OF QUANTITATIVE METHODS

Minimum Credits: 3

Maximum Credits: 3

This course is designed to introduce the beginning graduate student to the major conceptual and theoretical issues of contemporary political science. During the term, focus will be in three basic areas of inquiry; a) political science as a science; b) paradigms, frameworks, approaches; and c) examination of contemporary examples of applications of the above in various substantive fields of political science.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

PS 2020 - EMPIRICAL METHODS OF RESEARCH

Minimum Credits: 3

Maximum Credits: 3

This seminar is the second in a three-course methodological sequence required for graduate students in political science. It introduces students to techniques of research design and analysis, and is designed to enable students to read and understand empirical social science research. Problems of scientific method, concept formation, measurement, and statistical inference are explored; students learn to use some of the statistical techniques common in political research.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

PS 2030 - POLITICAL RESEARCH AND ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

This course aims to provide the student with (1) the ability to read, interpret, and criticize virtually any piece of political science research using quantitative methods and (2) the ability to design and carry out original research applying quantitative methods to relevant data.

Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PHD)

PS 2040 - CORE POLITICAL THEORY

Minimum Credits: 3

Maximum Credits: 3

This seminar in political thought forms one of the core requirements of the graduate program in political science. Its aim is to introduce graduate students to the traditional concerns of the subfield of political theory and to explore the relevance of this subject matter even to political scientists who do not choose to specialize in it.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

Course Attributes: Global Studies, West European Studies

PS 2060 - QUALITATIVE RESEARCH: DESIGN AND METHODS

Minimum Credits: 3

Maximum Credits: 3

This is a core doctoral course organized as a practicum aimed at giving doctoral students hands-on qualitative research experience. Explicit in the organization of the course is teaching doctoral students "when" and under what conditions researchers use qualitative methods. While there are numerous qualitative methods that can be used, in this practicum students conduct interviews as the primary method for collecting data. Upon completing this course, doctoral students should be able to carry out a qualitative study using interviewing as the method of data collection. By the end of the term, students should be able to articulate a rationale for a qualitative study through a literature review; formulate researchable questions to be answered by interview data; develop an interview protocol; conduct face-to-face interviews; prepare and code text data for analysis; analyze text data; and use text data as the basis for answering the questions posed in the study. The course is divided into five parts: Part 1 reviews the basic assumptions underlying a qualitative approach to social research. Part 2 focuses on the steps involved in doing research in the applied social sciences. Part 3 is hands-on and involves collecting data by interviewing informants. Part 4 involves the preparation and analysis of text data. Part 5 is the presentation of each student's study to the class. The final product in this class is a paper that summarizes the study's findings. Assignments consist of a mix of reading; going out into the field to interview; preparing and analyzing data; organizing and presenting research findings.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PS 2116 - COMPARATIVE PUBLIC ADMINSTRTN

Minimum Credits: 3

Maximum Credits: 3

The public bureaucracy is a political institution and must be understood as a key factor in the policymaking process. At the same time it is a formal structure charged with the legal implementation of policy. These two competing understandings of administration will be examined from a variety of theoretical and analytical perspectives. The principal geographical focus will be on Europe, but there will also be discussions of administration in other areas.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

PS 2118 - GENDERAND POLITICS

Minimum Credits: 3

Maximum Credits: 3

This course introduces graduate students to the study of gender and politics. Students will be exposed to theories and empirical research in the field. The course will also encourage students to refine and extend their thinking on a series of important topics in the recent literature.

Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PHD)

PS 2200 - AMERICAN GOVERNMENT AND POLITICS

Minimum Credits: 3

Maximum Credits: 3

This seminar provides an opportunity to analyze selected aspects of government and politics in the United States through a program of intensive reading, seminar discussions, and written essays. Some prominent interpretations of American government and politics are identified and examined. Readings on and discussion of topics such as political leadership and mass behavior provide a basis for consideration of the seminar's major theme, leader-follower interaction.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Political Science (MA or PHD)

PS 2201 - SEPARATION OF POWERS

Minimum Credits: 3

Maximum Credits: 3

This course will focus on the relationships among the branches in a separation of powers system, particularly the interplay between the legislature and the president. Most specifically, the course will consider the implications of a separation of powers system on representation: can a system specifically created to check the government's ability to act meet the demands for representation of a diverse constituency? How should we think about representation in a separation of powers system? The course will focus on the US political system, but will have implications for the comparative study of these systems.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PS 2211 - AMERICAN LEGISLATIVE PROCESS

Minimum Credits: 3

Maximum Credits: 3

Focus is on the journal literature of the last decade- involving representation, legislators and their behavior, legislative structures, legislative parties, interest groups, executive-legislative relations, legislative reform, national and subnational legislative systems.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

PS 2212 - US EXECUTIVE BRANCH POLITICS

Minimum Credits: 3

Maximum Credits: 3

This Ph.D. seminar course examines both the theoretical and empirical literature on the U.S. Executive branch. The focus of this course is strictly centered on the study of political institutions and organizations' political behavior related topics (e.g. presidential popularity; presidential elections; presidential nominations) will be covered in other courses. Although the primary focus of this course will be at the U.S. federal level, some attention will be given to the U.S. subnational level (i.e. American states). The course is broken down into three sections. The first section provides an overview of interdisciplinary research on institutions and organizations from both economics and sociological theoretical traditions. The second section of this course focuses on the internal functioning of the executive branch, including, but not limited to, president-agency relations. The final section focuses on analyzing executive branch actors' external relations with other institutional actors (i.e. legislative, judiciary, organized interests) within a separation of powers constitutional framework. The aim of the final section is to integrate insights from both institutional and organizational perspectives.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

PS 2213 - JUDICIAL PROCESS

Minimum Credits: 3

Maximum Credits: 3

This course examines courts and judges as political actors. It emphasizes the non-legal factors that affect the decisions judges make and that influence judicial interactions with other political actors and institutions. Most material will focus on the US court system, but there will be some work of a comparative nature. Students will be responsible for critically analyzing reading materials and producing an independent research project.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Political Science (MA or PHD)

PS 2221 - ECONOMIC INEQUALITY AND AMERICAN DEMOCRACY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PS 2230 - POLITICAL PSYCHOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course will focus on the political beliefs, attitudes, values, and behaviors of citizens in modern democracies. Because most of the theories and models were initially designed to analyze U.S. citizens, we will primarily examine the literature in American political behavior, though we will also discuss the degree to which such theories and models 'travel' to other contexts, leading us to some of the comparative behavior literature, as well. Much attention will be paid to the structure and content of citizen belief systems; additionally, we will examine the sources of such beliefs, including the media, political elites, and other citizens.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

PS 2233 - POLITICAL ECONOMY OF THE INTERNATIONAL FINANCIAL SYSTEM

Minimum Credits: 3

Maximum Credits: 3

This course examines the relevance of psychological theories of information processing and attitude change for the study of mass political behavior, with particular emphasis on American political behavior. Theoretical perspectives examined include cognitive heuristics, schema theory, attribution, stereotyping, and others. Study of such cognitive perspectives is intended to facilitate assessment of the political aptitude of the mass public.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Political Science (MA or PHD)

PS 2235 - AMERICAN ELECTORAL BEHAVIOR

Minimum Credits: 3

Maximum Credits: 3

This seminar complements PS 2230: Mass Politics. Like 2230, this seminar examines the American micropolity. But while 2230 focuses primarily on what happens in citizens' proverbial heads when they think about politics, this course will emphasize the practical applications and consequences of those thoughts - what people do in the electoral arena, what factors influence that behavior, and how electoral outcomes can be predicted or

explained.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

PS 2265 - ENVIRONMENTAL ECONOMICS

Minimum Credits: 3

Maximum Credits: 3

This course will combine multi-disciplinary environmental topics in an introductory level course. The concept of environmental policy and its impact on environmental management will be introduced. It will focus on the various scientific, technical and social disciplines including the basic sciences as well as law, engineering, public health and economics. Attention will also be given to the effects of developing and changing environmental policy on selected industries as well as natural resources.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Political Science (MA or PHD)

PS 2300 - GLOBAL ENERGY

Minimum Credits: 3

Maximum Credits: 3

This course provides students in the fields of political science and other areas in the arts and sciences with a first-hand experience of the global impact of contemporary developments in the natural gas and other energy sectors. Participants will first witness the effect that Marcellus shale has had in Western PA and then see how these developments are impacting the US's foreign policy and trade practices. After this, students will be familiarized with a very different side of the global natural gas and energy equation by traveling to Brussels, where they will see the European Union's view of global and regional gas and energy markets. The course ends with an exploration of the role that transit states like Ukraine play in global energy markets and efforts by these players to use their territory and energy alternatives to bargain with larger states at both ends of energy pipelines. Throughout this exploration, students will be exposed to a variety of stakeholders and gain an understanding of energy's impact on domestic and international politics, economies, societies and the environment.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PS 2301 - THEORY & CONCEPTS COMP POLITICS

Minimum Credits: 3

Maximum Credits: 3

This seminar focuses on theories of the modern state, especially in capitalist societies. The relationship of the state concept to various ideo-analytic frameworks and assumptions will be explored at some length as a way of evaluating the state concept as an analytic tool. These explorations form the basis for examining alternative images of the state in relation to society, to the role of leadership and statecraft in guiding the modern state, to alternative modes of organizing the state and to making policy.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Political Science (MA or PHD)

Course Attributes: Global Studies

PS 2303 - POLITICS, ISLAM, AND THE STATE

Minimum Credits: 3

Maximum Credits: 3

This course provides an accessible and comprehensive account of political Islam over the span of the past century. Drawing on insights from comparative politics and Islamic studies. It explains the complex interaction between Islam, society, the state, and progresses of globalization. The course demonstrated that political Islam, far from being monolithic phenomenon, varies considerably from country to country depending on its

position in relation to society, the state, and the broader political environment. The course provides a portrait of Islam and politics through a combination of detailed case studies and country overviews that span the globe, with a focus on the Middle East, central Asia, and south Asia. It also provides a detailed account of the global Jihadist movement.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

PS 2307 - ETHNIC POLITICS AND CONFLICT IN COMPARATIVE PERSPECTIVE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PS 2308 - AFRICAN DEVELOPMENT SEMINAR

Minimum Credits: 3

Maximum Credits: 3

The violence, hunger and poverty of Africa, and the economic potential, energy and mineral resources, that are often described in our newspapers, (on the bottom right-hand corner of the third section of your daily newspaper right after the sports briefs) do not exist in a vacuum. They are the products of historical and social forces that go back a number of centuries and also reflect current day world divisions about race, religion, gender and culture. In this highly individualized course we will look at the origins of these forces, the reason for sub-national violence and their consequences as they affect the African continent. Of particular importance is the question: is there a "new" Africa in terms of governance, conflict, institutional development and economic and social change? Are patterns of change national, regional or continental? The purpose of this course is to destroy myths and understand causality. It is to get course participants, in a small seminar environment, to start thinking and talking about the causes of poverty, political conflict, development and underdevelopment and to stimulate an interest in a part of the world which is very far away from and very different from the United States. It is an ambitious course in that it will require participants to have the ability to read and digest (as well as think about) a large amount of material in a short period of time. Every effort has been made to recommend material that is clearly and interestingly written. However, there will be many concepts and terms that are not immediately familiar to you. If so, write them down and ask about them during class. In tackling the reading, take your time with it, re-read and ask questions of your colleagues and of the course instructor. This course will be a mixture of lecture, presentation and discussion. Hopefully it will be structured and informal at the same time. Feel free to interject comments and raise questions at any point during the class. Generally, the first hour of class will be devoted to an informal lecture on the topic of the week. Following the break we will spend the remainder of the class discussing the reading for that week or listening to individual comments on a piece of reading. This format assumes that all class participants will have completed their reading in advance of the week's class.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PS 2310 - POLITICS OF THE EUROPEAN UNION

Minimum Credits: 3

Maximum Credits: 3

Over 180 sovereign states now participate in the international economic system. The risks and opportunities that each state faces in the international economy have been shaped by the givens of geopolitics and by the decisions and conflicts that make up its economic history. Each country faces some dilemmas that are recurrent and intractable, and others that are unfamiliar and fluid. In the first half of the semester, we will examine how governments have historically coped with these dilemmas, usually by trying to reconcile the expectations of foreign governments with those of domestic interests. Such reconciliation has created distinctive strategies (such as mercantilism and import-substitution industrialization) that combine policies for domestic economic development with (hopefully compatible) policies for economic exchange with other countries. In the second half of the course, we will focus on international economic issues currently facing the governments and citizens of selected advanced industrial and developing societies. Each student will write an extended research and policy paper, with recommendations, on a topic in ONE of the following categories: (1) The most important issues in the international economic relations of a particular state (for instance, Sri Lanka); or (2) The economic problems associated with trade in specific commodities (say, sugar or nuclear power generation equipment); or (3) The implications and consequences for individuals and particular social groups of a selected national strategy for managing international trade and investment. In order to receive credits for this course, students will take and pass an in-class final exam as well as submitting a satisfactorily drafted and revised research and policy paper.

Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Political Science (MA or PHD)
Course Attributes: Russian & East European Studies, West European Studies

PS 2312 - COMPARATIVE PARTIES AND ELECTIONS

Minimum Credits: 3

Maximum Credits: 3

In this seminar, graduate students will be introduced to a wide variety of readings in the history of Western Europe.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

PS 2313 - COMPARATIVE POLITICAL BEHAVIOR

Minimum Credits: 3

Maximum Credits: 3

This course is an introduction to the study of comparative mass political behavior. It is designed to emphasize cross-national similarities and differences in public opinion, voting behavior and political participation, and thus will complement the U.S.-dominated material presented in PS 2701 'American Electoral Behavior' and PS 2230 'Mass Political Behavior.' The course will first cover the comparative perspective on traditional subjects in the behavior field, such as turnout, the structure and sophistication of mass opinion, media impact, partisanship and models of voting behavior. It will then turn to more specialized areas such as political protest, the development and impact of democratic values, trust and "social capital" in new democracies, and the analysis of public opinion and participation in ethnically, religiously and linguistically divided societies.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

PS 2319 - THE EUROPEAN UNION IN POLITICS AND PRACTICE

Minimum Credits: 3

Maximum Credits: 3

This course is an intensive introduction to the history, organization, and politics of the European Union (EU). An historical overview of the immediate post-World War II period will be provided, but the major emphasis will be on the EU's governing institutions, its key political actors, and the fundamental issues they confront in EU politics and policymaking. The European Union today is among the most significant actors in international politics and economy; but its quality as a "democratic system" and the degree to which it represents the people of Europe remains hotly debated. This course therefore dedicates special attention to the European Union's influence as a global power and its legitimacy as a political system.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PS 2320 - HUMAN SECURITY

Minimum Credits: 3

Maximum Credits: 3

Because of Civil Wars in several parts of the world, especially in sub-Saharan Africa, the international organizations have reshaped their development agenda by emphasizing the importance of security and peace as preconditions for development. This approach has been explicitly mentioned among the aims of the United Nations by Secretary General Kofi-Annan in his roadmap for the implementation of the U.N. Millennium summit. In parallel, the concept of human security has been promoted by several Western governments, N.G.O.S and independent commissions in order to take into account the need to address not only state security needs but also human individuals' vulnerability in crisis situations. Aid policies have taken into account these evolutions, though the concept of human security itself has been discussed in a controversial way. The European union is progressively integrating it into its security agenda and has started 'securitizing' its development agenda and African policy, including instruments like the Cotonou convention with African, Caribbean and pacific states. The course explores the reasons for the merging of security and development policies in the European union and its member states and the emergence of a European human security agenda, within the wider context of the united

nations, world bank and OECD. The focus will be European policies towards crisis areas in Africa and Asia potential case to be discussed are: regulations about antipersonnel landmines, small arms and light weapons, conflict timber and conflict diamonds; policies of conditionality and sanctions; assistance to transitional justice; peace building, security governance, security sector reform in fragile states.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Political Science (MA or PHD)

Course Attributes: Global Studies, Russian & East European Studies, West European Studies

PS 2321 - LATIN AMERICAN POLITICS

Minimum Credits: 3

Maximum Credits: 3

The course is a readings seminar designed to introduce graduate students to the basic international literature on political questions and problems in the Latin American context. The course will focus primarily on the topic of "regime transition" in Latin America.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

Course Attributes: Latin American Studies

PS 2322 - SOCIOLOGY OF REVOLUTION

Minimum Credits: 3

Maximum Credits: 3

An inquiry into various theories, frameworks and models elaborated by social scientists to explain the origins, dynamics and outcomes of this most complex matrix of social change.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

PS 2323 - EXPERIMENTAL RESEARCH IN POLITICAL BEHAVIOR

Minimum Credits: 3

Maximum Credits: 3

This course is an advanced seminar focusing on how experimental methods can inform research in political behavior. The first part of the course will focus on experimental design. Students will learn how to design and implement lab experiments, survey experiments, and field experiments. We will cover various aspects of experimental design - including where to get funding, how to get IRB approval, subject recruitment, subject compensation, randomization, identifying an appropriate control group, internal and external validity, ethical considerations, deception, and methods for analyzing experimental results. Students will also learn how to program surveys and experiments in Z-tree, MTURK, and qualtrics. The second part of the course will focus on applied topics. We will study how experimental methods are useful for investigating special topics in political behavior, including voter mobilization, public opinion, racial attitudes, ethnic identity, group identity, gender issues, asking about sensitive topics, and methods for estimating both attitudinal and behavioral responses to experimental treatments. Students will propose and design their own experiments throughout the course, and will fully develop one experimental design as a final project.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PS 2326 - AUTHORITARIAN POLITICS

Minimum Credits: 3

Maximum Credits: 3

This course surveys important questions driving past and current research in the fields of regimes, regime change, and authoritarian governance. Students will be able to identify important research questions based on existing scholarship and execute sound research designs.

Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PS 2327 - ISSUES IN DVLPMNT MGMNT & POLICY

Minimum Credits: 3

Maximum Credits: 3

Provides an introduction to the theories and practice of development administration and planning and their relationship to the political and policy process.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

Course Attributes: Global Studies

PS 2341 - GOVERNMENT/POLITICS OF THE RUSSIAN FEDERATION

Minimum Credits: 3

Maximum Credits: 3

A reading seminar dealing with the alternative interpretations of the soviet political system since the death of Stalin.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

Course Attributes: Russian & East European Studies

PS 2351 - GENDER & DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PS 2370 - RESEARCH TOPICS ON THE POLITICAL ECONOMY OF DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

This is a PH.D level course that explores the causes and effects of poverty, under-provision of public goods, bad governance, and conflict in low-income countries. We will look at the role of institutions, historical legacies, state capacity, regime type, corruption and clientelism, natural resources, ethnic divisions, and international aid in explaining under-development. While this is primarily a substantive course, it will also expose students to cutting-edge methods at the forefront of research on the political economy of development, including experimental and quasi-experimental methods.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

PS 2374 - THE POLITICAL ECONOMY OF DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

This course seeks to help you understand the causes of international inequality in the distribution of wealth. In simple terms, the course seeks to answer the question, "why are there rich nations and poor nations and rich people and poor people"? To answer this question we will need to understand something about the factors related to economic development and how those factors are tied to income distribution. The course will expose you to some of the major theoretical and empirical literature on the political economy of development.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: PLAN: Political Science (MA or PHD)

PS 2378 - POLITICAL SOCIOLOGY

Minimum Credits: 3

Maximum Credits: 3

The variety of political arrangements in the twentieth century presents a number of puzzles that will make up the subject matter of this course. Are the differing mechanisms of governments to be explained by levels of economic development, institutional histories, the intentions of social movements, transnational constraints or slow-changing national political cultures? Is the state an autonomous actor or the creature of other social forces? Are regime changes consequences of some sort of "structural" change or are they simply consequences of rulers' stupidity?

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

Course Attributes: Global Studies, Russian & East European Studies

PS 2379 - ECONOMICS OF DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

Focuses on development theories; classical, neo-classical, Marxian, dualistic (economic and non-economic) as well as models of agricultural development and administration, productivity enhancement, saving and investment and the foreign sector. Students are expected to apply development models to current problems, analyze and construct policy approaches to issues of current importance in less developed countries.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Political Science (MA or PHD)

Course Attributes: Asian Studies, Global Studies

PS 2380 - SOCIAL MOVEMENTS

Minimum Credits: 3

Maximum Credits: 3

This seminar will take up current issues in the study of social movements: the historical development of forms of contention; the interactions of plebeian disruption and elite reform; transnational aspects of social movements; rational-action models of individual participation and movement tactics; movements as sources of identity; new frontiers in research methods.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

Course Attributes: Global Studies, Latin American Studies, Russian & East European Studies

PS 2381 - SEMINAR POLITICAL INSTITUTIONS

Minimum Credits: 3

Maximum Credits: 3

The basic question of this seminar is "what difference do institutions make"? The first part of the seminar attempts to focus on that question, while defining it more precisely, through comparative, formal, and evolutionary analyses of institutions. The second part of the seminar examines proposals for reform of institutions, particularly in the American context. Seminar participants will be asked to analyze particular proposals for institutional reform and evaluate them.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

Course Attributes: Global Studies

PS 2384 - TOPICS IN COMPARATIVE POLITICS

Minimum Credits: 3

Maximum Credits: 3

Special topics in comparative politics will be discussed.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

PS 2385 - COMPARATIVE LEGISLATURES

Minimum Credits: 3

Maximum Credits: 3

This course focuses on theories that relate to legislative organization, executive-legislative relations, and legislator behavior, and party politics from a comparative perspective. We frequently use literature on the US congress to frame the discussions, but read and analyze literature on Western and eastern Europe, Latin America, Asia, and other parts of the world.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (PHD or MA)

PS 2387 - POLITICS OF WATER

Minimum Credits: 3

Maximum Credits: 3

Given the need to highlight the contributions political science offers to our study of the Anthropocene, this interdisciplinary course investigates the role of water in the political development of contemporary Central Eurasia. As a landlocked world region, Central Eurasia provides a compelling case for the study of the political, social, and technological innovations that has yielded sites of ecological disaster and environmental frontiers of opportunity. This course guides students through the key stages of Soviet political change and its impact on the issues of Central Eurasian water culture: the collapse of tsarist governance and the withdrawal of its engineerspecialists, ending its "civilizing mission"; the arrival of US experts whose modern irrigation methods inadvertently contributed to environmental degradation and economic dependence; the "shock" construction sites of the Stalin era; the misguided dam-building projects of the late Soviet period; and finally the issues relating to the international cooperation to manage the river basins connecting Kyrgyzstan, Tajikistan, Uzbekistan, Turkmenistan, and Kazakhstan. Primarily, this course is a political science course, providing students with analytical frameworks to consider the institutions of power and how they are utilized concerning water management, whether for development purposes or national security. Yet this course also presents students with an interdisciplinary understanding of water politics by integrating skills from engineering sciences. This provides the opportunity for students to better understand the technological innovations that have exacerbated poor water management and also provided solutions to mitigate the ramifications of human activity. Through course assignments and a research project, students are not only introduced to a critical world region, but also familiarized with major crises of water management in the United States and beyond. Thus, at the course's conclusion, students are prepared to critically think about solutions to water management across environmental science, political science, and engineering.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PS 2401 - BEHAVIOR THEORY & EXPERIMENTS

Minimum Credits: 3

Maximum Credits: 3

This is a doctoral course that surveys theoretical models and corresponding experimental methods relevant to the study of political behavior. Topics will include voting, accountability, information processing, risk and social preferences, trust, cooperation, and leadership, drawing from rational choice, cognitive psychology, and behavioral economics. Class sessions will include seminar discussions, lectures, and workshops. Familiarity with formal models is helpful, but not required, we will review the basics as needed for the class.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Russian & East European Studies, West European Studies

PS 2501 - THEORY OF INTERNATIONAL RELATION

Minimum Credits: 3

Maximum Credits: 3

This course will survey a broad range of literature dealing with international relations theory. The course will view the literature in terms of the critical question areas in international relations and will be designed to describe each approach and to evaluate the utility of the approach in terms of bringing understanding to some of these question areas.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Political Science (MA or PHD)

Course Attributes: Global Studies

PS 2502 - INTERNATIONAL ORGANIZATION

Minimum Credits: 3

Maximum Credits: 3

This course examines the contemporary structures of governance within international policies as they are found at national, regional and international level, and the challenges and stresses to which such structures are vulnerable. It also considers major traditions and theorizing about sources of conflict, order and integration in international politics and reviews current evaluations of major international organizations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

Course Attributes: Global Studies, West European Studies

PS 2503 - TOPICS IN INT'L DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

Topics in international development will explore specific current issues in international development.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

Course Attributes: Asian Studies

PS 2512 - RUSSIAN FOREIGN POLICY

Minimum Credits: 3

Maximum Credits: 3

A reading course focusing on alternative interpretations of Russian foreign policy.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

Course Attributes: Russian & East European Studies

PS 2515 - DOMESTIC POLITICS AND INTERNATIONAL CONFLICT IN THE INFORMATION AGE

Minimum Credits: 3

Maximum Credits: 3

This class will explore the interaction between domestic and international conflict. While these domains have traditionally been treated separately, the processes of domestic mobilization for international initiatives (including minds, money, material and martyrs) and maintaining resilience to the domestic consequence of international interaction (including analog and cyber cooperation and conflict) are increasingly important in today's globalized and digitally connected world. We will read both canonical research as well as more recent works that attempt to integrate contemporary changes in technology and cyber-capabilities into our understanding of the connections between these nested spheres of politics.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PS 2518 - SECURITY & INTELLIGENCE STUDIES

Minimum Credits: 3

Maximum Credits: 3

Many argue that the 21st century security environment is fundamentally different from and more dangerous than that which existed in previous eras. There is some evidence to suggest that this claim might be true; the security challenges absorbing the majority of states' time, money, and military efforts since the end of the cold war ' and especially since 9/11 ' are notably different from those of the past and, at times, they seem more pervasive. However, it does not necessarily follow that such proximate differences are symptomatic of a deeper shift in the nature of the inherently dangerous international arena. This course explores the nature of the international security environment ' past and present ' and considers whether and to what degree the logics for coping with security challenges have changed over time. In doing so, students will be introduced to the arguments and debates in the academic literature on security and intelligence issues and learn to apply them to contemporary challenges. We will spend the first third of the semester examining traditional security studies concepts and issues like war, coercion, effectiveness in nuclear and conventional warfighting, and the effects of regime type on security policies and achievements. The second third will then be dedicated to considering the utility of traditional concepts in understanding the nature of and strategically-preferable responses to security challenges pervasive in the current international arena like asymmetric warfare, nuclear proliferation and missile defense, terrorism, and space and cyber warfare. The last third of the course examines the nuts and bolts of the United States national security apparatus to better understand how theory is (or should be) transformed into policy. We conclude by considering the costs and benefits of different American grand strategies moving forward.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Political Science (MA or PHD)

Course Attributes: Asian Studies, Global Studies, Russian & East European Studies

PS 2534 - CIVIL WARS

Minimum Credits: 3

Maximum Credits: 3

This course will introduce graduate students to the Civil Wars literature. In the first part of the course, we will examine theoretical debates about why groups sometimes resort to violence against the state or other domestic groups. We will consider grievances, opportunities, informational asymmetries, and commitment problems as plausible mechanisms explaining the onset of Civil Wars. We will also discuss terrorism as one of the strategies of political violence. In the second part of the course, we will discuss possible solutions to Civil Wars and evaluate the relative merits of these solutions. Mechanisms such as intervention, peacekeeping and power sharing will be emphasized.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

PS 2540 - INTERNATIONAL POLITICAL ECONOMY

Minimum Credits: 3

Maximum Credits: 3

This seminar explores in eclectic fashion a number of major conceptual thrusts and policy problems in the international political economy. Some of the work deals with system level properties of international political economy, while other work compares how various advanced industrial states deal with similar foreign and domestic economic challenges.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

PS 2543 - POLITICAL ECONOMY OF GROWTH

Minimum Credits: 3

Maximum Credits: 3

This graduate course is devoted to the study of international and comparative political economy in developing and emerging countries. These countries tend to face very different sets of constraints than their wealthier counterparts. The aim of this course is to analyze the determinants of welfare in poorer countries. Its main focus is to study the political economy of income and examine how domestic and international incentives shape crucial economic policies (e.g. trade, monetary, or education policies). In the last part of the semester, we broaden our horizon to examine other important components of welfare, such as environmental quality. This course is resolutely focused on the macro level and limited to developing countries.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

Course Attributes: Asian Studies, Global Studies, Latin American Studies

PS 2563 - PEACEMAKING AND PEACEKEEPING

Minimum Credits: 3

Maximum Credits: 3

This course is designed to introduce graduate students to the literature on conflict resolution and post-conflict recovery. In the first part of the course, we will examine the process by which belligerents in Civil Wars reach cease-fires and negotiate peace, why peace sometimes lasts and sometimes falls apart and what can be done to make peace more stable. Next, we will explore the longer-term prospects for economic and democratic rebuilding as well as reconciliation after Civil Wars. We will end the course by considering the consequences of Civil Wars for the regional and international peace and focus on terrorism, refugees, and weak states as destabilizing factors.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Political Science (MA or PHD)

PS 2607 - DEMOCRATIC THEORY & DEMOCRATIZATION

Minimum Credits: 3

Maximum Credits: 3

The course has three objectives for students: 1) to develop a broad knowledge of the main currents in modern and contemporary democratic theory and a familiarity with their main problems; 2) to study how normative theories of democracy inform or might inform processes of democratization; 3) to apply this knowledge in solving some puzzle or problem by comparing cases, assessing claims, developing arguments, etc.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

Course Attributes: Global Studies

PS 2675 - HUMAN RIGHTS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PS 2701 - ADVANCED METHODOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course aims to provide students with an overview of statistical methods appropriate for the analysis of longitudinal data, or data collected on multiple units (individuals, states, dyads, countries) at more than one point in time. The course will focus on models for the analysis of 'panel data,' which (by convention) is used to describe data with relatively large number of units and relatively few time points. We will cover different approaches to the analysis of panel data, including structural equation models, fixed and random effects models, dynamic econometric models, and longitudinal hierarchical growth ("multi-level") models.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

PS 2702 - ADVANCED METHODS: CAUSAL INFERENCE

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the challenge of causal inference in the social sciences. We will begin by approaching causal inference from the standpoint of experimental analysis. We will then study several non-experimental methods that aim to recover causality using observational data, including matching, instrumental variables, difference-in-differences, and regression discontinuity. The class will combine methodological training with exposure to important recent research in the social sciences that employ these methods. The goal of the class is not only to convey the concepts central to causal inference but there is also a heavy emphasis on helping students develop their capacity for research design.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PS 2703 - FORMAL POLITICAL THEORY

Minimum Credits: 3

Maximum Credits: 3

This seminar introduces students to formal modeling of political and economic phenomena. It has a social choice and a game-theory component. The former explores issues involved in the aggregation of individual preferences through majority and other voting rules. The latter-larger of the two components-surveys non-cooperative game theory and explores its applications to various questions of interest to political scientists.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

PS 2704 - FORMAL POLITICAL THEORY 2

Minimum Credits: 3

Maximum Credits: 3

This is the second course in the department's graduate formal theory sequence. We will survey game theoretic models in political science with two goals in mind: (1) students will become critical and competent consumers of formal theory and (2) they will be prepared to begin using formal theory in their research. Topics include bargaining, coalition formation, lobbying delegation, reputation, and signaling. We will also discuss the connection between formal models and empirical tests (both observational and experimental) as well as survey alternatives to rational choice (behavioral and experimental) as well as survey alternatives to rational choice (behavioral, computational, and evolutionary models). Students must be familiar with basic game theoretic concepts and analysis (at the level of PS 2701).

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

PS 2720 - BAYESIAN STATISTICS

Minimum Credits: 3

Maximum Credits: 3

This is a course in advanced methodology in political science. The class will focus on topics related to matrix algebra.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

PS 2730 - ADVANCED METHODOLOGY: MAXIMUM LIKELIHOOD ESTIMATION

Minimum Credits: 3

Maximum Credits: 3

This is a course in advanced methodology in political science. The class will focus on topics related to maximum likelihood estimation.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

PS 2740 - TIME SERIES ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

This is a course in advanced methodology in political science. The class will focus on topics related to time series.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PHD)

PS 2751 - ADVANCED METHODOLOGY: TEXT AS DATA

Minimum Credits: 3

Maximum Credits: 3

The amount of social science relevant information stored in text presses against the boundaries of human comprehension. From corpora of international and national speeches and documents, through repositories of human rights reports, news archives and blog posts, to streaming social media feeds, a font of knowledge awaits those that have the creativity and ability to model and learn from text as data. This class is a lower case, but more than cursory, introduction to the use of natural language processing, machine learning and Bayesian inference frameworks and tools to accelerate innovations in key social science research. The workload is significant but should not give anyone a stroke. We will cover lexical methods such as dictionary-based sentiment analysis, topic modeling and more general supervised learning techniques, as well as research designs that leverage syntactic information. Theoretical lectures will be punctuated with hands-on coding assignments. The point of the class is to increase student's confidence in utilizing text in their applied work.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PS 2900 - COMPREHENSIVE EXAM PREPARATION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

Course Requirements: PLAN: Political Science (MA or PhD)

PS 2901 - QUALIFYING PAPER PREPARATION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Independent Study
Grade Component: Grad SN Basis
Course Requirements: PLAN: Political Science (MA or PhD)

PS 2902 - DIRECTED READING

Minimum Credits: 1

Maximum Credits: 6

Individual reading programs are provided in those areas in which no course or seminar is scheduled during an academic year of three trimesters. They also may be taken by those students who have elected the courses and seminars dealing with a particular subject matter and who wish to do additional work in these areas.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PhD)

PS 2903 - DIRECTED RESEARCH

Minimum Credits: 3

Maximum Credits: 3

This course allows a student to develop a research topic and a plan of analysis over the course of a term.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PhD)

PS 2904 - DISSERTATION OVERVIEW PREP

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

Course Requirements: PLAN: Political Science (MA or PhD)

PS 2905 - TEACHING AND RESEARCH IN POLITICAL SCIENCE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

Course Requirements: PLAN: Political Science (MA or PhD)

PS 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 6

This course is for students who are preparing for comprehensive examinations or who are undertaking other forms of study not requiring the direct supervision of a faculty member.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

Course Requirements: PLAN: Political Science (MA or PhD)

PS 2991 - INDEPENDENT STUDY RESEARCH

Minimum Credits: 3

Maximum Credits: 3

This course is for students who are preparing for their research paper and comprehensive examinations or who are undertaking other forms of study not requiring the direct supervision of a faculty member.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Political Science (MA or PhD)

PS 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1

Maximum Credits: 12

This course is for students who have passed their dissertation overview and are currently working on their Ph.D. dissertation.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Prosthodontics

PROSTH 2020 - GRADUT REMOVABLE PROSTHODONTICS

Minimum Credits: 2

Maximum Credits: 2

This course examines in detail the mechanics of RPD function and its application to design. Complex RPD situations and their relationship to a complicated occlusion, with or without fixed partial dentures, is explored.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PROSTH 2030 - GRADUATE FIXED PROSTHODONTICS

Minimum Credits: 2

Maximum Credits: 2

This course exposes the student to concepts of tooth preparation and their relationship to total rehabilitation of the patient. Emphasis is placed on diagnostic preparation, dental materials knowledge, esthetics and the total relationship to occlusion. Modification of design for integration with RPD, is stressed. Laboratory skills are emphasized.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

PROSTH 2040 - DENTAL MATERIAL PROSTHODONTICS 1

Minimum Credits: 1

Maximum Credits: 1

This course presents an introduction to biomaterials. Application of biomaterials in removable and fixed prosthodontics will be emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PROSTH 2050 - DENTAL MATERIAL PROSTHODONTICS 2

Minimum Credits: 1

Maximum Credits: 1

Demonstrations of different clinical applications of BIO materials, as well as laboratory fabrication of appliances for active cases currently being treated in the prosthodontic department will be presented.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PROSTH 2070 - ADVANCED PROSTHODONTICS 1

Minimum Credits: 2

Maximum Credits: 2

During this course, the students become more experienced in treating difficult cases with medical complications and cases which need multi-disciplinary approaches.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

PROSTH 2080 - ADVANCED PROSTHODONTICS 2

Minimum Credits: 2

Maximum Credits: 2

Emphasis is placed on the clinical, laboratory, and technical skills necessary to treat the partially edentulous patient using a removable appliance. Coordination with fixed appliances is mandatory.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PROSTH 2090 - ADVANCED PROSTHODONTICS 3

Minimum Credits: 2

Maximum Credits: 2

Clinical and laboratory skills necessary to treat the patient with fixed prosthesis are emphasized along with principles of oral rehabilitation. Knowledge of porcelain and its handling qualities are stressed.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

PROSTH 2100 - ADVANCED PROSTHODONTICS 4

Minimum Credits: 2

Maximum Credits: 2

This course emphasizes the total treatment of the geriatric patient. Considerations are given to prosthodontic rehabilitation with implants, orthognathic treatment planning and the difficult prosthodontic patient.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

PROSTH 2101 - ADVANCED PROSTHODONTICS 5

Minimum Credits: 2

Maximum Credits: 2

Clinical and laboratory skills necessary to treat the patient with fixed prosthesis are emphasized along with principles of oral rehabilitation. Knowledge of porcelain and its handling qualities are stressed.

Academic Career: Graduate

Course Component: Clinical
Grade Component: Grad Letter Grade

PROSTH 2102 - ADVANCED PROSTHODONTICS 6

Minimum Credits: 2

Maximum Credits: 2

Clinical and laboratory skills necessary to treat the patient with fixed prosthesis are emphasized along with principles of oral rehabilitation. Knowledge of porcelain and its handling qualities are stressed.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

PROSTH 2103 - ADVANCED PROSTHODONTICS 7

Minimum Credits: 2

Maximum Credits: 2

Clinical and laboratory skills necessary to treat the patient with fixed prosthesis are emphasized along with principles of oral rehabilitation. Knowledge of porcelain and its handling qualities are stressed.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

PROSTH 2104 - ADVANCED PROSTHODONTICS 8

Minimum Credits: 2

Maximum Credits: 2

Clinical and laboratory skills necessary to treat the patient with fixed prosthesis are emphasized along with principles of oral rehabilitation. Knowledge of porcelain and its handling qualities are stressed.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

PROSTH 2110 - ADVANCED MAXILLOFACIAL PROSTHODONTICS 1

Minimum Credits: 1

Maximum Credits: 1

This course exposes the graduate resident to the principles of radiation oncology and the management of the cancer patient. Emphasis is placed on the oral biological changes that occur with treatment.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PROSTH 2117 - IMPLANT PROSTHODONTICS SEM 1

Minimum Credits: 2

Maximum Credits: 2

This is a didactic course designed to review all aspects of implant dentistry at the in depth level. Diagnostic and treatment planning procedures, selection of implants to include biomechanical and biomaterials considerations, surgical procedures for implant placement, prosthodontic procedures to include provisional and definitive implant restorations, and maintenance procedures will be presented and illustrated.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PROSTH 2147 - IMPLANT PROSTHODONTICS SEMINAR 2

Minimum Credits: 2

Maximum Credits: 2

This is a multidisciplinary didactic course planned to address advanced topics in oral and maxillofacial implant procedures; guided tissue regeneration in implant dentistry, management of failing implants, and advanced implant reconstructive procedures.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PROSTH 2150 - PROSTHODONTICS SEMINAR 1

Minimum Credits: 2

Maximum Credits: 2

This course is an introductory review of basic prosthodontic principles and their application to advanced prosthodontic procedures. Thorough understanding of this course is essential to comprehensive treatment planning.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PROSTH 2160 - PROSTHODONTICS SEMINAR 2

Minimum Credits: 1

Maximum Credits: 1

This course is a description of the factors necessary for detailed and comprehensive treatment planning of the fixed and removable partial denture patient. The dental material and psycho-social aspects of treatment planning is discussed.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PROSTH 2170 - PROSTHODONTICS SEMINAR 3

Minimum Credits: 2

Maximum Credits: 2

This course discusses the special considerations given to the geriatric and the handicapped prosthodontic patient. Maxillofacial patients and those undergoing immune suppression and cancer therapy are discussed.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PROSTH 2180 - PROSTHODONTICS SEMINAR 4

Minimum Credits: 2

Maximum Credits: 2

This course is the final in a series that entails the review of advanced graduate procedures, including TMJ and implantology.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PROSTH 2181 - PROSTHODONTIC SEMINAR 6

Minimum Credits: 2

Maximum Credits: 2

This course is another part of a series that entails the review of advanced graduate procedures, including TMJ and implantology.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

PROSTH 2182 - PROSTHODONTICS SEMINAR 5

Minimum Credits: 1

Maximum Credits: 1

Continuation course for the factors necessary for detailed and comprehensive treatment planning of the fixed and removable partial denture patient. The dental material and psycho-social aspects of treatment planning is discussed.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PROSTH 2200 - OCCLUSION

Minimum Credits: 1

Maximum Credits: 1

This is an introductory course in physiologic, gnathologic and denture occlusion. The basic principles and techniques are covered.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PROSTH 2210 - SPECIAL PROSTHODONTICS CLINIC

Minimum Credits: 1

Maximum Credits: 9

This course provides the resident with experience providing special clinical care of multi-disciplinary cases involving dental and medical treatment under direct faculty supervision.

Academic Career: Graduate

Course Component: Clinical

Grade Component: Grad Letter Grade

PROSTH 2211 - COMPREHENSIVE TREATMENT PLANNING 1

Minimum Credits: 2

Maximum Credits: 2

This is a multidisciplinary course in comprehensive diagnosis and treatment planning for graduate students/residents in endodontics, orthodontics, periodontics, prosthodontics, oral and maxillofacial surgery, maxillofacial prosthetics and advanced education in general dentistry.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

PROSTH 2230 - TEMPOROMANDIBULAR JOINT DYSFUNCTION

Minimum Credits: 1

Maximum Credits: 1

This course exposes the student to the etiology, diagnosis, and treatment of TMJ and myofascial pain dysfunction syndromes. Radiology and drug therapy are reviewed. Various treatment modalities involving electronic instrumentation and splint therapies are reviewed.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PROSTH 2240 - LITERATURE REVIEW 1

Minimum Credits: 2

Maximum Credits: 2

This course covers classic and current literature review in the following areas: bone resorption, articulators, face-bow, hinge axis, and immediate dentures.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PROSTH 2250 - LITERATURE REVIEW 2

Minimum Credits: 1

Maximum Credits: 1

This course covers classic and current literature review in the following areas: color, splinting, porcelain, crown preparation, impression materials, dies and pontics.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PROSTH 2260 - LITERATURE REVIEW 3

Minimum Credits: 2

Maximum Credits: 2

This course covers classic and current literature review in the following areas: occlusion, vertical dimension, centric relation, temporomandibular joint dysfunction, and occlusal equilibration.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PROSTH 2270 - LITERATURE REVIEW 4

Minimum Credits: 2

Maximum Credits: 2

This course covers classic and current literature review in the following areas: maxillofacial prosthodontics, removable partial dentures, complete dentures, diagnosis and treatment planning of the partially edentulous mouth.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PROSTH 2272 - LITERATURE REVIEW 6

Minimum Credits: 2

Maximum Credits: 2

This course covers classic and current literature review in the following areas: Maxillofacial prosthodontics, removable partial dentures, complete dentures, diagnosis and treatment planning of the partially edentulous mouth.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

PROSTH 2273 - LITERATURE REVIEW 5

Minimum Credits: 1

Maximum Credits: 1

Continuation course that covers classic and current literature review in the following areas: occlusion, vertical dimension, centric relation, temporomandibular joint dysfunction, and occlusal equilibration.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PROSTH 2305 - CEREC BASIC TRAINING

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis

PROSTH 2400 - REMOVABLE PARTIAL DENTURES

Minimum Credits: 1
Maximum Credits: 1

A seminar/case based course where advanced students (prosthodontic residents) will gain experience in surveying and designing a variety of clinical removable partial dentures. The majority of cases will involve clinical cases which will include the various Kennedy classes and modification while some simulated models may be used. The assessment of partial edentulism encompasses everything from the loss of a single tooth to the loss of all teeth but one. All disciplines of dentistry may be involved. The integration of all considerations is where the specialty of prosthodontics has the most to offer a patient. The management of the many variables in partially edentulous conditions is the essence of specialty-level prosthodontic therapy.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PROSTH 5142 - DENTAL MATERIALS

Minimum Credits: 2
Maximum Credits: 2
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

PROSTH 5171 - PRINCIPLES OF DENTAL OCCLUSION

Minimum Credits: 3
Maximum Credits: 3

This course is clinically-oriented and employs preclinical laboratory exercises to teach the students the basic principles of occlusion. The importance of the relationship between the temporomandibular joint, occlusion and incisal guidance is emphasized. The students use semi-adjustable - class III - articulators and face bows. Students will learn how to perform an anatomic diagnostic mounting, occlusal analysis, diagnostic equilibration, bite splint fabrication, and functional occlusal waxing.

Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

PROSTH 5211 - FIXED PARTIAL DENTURES 1

Minimum Credits: 1
Maximum Credits: 1

In this course, students will develop an understanding of the process involved in successfully treating a patient indicated for the placement of crowns. Topics include: 1) the preliminary work up, including diagnostic waxing on prepared casts; 2) template fabrication for provisionalization; and 3) the sequencing involved in the development of the art and skill of proper tooth preparation for single crowns, including a full cast crown preparation (FCC), a porcelain fused to metal crown (PFM), and an all ceramic crown (ACC). Provisionalization of the crown preparations will be discussed. Students will develop an understanding of the principles of final impression making for a fixed partial denture (FPD), pouring and indexing of the impression casts, face-bow transfer registration, jaw relation records and mounting of the case on a semi-adjustable articulator. In the accompanying lab course, PROSTH 5215, students will have an opportunity to develop and practice skills in a small group laboratory setting. This course includes lectures and class discussions.

Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: ABCF

PROSTH 5213 - COMPLETE DENTURES 1

Minimum Credits: 1

Maximum Credits: 1

In this course, students will develop an understanding of the process involved in successfully treating a patient indicated for the placement of crowns. Topics include: 1) the preliminary work up, including diagnostic waxing on prepared casts; 2) template fabrication for provisionalization; and 3) the sequencing involved in the development of the art and skill of proper tooth preparation for single crowns, including a full cast crown preparation (FCC), a porcelain fused to metal crown (PFM), and an all ceramic crown (ACC). Provisionalization of the crown preparations will be discussed. Students will develop an understanding of the principles of final impression making for a fixed partial denture (FPD), pouring and pindexing of the impression casts, face-bow transfer registration, jaw relation records and mounting of the case on a semi-adjustable articulator. In the accompanying lab course, PROSTH 5215, students will have an opportunity to develop and practice skills in a small group laboratory setting. This course includes lectures and class discussions.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

PROSTH 5215 - FIXED PARTIAL DENTURES 1 LAB

Minimum Credits: 3

Maximum Credits: 3

In this course, students will apply concepts learned in PROSTH 5211 and will develop the skills necessary to treat a fixed prosthodontic patient. An emphasis will be placed on the preliminary work up as well as the art of proper tooth preparation for single crowns. Students will complete crown preparations for a full cast crown (FCC), porcelain fused to metal crown (PFM), and all ceramic crowns (ACC). Provisionalization of the crown preps will also be required. Students will also develop skills in making final impressions for a fixed partial denture (FPD) and in the laboratory techniques required to produce acceptable results. Laboratory procedures such as pouring and pindexing of casts, facebow transfer registration, jaw relation records, and mounting of the case on a semi-adjustable articulator will be accomplished by the student. This course includes small group laboratory sessions.

Academic Career: Dental Medicine

Course Component: Practicum

Grade Component: ABCF

PROSTH 5217 - COMPLETE DENTURES 1 LAB

Minimum Credits: 1.5

Maximum Credits: 1.5

In this course, students will be prepared for the complex task of complete denture fabrication for the edentulous patient. Students will apply concepts learned in the didactic course (PROSTH 5213) in order to fabricate complete dentures in a simulated clinical environment. The student will also participate in the fabrication of complete dentures in the continuing education clinic for a selected patient. This course includes small group laboratory sessions.

Academic Career: Dental Medicine

Course Component: Practicum

Grade Component: ABCF

PROSTH 5241 - REMOVABLE PARTIAL DENTURES

Minimum Credits: 1

Maximum Credits: 1

Didactic introduction to the treatment of totally edentulous patients with removable complete dentures begins with terminology, patient examination and ridge and arch classification. Continues with the oral anatomy, pertinent bio materials and the mechanical and physiologic principles utilized in edentulous impression making. Concludes with jaw relation records, the use of artificial denture teeth and the steps required to fabricate, insert, adjust and maintain complete dentures.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

PROSTH 5245 - REMOVABLE PARTIAL DENTURES LABORATORY

Minimum Credits: 1.5

Maximum Credits: 1.5

An introductory laboratory course in which the student utilizes a variety of biomaterials to fabricate a technique set of maxillary and mandibular complete dentures for a dental typodont. Provides experience in material handling while making impressions, dental casts and baseplates and wax occlusion rims. Concludes with the performance of sequential laboratory procedures-tooth articulation, waxing, flasking, boil-out, packing, processing and finishing dentures.

Academic Career: Dental Medicine

Course Component: Practicum

Grade Component: ABCF

PROSTH 5251 - FIXED PARTIAL DENTURES 2

Minimum Credits: 1

Maximum Credits: 1

During this course the preparation of posterior teeth for a fixed partial denture along with making an impression, fabrication of an all metal cast fixed partial denture and provisionalization of the prepared teeth are introduced.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

PROSTH 5256 - FIXED PARTIAL DENTURES 2 LAB

Minimum Credits: 3

Maximum Credits: 3

This is the laboratory component of the didactic course fixed partial dentures 2. Students perform the procedures necessary to fabricate an all metal cast fixed partial denture and the provisionalization of the prepared teeth.

Academic Career: Dental Medicine

Course Component: Practicum

Grade Component: ABCF

PROSTH 5271 - DIGITAL DENTISTRY 1

Minimum Credits: 1

Maximum Credits: 1

In this course, students will be introduced to CAD/CAM (CEREC) technology and will be properly trained in its use. This course blends theoretical foundations with practical applications. Students will learn how to prepare teeth for all-ceramic, CEREC crowns and will make digital impressions using the CEREC 4.24 machines. Students will also learn how to design and edit these crowns prior to milling them. Proper block selection and finishing/inserting these final restorations will also be addressed. This course includes lecture and small group laboratory/simulation sessions.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

PROSTH 5273 - FIXED PARTIAL DENTURES 3

Minimum Credits: 1

Maximum Credits: 1

In this course, students will be prepared for the complex task of fabricating post and cores on anterior and posterior endodontically treated teeth. Students will learn the procedures involved for the placement of retraction cord into the sulcus of a patient prior to impression making. Students will also be exposed to contemporary provisional materials and CAD/CAM technology. This course includes lectures and class discussion. An opportunity to apply principles learned in this course will be provided in the accompanying lab course, PROSTH 5276 (Fixed Partial Dentures 3 Laboratory).

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

PROSTH 5276 - FIXED PARTIAL DENTURES 3 LABORATORY

Minimum Credits: 3

Maximum Credits: 3

The goal of this fixed prosthodontic course is to prepare the student for the complex task of fabricating post and cores on endodontically treated teeth. Students will have an opportunity to apply concepts learned in PROSTH 5273 (Fixed Partial Dentures 3) in a small group laboratory setting. Students will prepare porcelain veneers on anterior teeth, practice the procedures involved in the placement of retraction cord into the sulcus of a patient, and evaluate a completed fixed partial denture case to prepare for insertion. A practical exam on single crowns and provisionals will also be included.

Academic Career: Dental Medicine

Course Component: Practicum

Grade Component: Grad HSU Basis

PROSTH 5282 - COMPLETE DENTURES 2

Minimum Credits: 1

Maximum Credits: 1

In this course, students will learn the basic principles for the classification system of edentulism as well as dental procedures related to topics such as denture repair; relines or rebases to current removable appliances; interim or transitional appliances; overdentures; and immediate dentures. This course includes lectures and class discussions.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

PROSTH 5311 - IMPLANTOLOGY 1

Minimum Credits: 1.5

Maximum Credits: 1.5

In this course, students will be introduced to implantology as a progressive field that requires a comprehensive knowledge of dentistry. This course prepares students for introductory level treatment of implant dentistry, including examination of implant-bone interface, preoperative patient evaluation, use of cone beam CT scanning to image bone, construct surgical guides and virtually treatment plan cases. Other topics covered include: treatment planning involving surgical techniques and prosthetic therapies; surgical instrumentation and procedures for effective implant placement; temporization of the patient during the implant therapy; and implant impression making techniques. This course also serves as preparation for Implantology 2, where the student will begin with the reconstructive phase of implantology. This course includes lectures and class discussions.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

PROSTH 5346 - IMPLANTOLOGY 2

Minimum Credits: 1.5

Maximum Credits: 1.5

This course in implant dentistry is a multidisciplinary teaching program, structured to provide basic learning didactic experience. It presents an approach to historical and biological basis for implantology, patient evaluation and treatment planning, implant surgery and provisionalization, definitive Prosthodontic procedures, and maintenance protocols.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

PROSTH 5347 - CURRENT TRENDS IN DIGITAL DENTISTRY

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

PROSTH 5348 - DIGITAL DENTISTRY 2

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Practicum
Grade Component: Grad HSU Basis

PROSTH 5367 - CLINICAL REMOVABLE PROSTHODONTICS 1

Minimum Credits: 2
Maximum Credits: 2

This course is designed to provide clinical experiences in the area of removable prosthodontics for predoctoral dental students. By the end of the fourth year of the curriculum, students will be able to demonstrate competence in providing care to dental patients with removable prosthodontic needs at the level of a general dentist and will participate in a variety of additional experiences to increase skills in caring for the patient with removable prosthodontic needs.

Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: ABCF

PROSTH 5369 - CLINICAL FIXED PROSTHODONTICS 1

Minimum Credits: 2
Maximum Credits: 2

This course is designed to provide clinical experiences in the area of fixed prosthodontics for predoctoral dental students. By the end of the fourth year of the curriculum, students will be able to demonstrate competence in providing care to dental patients with fixed prosthodontic needs at the level of a general dentist and will participate in a variety of additional experiences to increase skills in caring for the patient with fixed prosthodontic needs.

Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: ABCF

PROSTH 5373 - SIMULATED PATIENT TREATMENT

Minimum Credits: 3
Maximum Credits: 3

In this course, students will focus on the preparation of a single unit porcelain crown and a three-unit porcelain-fused-to-metal fixed partial denture, utilizing several preparation designs and materials, in a simulated treatment environment. The student will complete their 3-unit fixed bridge experience and clinical simulation competency examination at the end of this 8-week course. The goal of this course is to develop the skills needed to restore teeth to proper form, function and esthetics using didactic knowledge and preclinical simulation to practice and refine skills learned in fixed prosthodontics. This preclinical experience is designed to improve the technical, laboratory communication, and digital dentistry skill set of dental students preparing single and multiple units. Progress is assessed through a series of self-evaluations, digital software, and faculty review of the restoration.

Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

PROSTH 5375 - CLINICAL PROSTHODONTICS 1

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: ABCF

PROSTH 5419 - CLINICAL REMOVABLE PROSTHODONTICS

Minimum Credits: 2

Maximum Credits: 2

The comprehensive and clinical treatment of a selected and assigned number of partially and completely edentulous patients. Treatment cases include complete dentures, immediate and transitional dentures, overlay dentures, removable partial dentures, temporary partial dentures, and the repair, reline and rebase of indicated dentures.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad Letter Grade

PROSTH 5429 - CLINICAL FIXED PROSTHODONTICS

Minimum Credits: 2

Maximum Credits: 2

This course will provide patient care in a clinical setting under direct faculty supervision. Treatment procedures will include anterior and posterior fixed partial dentures.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad Letter Grade

PROSTH 5448 - CLINICAL PROSTHODONTICS 2

Minimum Credits: 4

Maximum Credits: 4

This course is designed to provide clinical experiences in the area of fixed and removable prosthodontics for predoctoral dental students. By the end of the fourth year of the curriculum, students will be able to demonstrate competence in providing care to dental patients with fixed and removable prosthodontic needs at the level of a general dentist and will participate in a variety of additional experiences to increase skills in caring for the patient with fixed and removable prosthodontic needs.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: ABCF

PROSTH 5449 - CLINICAL REMOVABLE PROSTHODONTICS 2

Minimum Credits: 2

Maximum Credits: 2

The comprehensive and clinical treatment of a selected and assigned number of partially and completely edentulous patients. Treatment cases include complete dentures, immediate and transitional dentures, overlay dentures, removable partial dentures, temporary partial dentures, and the repair, reline and rebase of indicated dentures.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: ABCF

PROSTH 5459 - CLINICAL FIXED PROSTHODONTICS 2

Minimum Credits: 2

Maximum Credits: 2

This course will provide patient care in a clinical setting under direct faculty supervision. Treatment procedures will include anterior and posterior fixed partial dentures.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: ABCF

PROSTH 5469 - CLINICAL IMPLANT DENTISTRY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

PROSTH 5810 - DIGITAL DENTISTRY SELECTIVE

Minimum Credits: 1
Maximum Credits: 1
Academic Career: Dental Medicine
Course Component: Lecture
Grade Component: Grad HSU Basis

PROSTH 5900 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 3
This course is intended to direct first professional students in research projects in prosthodontics.
Academic Career: Dental Medicine
Course Component: Independent Study
Grade Component: Grad HSU Basis

PROSTH 5910 - ADVANCED PROSTHODONTIC TREATMENT PLANNING

Minimum Credits: 1
Maximum Credits: 1
This course is structured to develop the student's ability to plan and implement treatment for patients with complex prosthodontic problems, including but not limited to fixed, implant, and removable prosthodontics, geriatric prosthodontics, TMJ problems, re-establishment of vertical dimension, surgical prosthodontics and other prosthetic procedures.
Academic Career: Dental Medicine
Course Component: Seminar
Grade Component: Grad HSU Basis

PROSTH 5915 - DENTAL IMPLANT SELECTIVE

Minimum Credits: 1
Maximum Credits: 1
A hands-on approach is offered for the surgical and restorative phases of implant dentistry. Students will surgically place implants and assist with cases. Each student will re store one Prosthetic case. Advanced seminars will be given on implant dentistry.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

PROSTH 5916 - COMPLETE DENTURE FABRICATION - VA

Minimum Credits: 1
Maximum Credits: 1
This externship permits the fourth year dental student working one-on-one with a hospital staff dentist to complete one full denture in a hospital setting on medically compromised geriatric patients. In addition the student will understand the operation of a dental clinic within a hospital setting.
Academic Career: Dental Medicine
Course Component: Clinical
Grade Component: Grad HSU Basis

Psychiatry

PSYC 5345 - CLINICAL NEUROSCIENCE REPEAT

Minimum Credits: 0

Maximum Credits: 0

This course is registered when the clinical neuroscience clerkship is failed and all or part of it must be repeated. If less than the full clerkship is taken, the transcript should reflect the specific number of weeks repeated.

Academic Career: Medical School

Course Component: Clinical

Grade Component: Grad LG/SU5

Course Attributes: School of Medicine Year 3

PSYC 5365 - CLINICAL NEUROSCIENCES

Minimum Credits: 0

Maximum Credits: 0

The neurosciences clerkship integrates psychiatry and neurology. NSURG, neuropath and neurorad experiences are also provided. The block is five weeks psych and three weeks neurology. Clinical teaching includes INPT and OPT settings. Field trips, NSURG or neuropath brain cutting, emergency room, and one aa meeting are required. Integrated teaching on two afternoons utilizes interactive lectures, case conferences, neurorad rounds, and critical reviews of literature. Performance-based evaluations and NBME shelf exams are main modes of student evaluation.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

PSYC 5366 - PSYCHIATRY CLERKSHIP

Minimum Credits: 0

Maximum Credits: 0

The psychiatry clerkship is five weeks of clinical psychiatry. Focus in on common psychiatric conditions: presentation, diagnosis, treatment and prognosis. Clinical teaching includes INPT and emergency room settings. Field trips, and one aa meeting are required. Didactic teaching on two afternoons include interactive lectures, case conferences and critical reviews of literature. Performance-based evaluations and NBME shelf exams are main modes of student evaluation.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

PSYC 5410 - ACTING INTERNSHIP IN PSYCHIATRY

Minimum Credits: 0

Maximum Credits: 0

Four/eight week elective in a number of AI's available in psychiatry. Assigned to a clinical module at WPIC of their choice that will provide experience in diagnostic and management of psychiatric patients; enhance ability to conduct a psychosocial and clinical interview; proficiency in gathering clinical data relevant to a psychiatric evaluation, arriving at a correct diagnosis of psychiatrically ill patients; plan and carry out a treatment approach towards a psychiatric patient; effectively utilize the resources and skills of related mental health professions.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5411 - ADOLESCENT PSYC ACTING INTERN

Minimum Credits: 0

Maximum Credits: 0

Four week elective. Students will observe the assessment and treatment of hospitalized adolescents and their families. Patients are treated in therapeutic milieu along with individual group and family therapy sessions. Students attend team meetings, in-service sessions among other activities. Participate in establishing psychiatric diagnosis. Individual or informal seminar instruction cover normal and atypical developmental

stages.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5412 - TRIPLE BOARD ACTING INTERNSHIP

Minimum Credits: 0

Maximum Credits: 0

This elective is designed to provide an exposure to the interface of pediatrics and child psychiatry. This four-week internship will focus on the psychiatric consultation-liaison service at children's hospital of Pittsburgh. Students will participate in clinical activities specific to either pediatrics, medicine or psychiatry with attendance at pediatric outpatient continuity clinic for the triple board residents and the child psychiatry outpatient continuity clinic. Attendance at the pediatric noon conference and the didactic psychiatry sessions and both the pediatric and psychiatry grand rounds series is required.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5415 - INTRODUCTION TO CLINICAL PSYCHIATRY

Minimum Credits: 0

Maximum Credits: 0

This four-week elective is for those students interested in getting experience in clinical psychiatry outside of the core clinical neurosciences clerkship. Students will develop basic skills in the interviewing and assessment, diagnosis and management of psychiatric patients in the inpatient units. Course objectives include: conduct comprehensive psychiatric interview and mental status examinations; gather clinical data, generate differential diagnoses, formulate working diagnosis and management treatment; plan and implement a biopsychosocial treatment plan for patients with psychiatric illnesses; and utilize the resources and skills of related mental health professionals.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5420 - PSYCHIATRIC EMERGENCY SERVICES

Minimum Credits: 0

Maximum Credits: 0

Twenty-four hour psychiatric assessment center and emergency room where students may participate for one to 3 months in the assessment, diagnosis and disposition planning of patients. Students also participate in a comprehensive course covering diagnostic interviewing, lethal assessment and specific methods for interviewing efficiently under time constraints. This course consists of didactic presentations, role playing, interviewing of patients in class and a bibliography of required and suggested readings.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5425 - MANAGEMENT OF PSYCHIATRIC ILLNESSES

Minimum Credits: 0

Maximum Credits: 0

Four week elective designed to allow students to learn in a service-learning model. Students will participate at non hospital sites interacting with social workers, nurse practitioners, primary care physicians, and psychiatrists. Primary goal of this elective is to learn to identify and manage psychiatric illness in the primary care setting.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5430 - PEDIATRIC PSYCHIATRY

Minimum Credits: 0

Maximum Credits: 0

Assessment of children and families referred to behavioral science program, children's hospital and consult liaison. Help consult in abuse and neglect problems at hospitals and special settings. Acquainted with community resources. Skills in behavioral syndromes assessment principles of consultation and liaison activity.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5441 - OUTPATIENT ADOLESCENT PSYCHIATRY

Minimum Credits: 0

Maximum Credits: 0

Four week elective in which the student will observe and participate in complete evaluations of children, adolescents, and their families. Expected to rotate in a general clinic and through some of the specialty child psychiatry clinics as well. There will be an opportunity to observe group therapy sessions. Teaching will be in individual, group and conference settings.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5442 - ADV OUTPATIENT CHILD & ADOLSCNT

Minimum Credits: 0

Maximum Credits: 0

Four/eight week for those individuals who are considering a career in behavioral pediatrics, or general or child psychiatry. Active role demanded of student. Those interested will serve as a co-clinician with shared and supervised responsibility for assessment and treatment of children and adolescents. Literature-intensive, assigned texts and articles. Students will learn clinical skills as part of a multi-disciplinary approach to outpatient treatment, working with other mental health professionals. Student will spend time in general clinic and varied specialty clinics.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5443 - SEX ABUSE OF CHILDREN & ADOLSCNT

Minimum Credits: 0

Maximum Credits: 0

Four week elective, clinical and research aspects of child sexual abuse will be examined from a variety of perspectives. Discussions with instructors and selected readings. Clinical aspects of child sexual abuse including how to identify and gather information from children, methods of reporting abuse to the proper authorities. Legal and child protective aspects. Psychiatric and physical problems will be addressed.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5448 - INTRODUCTION TO GERIATRIC PSYCHIATRY

Minimum Credits: 0

Maximum Credits: 0

This course will provide an introduction to psychiatric care of the geriatric patient. Experiences will include new assessments, interviewing, psychotherapy and pharmacotherapy, collaboration with geriatricians and other related issues. Experiences will be in both inpatient units and in-home visits. Course objectives: conduct comprehensive psychiatric interviews and mental status examinations; gather clinical data, generate differential diagnoses, formulate working diagnosis and manage treatment; plan and implement biopsychosocial treatment plan for patients with elders with psychiatric illnesses; utilize the resources and skills of related mental health professionals, learning how to collaborate with other providers and agencies; understand how family and community contents affect mental health of the elderly; summarize the assessment and treatment of a patient with dementia; employ a cognitive screening evaluation to assess and follow patients with cognitive impairment and state the limitations of these instruments; summarize the special considerations in prescribing psychotropic medications of the elderly, especially toxicity risks; appreciate the role of loss in the etiology of psychiatric disorders in the elderly.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5450 - GERIATRIC PSYCHIATRY

Minimum Credits: 0

Maximum Credits: 0

Four/eight week elective provides the students the opportunity of being involved in all aspects of care of elderly inpatients and outpatients. Involvement in individual, couple, family and group programs. Function as members of the multi-disciplinary team. Assume increasing responsibility for individual patients as their rotations proceed. Attend a weekly case conference. Supervised by a resident and faculty member of the team to which they are assigned.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5455 - EMERGENCY PSYCHIATRY

Minimum Credits: 0

Maximum Credits: 0

Student will learn clinical interviewing, the mental status examination, basic psychiatric diagnosis, basics of evaluation of suicidal and homicidal potential, emergency therapeutics, and basic aspects of psychiatry and the law.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5458 - PSYCHIATRIC ASSESSMENT

Minimum Credits: 0

Maximum Credits: 0

This elective experience will develop skills at psychiatric interviewing as well as assessment of new patients. Forty (40%) percent time will be spent in the psychiatric emergency room doing evaluations with faculty and resident preceptors, 40% rotating at other sites (child, adult, geriatric) doing assessments of new ambulatory patients, plus a full day of didactics and supervision. Course objectives: conduct comprehensive psychiatric interviews and mental status examinations; gather clinical data, generate differential diagnoses, and formulate working diagnosis using the dsm-iv multi axial system; elicit, describe and record the key components of a mental status examination; make a clear and concise psychiatric case presentation; learn different approaches to assessment across the lifespan; understand the indications and procedures for involuntary mental health commitment; develop a collaborative, multi-disciplinary and biopsychosocial approach to patient care; demonstrate empathy, facilitative approaches and sensitivity to diversity.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5459 - NEUROSCIENCE AT THE BEDSIDE: EXPLORING PERSONALIZED MEDICINE IN PSYCHIATRY

Minimum Credits: 0

Maximum Credits: 0

Personalized medicine is the new catchphrase for the role of cutting edge translational science on routine clinical care. Can we use an imaging result to predict treatment response? How will a person's genetic make-up inform choice of medication? How does awareness of risk affect management? In psychiatry, personalized medicine remains somewhat of a 'holy grail' - elusive but hotly pursued by neuroscientists and clinicians. In this elective experience, students will get a taste of that pursuit through a mixture of scientific and clinical activities that will be individualized by students in particular areas ranging from neuroimaging, pharmacotherapy, genomics, ethics and service research. Students will investigate a particular area of interest through a literature review and specific directed experiences, presenting a capstone project to a scientific audience at the end. Overall supervision will be conducted by the course director.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

PSYC 5460 - CONSULTATION & LIAISON PSYCH

Minimum Credits: 0

Maximum Credits: 0

Four/eight week elective focuses on psychiatric problems in medical and surgical patients. Under the supervision of full-time faculty and chief resident. Respond to requests for psychiatric evaluation of patients on inpatient units. Conducts the clinical evaluation, investigates any ward management difficulties, assesses the role of the patient's family in the clinical problem, makes treatment recommendations and provides appropriate follow-up during the patient's hospital stay. Multi-disciplinary team integrates the biological with psychosocial perspective to achieve view.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5462 - COMBINED PSYCHIATRY AND FAMILY MEDICINE

Minimum Credits: 0

Maximum Credits: 0

This four-week elective focuses on psychiatric and general medical problems in a variety of patients. Student will work on the consultation/liaison service at St. Margaret's hospital where the student will respond to requests from physicians for psychiatric evaluation of patients on inpatient units. The student conducts the clinical evaluation, investigates any ward management difficulties, assesses the role of the patient's family in the clinical problem, makes treatment recommendations and when appropriate does follow up during the patient's hospital stay. The multi-disciplinary team on the service attempts to integrate the biological with the psychosocial perspective to achieve a comprehensive view of patient care. Students will participate in family medicine case conferences, attend outpatient experiences at primary care clinics, participate in palliative care interventions and work on the medical care of the psychiatry patient (MCP) service at WPIC. Learning opportunities include: supervised clinical assessments; hospital rounds; case conferences and seminars. This elective can prepare a student for combined family medicine/psychiatry residency programs.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5465 - COMMUNITY PSYCHIATRY

Minimum Credits: 0

Maximum Credits: 0

This four-week elective intends to teach students how to care for seriously and persistently mentally ill adults and adolescents who are in community-based psychiatric treatment programs. Students will precept with team psychiatrists, get exposure to group and individual therapy, and follow one or two patients for continuing care over the month. Home visits and other community outreach will be an integral part, along with collaboration with a variety of team members and other providers. Students will be involved in case management, treatment teams, and systems liaison (e.g., Assisting patients leave state hospitals and return to the community). The course objectives are: to build basic skills in psychiatric interviewing, assessment, and patient management; to learn how to work with "challenging" clients, situations, and systems; to plan and implement biopsychosocial treatment

plans for patients with psychiatric illnesses; to utilize the resources and skills of related mental health professionals, working collaboratively with multiple disciplines and agencies; to understand how continuity of care can be achieved and how it can help improve patient outcomes; and to learn how the funding of mental health care affects service delivery and patient outcomes.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5468 - INTEGRATED CARE ACROSS THE LIFESPAN

Minimum Credits: 0

Maximum Credits: 0

This elective will provide medical students with clinical experiences at the interface of psychiatric and medical care, focusing on different models of integrating ambulatory behavioral services with primary and specialty medical care. Students will work with interdisciplinary teams that help improve access to care, often at the level of the medical home.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

PSYC 5471 - MAYVIEW STATE HOSPITAL

Minimum Credits: 0

Maximum Credits: 0

Eight week elective at Mayview State Hospital. Become aware of the social and community programs of the chronic mentally ill and participate in the supervised group therapy experience. Participate in ongoing research at Mayview depending on the student's ability and interest. Interview and assessment techniques for psychiatric inpatients. Prescription practice for psychotropic medications. Treatment of non-responsive schizophrenic patient. Drug metabolism, conduct a neurological evaluation of psychotic and depressed individuals.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5481 - ADDICTIONS TREATMENT PROGRAM

Minimum Credits: 0

Maximum Credits: 0

Four/eight week placement providing the opportunity of being included in all aspects of care both in and outpatient, for chemical dependency. Participation and involvement in all medical-psychological aspects; detoxification and rehabilitation, individual, family and group counseling; evaluation/ assessment, treatment planning; working with adult, adolescent, elderly and pregnant patients in various modalities. Function as an integral part of the clinical multi-disciplinary team. Recognize how to avoid prescribing inappropriately for chemically-dependent patients.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5482 - DUAL DIAGNOSIS: MENTAL AND SUBSTANCE ABUSE

Minimum Credits: 0

Maximum Credits: 0

Experience treatment of patients with both mental illness problems and substance abuse problems at the Western psychiatric institute and clinic. Full member of interdisciplinary treatment team as primary therapist for two patients. Some time will be spent at off-site locations within the community.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5483 - ADDICTION MEDICINE AND DUAL DIAGNOSIS

Minimum Credits: 0

Maximum Credits: 0

This elective will provide the student with experiences in addiction medicine and psychiatry, with a special focus on patients with dual diagnosis of substance use and other psychiatric disorders. Various rotation sites will be available including outpatient and inpatient detoxification services, treatment of opiate dependence (including methadone and buprenorphine maintenance programs), individual and group dual diagnosis treatment, and specialized perinatal addiction treatment for pregnant women and women with young children. Optional rotation sites in the HIV clinic and center for liver disease may also be available (depending on availability), as patients with addiction frequently engage in risky behaviors such as needle-sharing or unprotected sex that can lead to transmissible diseases such as HIV and hepatitis. Patients with psychiatry and substance use disorders often have a history of trauma, and thus the student will have ample opportunity to learn how to diagnose post-traumatic stress disorder (PTSD) and deliver trauma-informed care. Evidence-based treatments for addiction will be demonstrated with a special focus on motivational interviewing (MI), a collaborative, patient-centered technique for facilitating behavioral change. Supervision will be provided by medical directors of the various sites. The student participating in this elective will have the opportunity to: 1) assess patients in need of detoxification and provide appropriate treatment; 2) manage opiate dependence utilizing opioid-replacement therapies; 3) perform assessments and intakes on new patients referred for dual diagnosis treatment; 4) observe and interview patients during individual pharmacotherapy management sessions; 5) participate in individual and group dual diagnosis sessions; 6) interact with and provide education to family members when possible; 7) observe and assist with current substance abuse research within the department.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

PSYC 5485 - ADULT INTENSIVE OUTPATIENT PROGRAM

Minimum Credits: 0

Maximum Credits: 0

Elective introduces student to acutely ill psychiatric patients. Partial serves as a step-down for hospitalized patients with a mix of mood and psychotic disorders, frequently with significant comorbidities. Treatment occurs in group, individual and family sessions by multidisciplinary treatment team. Student participates in variety of clinical experiences: running group psychotherapy sessions; carrying small case load of individual patients for individual psychotherapy and pharmacotherapy; conduct family sessions; perform assessments and intakes on new patients; participate in treatment team meetings.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5500 - NEUROBEHAVIORAL PSYCHIATRY

Minimum Credits: 0

Maximum Credits: 0

Four week elective to learn different diagnosis of neuropsychiatric disorders in developmentally disabled population; neurology principles and treatment pertaining to developmental disabilities; behavioral neurology principles and treatment pertaining to developmental disabilities; to work on a treatment team and learn inpatient case formulation and therapeutic management skills. John Merck multiple disabilities program for children/adolescents/adults and their families in and outpatient clinic and community liaison program. Reasons for admission is acute psychiatric symptomatology.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5510 - SLEEP AND ITS DISORDERS

Minimum Credits: 0

Maximum Credits: 0

Eight week elective to provide a basic knowledge of sleep, regulation of a relationship of sleep stages to other physiobiological process; to develop basic skills and apply them to comprehensive assessment of patients with complaints of disturbed sleep. Assist in the evaluation of patients with

disorders. Participate in history taking and in the administration of structured interview to patients and their bed partners. Learn principles and procedures of polysomnography and will participate in the processes of data interpretation, treatment recommendation and formulate a treatment plan.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5520 - BIOLOGICAL RHYTHMS

Minimum Credits: 0

Maximum Credits: 0

Eight week elective in understanding more the interrelationships between the sleep-wake cycle and the circadian rhythms of core body temperature and different neuroendocrine axes; to participate in the evaluation of subjects and patients including history taking and recruitment. Provide as opportunity to learn about polysomnography and clinical neuroendocrinology including hormone assay procedures; participate in data collection and subsequent analysis. Material will be provided; expected to critically review relevant literature. Design a research study.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5531 - WOMEN'S MENTAL HEALTH

Minimum Credits: 0

Maximum Credits: 0

A four week elective that provides students with the opportunity to assess and treat psychiatric disorders in women, both within inpatient and outpatient settings. Students will have the opportunity to assess up to five patients per day. Issues addressed include: pregnancy, postpartum, breast and gynecological oncology as well as other problems such as premenstrual dysphoric disorder and long term care of patients with cancer. Weekly breast or gynecologic conferences and student involvement in special projects are also encouraged.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0

Maximum Credits: 0

An individualized course of study may be arranged with the department of psychiatry to fit the student's needs. The student will meet with a department faculty person to design a clinical course of study for a four-week period of time. A written proposal must be approved by the faculty member as well as the student's scheduling advisor. When approvals have been received, the school registrar will schedule the course and notify the department student coordinator.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5750 - GET READY FOR RESIDENCY BOOT CAMP

Minimum Credits: 0

Maximum Credits: 0

This elective is an intensive preparation for students who are about to enter residency. Students will be provided with a combination of general and specialty-specific, clinically relevant content in a variety of modalities. The focus will be on content that will prepare the student to function at the starting level of an intern (and meet the expected intern-level milestones) after graduation. Teaching modalities will include simulation, small group sessions, skills workshops, standardized patient cases, and a limited number of high-yield lectures.

Academic Career: Medical School

Course Component: Clinical
Grade Component: S/U Basis

PSYC 5890 - CHILD & ADOLSCNT DEPRESSION RES

Minimum Credits: 0

Maximum Credits: 0

Four week elective to understand the manifestations of affective disorder in childhood and adolescence; to learn structured assessment techniques for children axis 1 psychiatric disorders; to become familiar with several different research methodologies used in this population including neuroendocrine and pharmacological of childhood depression and safety side effects. Conduct structured interview of both parent and child with use of techniques appropriate to age and development of child. Formulate a specific treatment plan.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5892 - PSYCHOPHYSIOLOGY

Minimum Credits: 0

Maximum Credits: 0

Eight week elective provides an introduction to basic noninvasive electrophysiobiological techniques and psychophysiobiological responses used to study autonomic nervous system responsivity to psychological influences on physiology and pathophysiology will be taught and basic research. Readings will supplement lab work. Students will successfully collect at least one type of electrophysiobiological data; effectively critique a published article in psychophysiology; design a feasible psychophysiobiological experiment.

Academic Career: Medical School

Course Component: Practicum

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5893 - NEUROPHARMACOLOGY

Minimum Credits: 0

Maximum Credits: 0

Four week elective on various central neurotransmitter systems will be described and their possible role processes will be analyzed in relation to pharmacological effects. Catecholamines, serotonin, GABA, acetylcholine and receptors will be discussed and existing experimental evidence regarding their role. Independently conduct a thorough library search; effectively critique and evaluate published research papers and write a comprehensive document based on a critical literature review.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5894 - PSYCHOPHARMACOLOGY OF MOOD DISORDERS

Minimum Credits: 0

Maximum Credits: 0

Eight week elective that offers the opportunity to conduct lab studies of cell membrane function in patients with mood disorders. Blood components are used to study ion transport phenomena and other aspects of membrane function, and membrane structural components such as phospholipids. Orientation is to ward off the biological foundations of major mood disorders, and the mechanisms underlying the therapeutic actions of psychopharmacological agents; to design an experiment that employs basic lab methods to investigate clinical phenomena; to analyze and interpret data from experiments.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5895 - INDEPENDENT RESEARCH

Minimum Credits: 0

Maximum Credits: 0

Four week interdisciplinary work, combining research and clinical work, involving areas of overlap between psychiatry and other disciplines or institutions, i.e. psychophysiology, behavioral approaches in psychiatry, research design in the treatment of chronic psychiatric disease, research literature and psychopharmacology, neuroendocrinology of major psychiatric disorders, somatopsychiatric factors in human disease.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5896 - LAW AND PSYCHIATRY

Minimum Credits: 0

Maximum Credits: 0

Four week elective to conceptualize issues and perform law medicine consultations in general areas of mental health law, medical ethics and professional responsibility with specific projects on patient's rights, informed consent, medical experimentation, legal guidelines effecting patient care and other areas of medicine where legal, social and ethical issues predominate. An experience as a jail psychiatrist providing psychiatric examination, as an advocate for patient's rights in a state hospital or as a consultant to lawyers at neighborhood legal service could be arranged.

Academic Career: Medical School

Course Component: Internship

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5897 - BEHAVIORAL MEDICINE

Minimum Credits: 0

Maximum Credits: 0

Four week elective aimed at familiarizing the student with theory and practical applications within the programs of one or two of participating faculty members. Techniques include behavioral assessment, nutritional intervention for diabetes and obesity, and interventions for enhancing coping with chronic disease or pain such as relaxation and biofeedback therapy. Develop an assessment and treatment plan for a representative case; conduct a behavioral treatment session of a selected case; critically evaluate the clinical behavioral medicine literature.

Academic Career: Medical School

Course Component: Internship

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5898 - INTRO TO CLINICAL PSYC RESEARCH

Minimum Credits: 0

Maximum Credits: 0

Eight week elective exposure to clinical research projects. Variety of research projects available. Each student will be assigned a faculty mentor or mentors based on his/her particular interests. Current projects involve clinical, biochemical, neuropsychological, neuroanatomic and electrophysiology studies in schizophrenia. Experiences range from "bench-top" lab assays to patient interviewing techniques; data collection, basic computer skills and basic lab skills; basic knowledge of current psychiatric nomenclature and diagnostic instruments.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5899 - INDEPENDENT STUDY

Minimum Credits: 0

Maximum Credits: 0

Four week elective wherein the students are welcome to do an independent study or the possibilities of other studies besides the following ones:

anorexia nervosa and bulimia nervosa; epidemiology of major psychiatric disorders; out patient management of cognitive disorders; outpatient behavioral treatment of neurotic disorders; behavioral techniques in the management of general medicine disease; genetic factors in major psychiatric disorders; outpatient drug and alcohol valid disorders and their management.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

PSYC 5901 - EXTRAMURAL PSYCHIATRY

Minimum Credits: 0

Maximum Credits: 0

A clinical experience in psychiatry may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

PSYC 5903 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 3

This course is intended for the nonmedical graduate student. It provides the opportunity to participate in ongoing clinical or laboratory research under the direction of a departmental faculty preceptor. The student, in collaboration with the faculty member, will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and time table for completing the experience.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Psychology

PSY 2000 - RESEARCH AND THESIS MS DEGREE

Minimum Credits: 1

Maximum Credits: 9

Students who are planning, conducting or completing the master's thesis may register for this course.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: Psychology (PHD)

PSY 2005 - STAT ANAL 1/ADV STATS-UG

Minimum Credits: 3

Maximum Credits: 3

This course is the first of a two course sequence to provide the knowledge and skills needed to plan and conduct analyses using a uniform framework based on the general linear model. Students will learn techniques to conduct a variety of statistical tests; the appropriate interpretation of results will be emphasized. Topics include descriptive statistics, graphing data, sampling distributions, hypothesis testing (including power, effect sizes, and confidence intervals), t-tests, correlations, multiple regression, and polynomial regression. Students use SAS for statistical computations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Psychology (PHD)

PSY 2010 - STATISTICAL ANALYSIS 2

Minimum Credits: 3

Maximum Credits: 3

This is the second of a two-course sequence to provide knowledge and skills needed to plan and conduct analyses using a uniform framework based on the general linear model. Topics covered include one-way and factorial analysis of variance, analysis of covariance, repeated measures and mixed model analysis of variance, mixed model analysis of covariance, outlier detection, and transformations. Students will continue to use SAS for statistical computing.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PSY 2090 - STRUCTURAL EQUATION MODELING

Minimum Credits: 3

Maximum Credits: 3

This course aims to provide a strong foundation in the principles of modern structural equation modeling (SEM), with an emphasis on the applied use of these techniques. The goal is to provide students with a strong set of fundamentals that will allow them to flexibly apply SEM to sophisticatedly answer diverse questions in a wide variety of data. Core topics covered will include conceptual introduction to latent variable models, fundamentals of covariance structure models (e.g., data requirements, identification, etc.), measurement models and confirmatory factor analysis, path analysis, full SEM, multiple group analysis, measurement invariance, and the basics of longitudinal models (e.g., cross-lagged panel designs, growth curve models). Introductions to advanced topics will be offered time permitting (e.g., SEM with categorical data, advanced growth curve modeling, mediation with bootstrapped errors, exploratory structure equation modeling). Examples will draw from the behavioral sciences, mostly psychology. Student evaluation will be based on take-home exercises, quizzes, and a final project. Students are encouraged to work with their advisors to identify suitable data for analysis in their final projects, with a goal of producing a publication ready product at the end of the term. The primary statistical package used in this course will likely be Mplus.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PSY 2110 - TOPICS IN SOCIAL PSYCHOLOGY

Minimum Credits: 3

Maximum Credits: 3

Course focuses on a single topic within social psychology, such as group formation and development, victimization, social comparison, or the self. Choice of topic varies from one instructor to another.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PSY 2111 - FOUNDATIONS OF SOCIAL PSYCHOLOGY

Minimum Credits: 3

Maximum Credits: 3

The goal of this course is to provide graduate students with an overview of theory and research in social psychology. Topics covered include social cognition, social perception, the self, attitudes and attitude change, close relationships, prosocial behavior, aggression, group processes and performance, and stereotyping, prejudice, and discrimination. A seminar format is used, in which students are expected to read and comment on papers, participate actively in class discussions, and write a final paper.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PSY 2130 - INTERPERSONAL RELATIONS

Minimum Credits: 3

Maximum Credits: 3

Survey of theories and empirical research from social psychology and personality relevant to the study of close interpersonal relationships. Topics covered include empathy, altruism, affiliation, aggression, sexuality, and interpersonal power.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PSY 2155 - PSYCHOLOGY OF SMALL GROUPS

Minimum Credits: 3

Maximum Credits: 3

The goal of this course is to provide students with a critical overview of theory and research on intragroup processes. Topics include: group composition and diversity; group structure (e.g., status, power); conflict (e.g., negotiation, justice); conformity and deviance; decision making; creativity and innovation; productivity and team effectiveness; leadership; prejudice and discrimination; social identity; responses to stigmatization; intergroup interaction; and techniques for improving intergroup relations. The course is useful for students in various areas of psychology as well as such disciplines as organizational behavior, sociology, and decision sciences.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PSY 2200 - CLINICAL PSYCH RESEARCH METHODS

Minimum Credits: 3

Maximum Credits: 3

Graduate level examination of major research methods used in clinical psychology.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PSY 2205 - PSYCHOPATHOLOGY

Minimum Credits: 3

Maximum Credits: 3

Provides a critical background in research strategies, phenomena, empirical research, & models of adult psychopathology. Emphasis on etiological & pathological research, with both psychological & biological findings to be discussed. Concentration will be on the major psychopathologies with clinical onset in adulthood, including schizophrenia, affective disorders, anxiety, addictions, & eating disorders. Conceptual & methodological issues that cross diagnostic categories will be stressed. Treatment approaches and differential diagnosis will be covered but not emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PSY 2210 - CLINICAL PROGRAM RESEARCH SEMINAR

Minimum Credits: 1

Maximum Credits: 1

This monthly graduate seminar series serves as an introduction to ongoing research relevant to the field of clinical psychology through research presentations by students and faculty from the clinical psychology program, department of psychology, and other departments.

Academic Career: Graduate

Course Component: Colloquium

Grade Component: Grad SN Basis

PSY 2220 - CLINIC PRACTICUM

Minimum Credits: 1

Maximum Credits: 6

This graduate course involves supervised experience in interviewing, assessment and psychotherapy within the clinical psychology center. This course is open only to graduate students in the clinical psychology program.

Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Psychology (PHD)

PSY 2225 - EXTERNSHIP PRACTICUM

Minimum Credits: 1

Maximum Credits: 6

This graduate course provides the student with supervised experience in a community organization. The placement and number of credits must be approved by the student's program faculty. This course is open only to graduate students in psychology.

Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis
Course Requirements: PLAN: Psychology (PHD)

PSY 2230 - CLINICAL COGNITIVE ASSESSMENT

Minimum Credits: 3

Maximum Credits: 3

This graduate course focuses on the intellectual assessment of adults and children. Following a discussion of the history of theories of intelligence, the major instruments for assessing intellectual functioning will be reviewed, with a focus on the Wechsler Scales. Students will administer, score, and interpret several measures. The communication of assessment results will be emphasized. A brief introduction to the assessment of brain diseases and learning disability will also be provided.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Psychology (PHD)

PSY 2235 - CLIN PSYCHOPATHOLOGY ASSESSMENT

Minimum Credits: 3

Maximum Credits: 3

This graduate course covers psychometric theory and major methods for assessing psychopathology with an emphasis on objective tests such as the MMPI-2 and structured interviews. Both theoretical and practical issues of administration and interpretation are addressed. Open only to graduate students in the clinical psychology program.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PSY 2245 - DEVELOPMENTAL PSYCHOPATHOLOGY

Minimum Credits: 3

Maximum Credits: 3

This graduate course reviews models of social development and considers several theoretical issues with implications for both normal social development and for the emergence of psychopathology. Social experiences that are seen as crucial for normal development or which may set the stage for later problems are discussed. Both theoretical formulations and empirical findings are critically reviewed with an emphasis on attachment, peer relationships and family relationships.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PSY 2250 - PSYCHLGCL TRMNT: SYSTEMS & PRIN

Minimum Credits: 2

Maximum Credits: 2

This graduate course covers the history and systems of psychotherapy, with a particular focus on psychotherapy process and outcome research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PSY 2251 - PSYCHLGCL TRMNT: COGNTV & BEHVRL

Minimum Credits: 2

Maximum Credits: 2

This graduate course covers the history and theoretical foundations of cognitive and behavioral therapies as well as evidence on their effectiveness for a range of psychopathology in adulthood. Students will be exposed to basic principles of operant conditioning, behavioral analysis, counter-conditioning, strategies and case material will be introduced, but the class will focus on critical evaluation of treatment research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PSY 2252 - PSYCHLGCL TRMNT: BEHVRL MEDICINE

Minimum Credits: 2

Maximum Credits: 2

This graduate course examines history and current status of psychological therapies designed for health risk prevention and management of physical disease. Areas emphasized are risk factor modification, secondary prevention/rehabilitation, coping with medical illness and procedures, and community/public health interventions. Critical evaluation of research on these topics will be stressed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PSY 2253 - PSYCHLGCL TRMNT:FAMILIES & CHILD

Minimum Credits: 2

Maximum Credits: 2

This graduate course provides an overview of family systems theory and family interventions with children. The history and conceptual underpinnings of family systems approaches will be introduced along with a background in normal family development. Specific orientations, including structural, functional/behavioral, and strategic approaches will also be presented.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PSY 2280 - ETHICS AND PROFESSIONAL ISSUES 1

Minimum Credits: 1

Maximum Credits: 1

This course introduces first-year clinical students to some of the core issues in professional psychology, including an overview of ethics and diversity issues and some orientation to the clinic and the team process. The largest part of the course will be devoted to the development of fundamental clinical skills.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PSY 2281 - ETHICS AND PROFESSIONAL ISSUES 2

Minimum Credits: 1

Maximum Credits: 1

This course provides information for first-year clinical students regarding core issues in professional psychology, including a series of lectures on psychopharmacology, followed by a summary of process research in psychotherapy. There will be additional presentations in the areas of ethics, diversity, and several empirically supported treatment models. This course will be offered annually in the summer term.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Psychology (PHD)

PSY 2282 - ETHICS AND PROFESSIONAL ISSUES 3

Minimum Credits: 1

Maximum Credits: 1

This course addresses a number of topics of relevance for second-year clinical students, including ethics and diversity, as well as information regarding specific empirically supported treatment models and more general therapy techniques, such as relaxation skills training and emotional self-regulation. This course will be offered each year in the fall term.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Psychology (PHD)

PSY 2310 - FOUNDS: DEVELM PSYCHOLOGY

Minimum Credits: 3

Maximum Credits: 3

A survey of theories and current research problems in developmental psychology.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PSY 2315 - DVLPMNTL PSYCH: INFANCY

Minimum Credits: 3

Maximum Credits: 3

This course will focus on the development of basic cognitive processes such as sensation, perception, memory, and thought during the first 18 months of life.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PLAN: Psychology (PHD)

PSY 2325 - DVLPMNTL PSY: SOCIAL DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

This course covers the central theory and research concerning social and emotional development. Topics covered include: interpersonal relations with peers and family; aggression and pro-social behavior; sex-role development and moral development.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis

PSY 2330 - DEVELM PSYCH: COGNITV DEVELP

Minimum Credits: 3

Maximum Credits: 3

This course examines children's cognitive development in areas such as perception, language, memory and learning skills. Several theoretical perspectives, including Piagetian theory and the information-processing approach are discussed.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PSY 2335 - DEVELOPMENTAL PSYCHOLOGY: SOCIAL-COGNITIVE DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

A survey of recent research problems and techniques in the development of perception with an emphasis on theoretical controversies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PSY 2376 - TOPICS SEMINAR IN DEVELOPMENTAL PSYCHOLOGY

Minimum Credits: 2

Maximum Credits: 3

This seminar will vary from term to term. It is designed to offer a graduate level seminar in specialized topics in developmental psychology.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

PSY 2402 - COGNITIVE PROGRAM RESEARCH SEMINAR

Minimum Credits: 1

Maximum Credits: 1

This series of presentations serves as an introduction to ongoing research relevant to the field of cognitive psychology. Presentations are made by graduate students and faculty of the cognitive psychology program, the department of psychology, and other departments.

Academic Career: Graduate

Course Component: Colloquium

Grade Component: Grad SN Basis

PSY 2410 - FOUNDATIONS OF COGNITIVE PSYCHOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course will introduce core issues, theories, and experimental findings in cognitive psychology. Topics to be covered include history of cognitive psychology, sensory perception, attention, memory, imagery, language, reasoning, learning and expertise, problem solving, decision making, and individual differences in cognition. The goal is to understand foundational theories and issues as well as the research methods used in this area, in other words, how human cognition can be studied scientifically, and why the results of experimental investigations support particular theories.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PSY 2470 - HUMAN COGNITION: SKILL ACQUISITION

Minimum Credits: 3

Maximum Credits: 3

A course in the human cognition graduate core sequence dealing with the learning of cognitive skills, such as technical job skills and professional problem solving skills. Emphasis is on the acquisition of facility, the nature of effective practice, and the representation of knowledge that contributes to skilled performance.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PSY 2471 - MAPPING HUMAN BRAIN CONNECTIVITY TECHNOLOGY BASIC RESEARCH AND CLINICAL APPLICATIONS

Minimum Credits: 3

Maximum Credits: 3

This course covers use of a novel Pittsburgh developed High Definition Fiber Tracking (HDFT) technology providing human brain connectivity with unprecedented fidelity. The technology maps a million streamlines (0.1mm diameters sets of axons) per person providing 93 miles of tracts within the head involving 40 tracts connecting 170 brain areas. We can follow tracts from source to destination mapping projection fields with high accuracy. The fibers can be visualized and quantified providing circuit diagrams of cortical networks. These techniques will advance the study of brain systems, disorders, development, neuropathology, and neurosurgery. Students will perform projects individually or in groups analyzing collected data or developing new analysis or biomedical methods. Students can do projects that are cognitive neuroscience studies of a brain system or technical development of new methods. Sample projects might include mapping a sensory system, developmental assessment or automated brain segmentation and circuit tracing and detection of clinical anomalies (e.g., TBI breaks, tumors). Technical projects might involve better fiber reconstruction, tracking, tract segmentation or developing new visualization or statistical projects. Students must have some statistics and research experience/course work and consent of the instructor.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PSY 2475 - BEHAVIORAL NEUROSCIENCE

Minimum Credits: 3

Maximum Credits: 3

This course will explore the links between behavior (normal and abnormal) and the brain. Cognitive and affective processes will be emphasized. Throughout the course, students will be exposed to research involving humans and animals at a variety of levels: e.g., Analysis of behavior, neuroimaging studies of whole brain activity, recordings from single brain cells, examinations of brain chemistry, and manipulations and study of genetic information. No prior knowledge of biology or neuroscience is required. The format of the course will include both lectures and discussions of scientific papers. The lectures will introduce basic facts and methods of cognitive, systems, cellular, and molecular neuroscience, and they will provide overviews of topics in cognitive and affective neuroscience, considering both normal and clinically-impaired behavior and brain function. The readings will provide an opportunity to consider different methods in the context of the primary literature, permit selected topics to be explored in greater depth, and provide a foundation for self-exploration and evaluation of cognitive and affective neuroscience literatures.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PSY 2476 - TOPICS SEMINAR IN COGNITIVE PSYCHOLOGY

Minimum Credits: 1

Maximum Credits: 4

This seminar will vary from term to term. It is designed to offer a graduate level seminar in specialized topics in cognitive psychology.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

PSY 2477 - DESIGN OF EDUCATIONAL SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

Students will work in teams to enact an innovative educational design process with real projects and real clients. The educational systems being (re)designed may include a museum exhibit, a high school robotics unit, a college lab course, or a professional development sequence for mathematics teachers. Throughout the process we will be learning about and addressing constraints from (1) organizational and policy contexts; (2) learning sciences; and (3) disciplinary content. The course will be interdisciplinary in that it will draw students with diverse backgrounds to form the design teams.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PSY 2502 - HEALTH FUNDAMENTALS

Minimum Credits: 3

Maximum Credits: 3

This is a 3-credit proseminar intended for graduate trainees in biological and health psychology. Key conceptual and methodological issues in several major areas of concentration will be presented and discussed in a seminar format, in the context of current research. Requirements include active class discussion, brief presentations, and several papers involving summary and critique of current issues in each area of concentration. Areas of concentration will include cardiovascular behavioral medicine, psychoneuroimmunology and behavioral oncology, addictions and health behavior, and health cognition.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PSY 2505 - HEALTH PROGRAM RESEARCH SEMINAR

Minimum Credits: 1

Maximum Credits: 1

Review of current research and topics in biopsychology.

Academic Career: Graduate

Course Component: Colloquium

Grade Component: Grad SN Basis

PSY 2520 - PSYCHONEUROIMMUNOLOGY

Minimum Credits: 3

Maximum Credits: 3

The course provides a general background in the new interdisciplinary area of research dealing with effects of physical and psychological stress on the ability of the immune system to withstand illness and disease. Emphasis is on experimental studies which demonstrate ways in which environmental factors alter immunocompetence of animals and humans and on neural and endocrine factors that may mediate such effects. The possible significance of nervous system immune system interactions for development of disease states such as cancer is discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PSY 2560 - HUMAN CARDIOVSLR PSYCHPHYSLGY

Minimum Credits: 3

Maximum Credits: 3

Cardiovascular psychophysiology examines the influence of psychological processes on cardiovascular function. The course examines evidence supporting three perspectives on psychological processes related to cardiovascular function; a stress-arousal perspective, an information processing perspective and a metabolic need perspective.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PSY 2575 - TOPICS IN PSYCHOLOGY

Minimum Credits: 3

Maximum Credits: 3

This seminar will vary from term to term. It is designed to offer a graduate level seminar in specialized topics in psychology.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PSY 2576 - TOPICS SEMINAR IN HEALTH PSYCH

Minimum Credits: 2

Maximum Credits: 3

This seminar will vary from term to term. It is designed to offer a graduate level seminar in specialized topics in biopsychology.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

PSY 2945 - PSYCHOLINGUISTICS

Minimum Credits: 3

Maximum Credits: 3

This course is a general introduction to psycholinguistics, which will look at processes of language understanding, language production, and language acquisition. Throughout the course, we will consider the relationship between theoretical linguistic concepts and constructs, and psycholinguistic data. We will also touch on related areas, such as processes of reading, language and the brain, and language and thought.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PSY 2970 - TEACHING OF PSYCHOLOGY

Minimum Credits: 1

Maximum Credits: 3

This course is required of all graduate students fulfilling the departmental teaching requirement. This requirement involves full responsibility for teaching an undergraduate course in psychology during one term.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Psychology (PHD)

PSY 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 9

Independent research project developed under the supervision of a faculty advisor.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

Course Requirements: PLAN: Psychology (PHD)

PSY 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1

Maximum Credits: 9

Students who are planning, conducting or completing the Ph.D. dissertation may register for this course.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PLAN: Psychology (PHD)

PSY 3205 - SEMINAR IN BEHAVIOR GENETICS

Minimum Credits: 3

Maximum Credits: 3

This is a survey of recent topics in the field of experimental psychopathology.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PSY 3245 - SEMINAR IN ADDICTION

Minimum Credits: 3

Maximum Credits: 3

This seminar will examine research literature on alcohol use and abuse. A guiding principle in this course is that alcoholism is a heterogeneous disorder that is multiply determined. Both genetic and environmental factors contribute to its etiology. A second point of emphasis in this course is that understanding drinking and alcoholism is advanced through the study of basic psychological processes. Although the course will focus on alcohol, some of the material will be drawn from, or relevant to, other substances of abuse. The field of alcohol research is vast and this course will focus on aspects of particular psychological relevance, with an emphasis on human research. Seminar topics will range from acute effects of alcohol in social drinkers to issues related to prevention and treatment of alcoholism. Although the course will include clinical topics, it will not be a clinical

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PSY 3290 - RESEARCH CHILD PSYCHOPATHOLOGY

Minimum Credits: 3

Maximum Credits: 3

This seminar focuses on major research problems in the field of child psychopathology. Issues of classification, differential diagnosis, course, and outcome of disorder are addressed. Particular disorders are used to illustrate the issues, trends and methodological problems which characterize current research in child psychopathology. These include attention deficit disorder, conduct disorder, childhood depression and anxiety disorders.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PSY 3902 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

Specific research topics carried out under the direction of a particular member of the faculty.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Psychology (PHD)

Psychology in Education

PSYED 2001 - INTRODUCTION TO RESEARCH METHODOLOGY

Minimum Credits: 3

Maximum Credits: 3

Introduces basic language and concepts of empirical research with emphasis on the applicability of research methodology (statistics, measurement, design, and evaluation) for improvement of professional practice in education.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PSYED 2003 - REFLECTIVE CONSULTATION

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad SN Basis

PSYED 2005 - INFANT DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PSYED 2006 - INFANT MENTAL HEALTH INTERVENTIONS I

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PSYED 2007 - FOUNDATIONS OF INFANT MENTAL HEALTH 1

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PSYED 2008 - FOUNDATIONS OF INFANT MENTAL HEALTH 2

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PSYED 2009 - INFANT MENTAL HEALTH INTERVENTIONS 2

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PSYED 2018 - STATISTICS 1: DESCRIPTIVE AND INFERENTIAL STATISTICS

Minimum Credits: 3

Maximum Credits: 3

Introduction to descriptive and inferential statistics. Topics include frequency distributions, graphs, stem-and-leaf displays, boxplots, scatter diagrams, measures of central tendency, measures of variability, correlation, sampling distributions, point estimation, introduction to hypothesis testing, introduction to interval estimations, chi-square analysis, one-sample and two-sample tests of hypothesis for means, variances, proportions, and correlation coefficients.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PSYED 2019 - STATISTICS 2: ANALYSIS OF VARIANCE

Minimum Credits: 3

Maximum Credits: 3

Topics include one- and two-way analysis of variance, multiple comparisons for main effects and interactions, analysis of covariance, multiple comparisons for adjusted means, randomized block designs, nested designs, repeated measures designs, non-orthogonal designs and linear regression. SPSS for Windows will be used.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: PSYED 2018

PSYED 2024 - FAMILY DYNAMICS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PSYED 2030 - EXPERIMENTAL DESIGN

Minimum Credits: 3

Maximum Credits: 3

Topics include characteristics of experimental research, steps for implementing an experiment, internal and external validity, classification of experimental designs, and design techniques such as random sampling, random assignment, blocking, analysis of covariance, and gain scores.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: PSYED 2019

PSYED 2072 - EDUCATIONAL AND PSYCHOLOGICAL MEASUREMENT

Minimum Credits: 3

Maximum Credits: 3

Introduction to basic principles of measurement and a survey of educational and psychological testing. Topics include the role of testing in decision-making, proper and improper uses of tests, test score interpretations (norm-referencing and criterion-referencing), ascertaining the validity and reliability of test scores and interpretations, classroom assessment and item analysis, and an overview of the different types of tests: standardized achievement and ability tests, intelligence tests, personality tests, and other non-cognitive tests (e.g. attitude surveys, interest inventories).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: PSYED 2001 and (2014 or 2018)

PSYED 2073 - CONSTR ACHIEV/ABILITY TESTS

Minimum Credits: 3

Maximum Credits: 3

A basic course in the construction of measures of cognitive achievement and ability. Topics include test planning, item writing, test tryout, item analysis, reliability, validity, criterion-referencing, norm-referencing, item banking, and aptitude test design. Students write items, critique items written by others, construct tests, try out and revise tests, and develop test manuals to document the process of test development and the quality of their tests.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: PSYED 2072

PSYED 2113 - DEVELOPMENTAL PSYCHOPATHOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course examines emotional and behavioral disorders of childhood and adolescence in terms of current conceptual models. Through an examination of current prevention, treatment, and intervention research, students develop an understanding of problems as well as principles of prevention, treatment and intervention. The format includes lectures film illustrations, small group exercises, and case-based learning.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PSYED 2127 - HUMAN LEARNING

Minimum Credits: 3

Maximum Credits: 3

Presents students with an understanding of various learning theories and their application in a wide variety of settings. Consideration is given to current research focusing on biological aspects of learning, classical and operant conditioning, social cognitive theory, information processing and selected cognitive concepts in learning.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PSYED 2141 - CHILD AND YOUTH WORK 1 - INTRODUCTION

Minimum Credits: 3

Maximum Credits: 3

This course introduces contemporary issues in the vibrant and growing field of positive youth development. Our developmental-ecological perspective emphasizes both individual growth and the impact of systems on children and youth. Class topics include: settings where child and youth development occurs (e.g. community-based programs, religious and cultural institutions, residential treatment); the impact of popular media, social media, and other technology on youth development; and issues of diversity and privilege. We investigate efforts to support the development of thriving and other positive outcomes, as well as traditional prevention approaches. The course is benchmarked to the child and youth work competencies of the North American competency project and to the certification program of the child and youth care certification board, inc.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PSYED 2143 - CHILD AND YOUTH DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

This course expands and deepens on themes introduced in Child and Youth Work I. Topics include the challenges of ecological approaches to learning and development; the roles of decision-makers at multiple levels (government, program directors, youth workers, youth themselves); and the benefits and challenges of youth-adult partnership approaches to child and youth work.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PSYED 2197 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 6

Independent study for students in psychology in education.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

PSYED 2198 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 3

Student pursues study of various topics under the direction of faculty.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

PSYED 2233 - COMMUNITY-BASED ACTION RESEARCH 1

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PSYED 2234 - COMMUNITY-BASED ACTION RESEARCH 2

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PSYED 2261 - ADOLESCENT DEVELOPMENT 1

Minimum Credits: 1

Maximum Credits: 1

The adolescent development course sequence for teacher education students covers developmental pathways from middle childhood through adolescence across multiple contexts (e.g. Individual, family, peers, school, community, and cultural) and the important considerations and relationships in these contexts. This first course in the sequence for teacher education students focuses on the importance of and considerations for forming authentic, meaningful relationships with all adolescents and the vital role such relationships play in promoting positive outcomes. Students will learn about developmental theories and concepts that are important in forming such relationships and will apply the concepts in their work with adolescents in educational settings. Key developmental tasks for adolescents are introduced in the context of understanding adolescent thinking and behavior. In addition to reading about development from a variety of sources, students will have the opportunity to apply the new information in their practice settings.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PSYED 2262 - ADOLESCENT DEVELOPMENT 2

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Instruction and Learning (MAT, MED, MA, or ND)

PSYED 2263 - ADOLESCENT DEVELOPMENT 3

Minimum Credits: 1

Maximum Credits: 1

The adolescent development course sequence for teacher education students covers developmental pathways from middle childhood through adolescence across multiple contexts (e.g. individual, family, peers, school, community, and cultural) and the important considerations and relationships in these contexts. This class is the third course in the sequence for teacher education students. The course focuses on the nature and types of atypical development, especially as they relate to educational settings. Topics covered include learning, emotional, developmental, and

behavioral disabilities, as well as psychological difficulties, with a continuing focus on the importance of positive relationships and the particularly vital role such relationships play in promoting positive outcomes for youth with disabilities. Students will learn about the ways in which 'typical' development is impacted by a disability and the potential implications of these impacts on adolescents' educational, social, and psychological functioning and development. Using a developmental framework, students will analyze and evaluate current interventions and/or teaching methods and apply knowledge of development to improve these approaches. Students will have the opportunity to apply the concepts in their work with adolescents in applied settings

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PSYED 2265 - ATTENTIONAL TEACHING PRACTICES 1

Minimum Credits: 1

Maximum Credits: 1

Attentional teaching practices (ATP) aims to train pre-service teachers to cultivate a safe psychological space for learning, so students can make the greatest academic gains possible. In ATP I, preservice teachers will (1) learn to recognize the psychological dynamics that occur in classrooms and that may enhance the effectiveness of instruction, will (2) learn principles of adolescent development to improve their ability understand adolescent perspectives, and will (3) begin to build a toolbox of strategies to improve their psychological competence.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

PSYED 2266 - ATTENTIONAL TEACHING PRACTICES 2

Minimum Credits: 1

Maximum Credits: 1

Attention teaching practices (ATP) aims to train pre-service teachers to cultivate a safe psychological space for learning, so students can make the greatest academic gains possible. In APT II, preservice teachers will (1) learn how to shift the psychological dynamics in the classroom when needed, will (2) practice interacting with adolescents in ways that build on knowledge of adolescent development, and will (3) continue to strengthen their toolbox of strategies to improve their psychological competence.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

PSYED 2316 - ADP PROFESSIONAL SEMINAR 1

Minimum Credits: 1

Maximum Credits: 1

This course, taken concurrently with Community-Cased Practice Learning I, engages students across all specializations in their practice learning placements. The ADP professional seminar will develop students' sense of identity as an applied developmental scientist and will help them to actively develop professional ethics and standards in this process. As part of the ADP professional seminar, students will collaborate with faculty, agency supervisor, and master student colleagues to progress with completion of the master's written capstone project.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PSYED 2317 - ADP PROFESSIONAL SEMINAR 2

Minimum Credits: 1

Maximum Credits: 1

This course, taken concurrently with community-based practice learning ii, engages students across all specializations in their practice learning placements. The ADP professional seminar will develop students' sense of identity as an applied developmental scientist and will help them to actively develop professional ethics and standards in this process. As part of the ADP professional seminar, students will collaborate with faculty, agency supervisor, and master student colleagues to progress with completion of the master's written capstone project.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

PSYED 2349 - CHILD LIFE PRACTICE IN HOSPITALS

Minimum Credits: 3
Maximum Credits: 3

This seminar identifies important concepts and practices to working as child life specialists in medical/hospital settings. Given the complex interdisciplinary nature of the child life specialist's role, and the need for ongoing consultation and collaboration with a variety of professionals involved in a child's care, this course will cover a range of practical and professional topics. These topics include family coping strategies, hospital policies and practices (e.g. charting, notes, supervision, etc.), death and dying, medical terminology, and interdisciplinary consultation and communication. Students will gain an understanding of the theories and concepts underlying practices, the necessary and important day-to-day practices in hospital settings, and strategies for successful collaborations with medical professionals.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PSYED 2410 - APPLIED REGRESSION ANALYSIS

Minimum Credits: 3
Maximum Credits: 3

Study of topics related to simple and multiple linear regression, including model specification and assumptions, methods of estimation, significance tests of model parameters and various types of multiple regression and predictor-selection techniques. The relationship of partial and semi partial correlation to regression is covered as well as the use of interaction terms and dummy variables in regression. SPSS and SAS are used to illustrate the correct interpretation of regression results.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PSYED 2416 - APPLIED MULTIVARIATE ANALYSIS

Minimum Credits: 3
Maximum Credits: 3

This course will emphasize understanding, implementation, and interpretation of multivariate statistical methods. The course will involve both lecture and lab work. These methods are manova, mancova, profile analysis, doubly manova, discriminant function analysis, logistic regression, principal components and factor analysis. SPSS will be emphasized with an introduction to SAS.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: PSYED 2410 and 2422

PSYED 2422 - DATA ANALYSIS USING COMPUTER PACKAGES

Minimum Credits: 3
Maximum Credits: 3

Introductory course in using SPSS and SAS for data analysis. The course focuses on quantitative methods where specific attributes or variables are measured according to different scales of measurement. Statistical procedures are then applied to study relationships between the variables. The course addresses all stages to data analysis: reviewing research questions and identifying variables of interest; reviewing protocols used to collect data; coding data and creating data codebooks; reading data, screening data, transforming data, and performing file manipulations; and analyzing data using descriptive and basic inferential methods.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: PSYED 2001 and (2014 or 2018)

PSYED 2490 - SUPERVISED RESEARCH IN APPLIED DEVELOPMENTAL PSYCHOLOGY

Minimum Credits: 1

Maximum Credits: 18

The student demonstrates ability to apply research skills by planning and completing a research project under direction of an appropriate faculty member.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

PSYED 2491 - SUPERVISED RESEARCH IN RES METH

Minimum Credits: 1

Maximum Credits: 9

The student demonstrates ability to apply research skills by planning and completing a research project under the guidance of an appropriate faculty member.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

PSYED 2494 - M.A. PROJECT IN RSRCH METHODLOGY

Minimum Credits: 1

Maximum Credits: 9

Student prepares a library-based research paper that reviews, organizes, synthesizes, and critiques previously conducted research and scholarly discussion pertaining to quantitative research methodological issues and/or techniques in the areas of statistics, research design, and/or measurement.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

PSYED 2498 - DIRECTED STUDY IN RES METH

Minimum Credits: 1

Maximum Credits: 3

Student pursues study of various topics under the direction of faculty.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

PSYED 2499 - THESIS RES IN RSRCH METHODOLOGY

Minimum Credits: 1

Maximum Credits: 9

Under the guidance of the thesis advisor, the student plans and completes a theoretical or empirical study on a quantitative research methodology topic and prepares a thesis in the form stipulated in the university style and form manual.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

PSYED 2503 - DEVELOPMENT: CONCEPTION THROUGH EARLY CHILDHOOD

Minimum Credits: 3

Maximum Credits: 3

Focuses on developmental pathways from conception through early childhood within contexts of family, daycare/school, community and culture. Pathways are considered with regard to developmental changes in transactions between individuals and social life conditions, with focus on patterns of change in participation in social-cultural practices. Besides a review of current literature, students will be engaged in qualitative investigations of the social lives of young children.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

PSYED 2504 - DVLP: MIDDLE CHLHD/ADOLESCENCE

Minimum Credits: 3

Maximum Credits: 3

You will be teaching adolescents, or youth ages 11 - 18 years old. How your students think, feel, and experience the world around them will be unique to their own life histories and perspectives, but developmental psychology can provide some helpful insights into typical and normal thoughts, feelings and experiences during adolescence. This hybrid course (focuses on the cognitive, social, and biological changes from middle childhood, youth ages 6 - 10 years old through adolescence within the contexts of family, peers, community, school, and culture. Assignments will focus on observing in your field placements and applying theory to practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Psychology in Education (MS or PHD)

PSYED 2510 - ASSESSMENT OF CHILDREN'S DEVELOPMENT IN REAL WORLD CONTEXTS

Minimum Credits: 3

Maximum Credits: 3

The course is intended for interdisciplinary graduate students (masters and doctoral) from such programs as applied developmental psychology, developmental psychology, social work, early childhood special education, health and rehabilitation sciences, and nursing. The course content and applied group activities will help prepare graduate students as emerging leaders to understand 'best practices' in the measurement of both children's development and the quality and impact of services and interventions that are applied to them and to their families. These 'best practices' are both professionally sanctioned by the major national early childhood professional organizations and many also have a research evidence-base that supports their use. Thus, this course will help students to understand and use various applied assessment strategies that can: (1) describe the development and progress of children (birth to adulthood) and families in functional ways; (2) sensitively monitor children's progress in intervention programs; (3) be applied by teachers and other direct care professionals; (4) collect evidence of children's daily functioning in natural everyday settings; (5) be selected to conduct applied program evaluation research for schools, agencies, and human service programs; and (6) document the impact and outcomes of intervention programs. The course will help students who are interventionists, but is not primarily clinical in orientation. Rather, it is designed to prepare future leaders-researchers, program administrators, program evaluators, and policy specialists-in best practices and their implications. It is a required course in the ADP MS course sequence.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PSYED 2519 - QUALITATIVE METHODS: PARTICIPANT OBSERVATION

Minimum Credits: 3

Maximum Credits: 3

This research methods course introduces one of the main methods of qualitative research participant observation. Special attention is paid to the naturalistic study of child and youth development in context. Students will gain competence in key areas of ethnographic research including: establishing access to a site, writing ethnographic field notes capable of supporting rigorous research, articulating research questions, determining a unit of analysis, developing conceptual categories, coding, and writing up findings. Students conduct seven weeks of fieldwork in order to complete a pilot study of their choosing. Please note that the use of data analysis software such as NVIVO and ALTAS/TI is not permitted.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PSYED 2520 - INTRODUCTION TO COUNSELING

Minimum Credits: 3

Maximum Credits: 3

This course will include theoretical models of counseling; units on crisis intervention, family support and intervention, home based models of support and intervention, the reflective practitioner; and counseling skills for child and youth care practice.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PSYED 2521 - THEORY, MEANING AND PRACTICE OF PLAY AND ACTIVITY

Minimum Credits: 3

Maximum Credits: 3

This course provides a comprehensive overview of the role of play and activity in human development, with a particular focus on ways of utilizing play and activity to promote positive growth in social, emotional, physical, and cognitive domains; and on interpreting the meaning of individual and group play and activity. Play and activity in the lives of persons of all ages will be considered with some emphasis on the early and school years.

While academic learning is essential in this course, the focus will be on hands-on, real play as the ideal way to learn about it, and encouragement of a life-long playful spirit.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PSYED 2524 - BEHAVIORAL ASSESSMENT AND INTERVENTION

Minimum Credits: 3

Maximum Credits: 3

This course helps graduate students respond to the needs of K-12 students with emotional and behavioral problems in school settings. These problems include disruptive, oppositional and aggressive behaviors, limited interpersonal and study skills, and behaviors caused by learning difficulties, mental illness and stressful life events. The emphasis of the course is on research-based positive behavioral supports and interventions. In addition, students learn consulting strategies to assist those who teach challenging youth.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PSYED 2530 - APPLIED DEVELOPMENTAL PSYCHOLOGY (ADP): PROFESSIONAL IDENTITY AND LEADERSHIP

Minimum Credits: 3

Maximum Credits: 3

The purpose of this course is to introduce the field of applied developmental psychology (ADP). This course focuses on helping students to develop a professional identity, ethical reasoning skills, and leadership skills that align with ADP. Students will gain knowledge of the overall field, reading an advanced textbook and related literature, while getting to know how developmental thinking is being applied in our local community of practice.

Attention will focus on the relations and partnerships that are necessary for the development, implementation, and evaluation of programs and policies that effectively support the positive biopsychosocial & spiritual development of children and youth in contexts of their families, schools and communities. The course introduces students to local experts who apply developmental thinking in different systems of practice, including education, juvenile justice, child welfare, and behavioral health. In this process, students will frame their own professional development, considering their goals in relation to needed competencies and opportunities in the field, and think critically about ethical principles and their applications.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PSYED 2532 - PSYCHOSOCIAL ASPECTS OF ILLNESS

Minimum Credits: 3

Maximum Credits: 3

This course is designed to enable students to understand the nature of and dynamics of pediatric illness, appreciate the impact an acute or prolonged health care experience may have upon children throughout the developmental process, better understand a family health care philosophy and gain an understanding of the multi-faceted role child life specialists play in today's health care environment.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

PSYED 2538 - ADVANCED COUNSELING SKILLS

Minimum Credits: 3

Maximum Credits: 3

Course will teach indirect communication techniques, methods for dealing with secondary gains, methods to help clients develop a sense of empowerment and the therapeutic use of visual imagery. The course will emphasize hands-on practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: PSYED 2520

PSYED 2540 - METHODS AND PRACTICES OF ADP RESEARCH

Minimum Credits: 3

Maximum Credits: 3

This course is designed to introduce students to ways of thinking like an applied developmental psychologist. This class teaches the fundamentals of how to investigate applied developmental questions, from how to read scholarly articles, why and how to connect research and practice, and how to begin to explore questions relevant to both students' own specific applied developmental interests and the field at large. To these ends students will study text on how to think and know in ADP, as well as participate in activities to develop practical investigative skills.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Psychology in Education (MA or MS or PHD)

PSYED 2542 - EVIDENCE-BASED INTERVENTIONS IN REAL WORLD CONTEXTS I

Minimum Credits: 3

Maximum Credits: 3

Evidence-based interventions (EBIS) are the foundation of effective and high-quality prevention and intervention programs in education, human services, and healthcare. Both pre-service and continuing education of interdisciplinary professionals must emphasize the acquisition of knowledge and applied competencies about diverse ebis in this continuously evolving area. Many forms of prevention and intervention are used in education, human services, and healthcare, but few such practices have 'practice-based evidence' conducted in real-world settings which validate their continued use. Thus, in this course, students will gain knowledge and skills in evidence-based contextual and individual interventions, their content, methodology, implementation, and evaluation. The course will help students who are interventionists but is not primarily clinical in orientation. Rather, it is designed to prepare future leaders ' practitioners, researchers, program administrators/directors, program evaluators, and policy specialists - in best practices and their implications.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PSYED 2543 - EVIDENCE-BASED INTERVENTIONS IN REAL WORLD CONTEXTS 2

Minimum Credits: 3

Maximum Credits: 3

Evidence-based interventions (EBIS) are the foundation of effective and high-quality prevention and intervention programs in education, human services, and healthcare. In this second part of a 2-course sequence, students will: learn about and apply qualitative and quantitative data-based decision-making techniques and measures to collect evidence of child/youth daily performance and to assess the dimensions of various home, school, and community contexts which hinder or promote progress; create EBI plans for individuals and groups to promote progress in real-world settings; apply a short-term EBI in a real-life case situation; and evaluate the quality, impact, or outcomes of the data-based decision making methods and process.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PSYED 2557 - COGNITIVE-BEHAVIOR THERAPY

Minimum Credits: 3

Maximum Credits: 3

This course introduces the theory and practices of cognitive-behavioral therapy (CBT) to help students develop a basic therapeutic skill set. The CBT approach applies to a variety of clinical problems and practice settings. CBT is a flexible approach and is used in diverse settings such as inpatient, outpatient and partial hospital programs as well as in schools and community-based programs. Students will learn about how CBT may be used to address issues such as depression, anxiety, attention-deficit/ hyperactivity disorder, and other emotional and behavioral disorders. In addition to clinical practice, many people find the principles of the cognitive-behavioral model useful in maintaining a healthy emotional outlook in their own lives. This course will emphasize both theory and practice of cognitive-behavioral skills.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PSYED 2560 - PROFESSIONAL SEMINAR IN SCHOOL-BASED BEHAVIORAL HEALTH

Minimum Credits: 3

Maximum Credits: 3

This course addresses critical contemporary issues in designing, implementing, and evaluating school-based behavioral health programs and services. Through a partnership with experienced mentors practicing in the field of school-based behavioral health, students will create new resources that reflect best practices. Using in-class and on-line discussions, problem-based learning, and simulations, students will explore real-life situations they are likely to encounter in future supervisory and administrative positions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PSYED 2562 - PLAY THERAPY AND FIELD WORK

Minimum Credits: 3

Maximum Credits: 3

Supervised experience in direct interaction with children on an individual basis in play interviews with concomitant consideration of children's developmental dynamics as revealed in a one-to-one relationship. An ongoing weekly seminar is a part of the course.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

PSYED 2565 - PROGRAM DESIGN AND EVALUATION

Minimum Credits: 3

Maximum Credits: 3

An integration of child development theory and research in the design of programs for children, youth, and families. Focus is on skills in designing developmentally appropriate and interventive programs, structure of service models, and program evaluation. The major paper for the graduate program will be part of this course's requirements.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: PSYED 2540

PSYED 2567 - PROFESSIONAL LEADERSHIP

Minimum Credits: 3

Maximum Credits: 3

Professional leadership focuses on empowering practitioners in applied developmental psychology, education, and related human service professions to use a knowledge base to recognize and develop their leadership potential, to identify and solve professional problems and issues, and to have the knowledge background, thinking, and practical skills to enable them to function in leadership positions. The course will be divided into three sections designed to address specific areas pertinent to leadership: leadership theory, leadership thinking, and leadership applications. Applications include effective personal presentation and specific leadership skills, such as strategic planning, marketing, and grantsmanship.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

PSYED 2588 - SPECIAL TOPICS

Minimum Credits: 3
Maximum Credits: 3

This advanced course focuses on selected topical areas of special importance for child care and child development. Each time it is offered a different topic is addressed from theoretical, research, intervention, and professional practice perspectives.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PSYED 2590 - MASTER'S RESEARCH TEAM

Minimum Credits: 1
Maximum Credits: 1

This weekly course is designed for students who are pursuing a research project as their option for their master's program. Topics include discussions and hands-on support for how to design, conduct and write-up results for a research project.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad SN Basis

PSYED 2596 - INTERNSHIP IN APPLIED DEVELOPMENTAL PSYCHOLOGY

Minimum Credits: 1
Maximum Credits: 6

A university-approved agency based supervised internship in developmental/interventive practice with and/or for children, youth and families.

Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad HSU Basis

PSYED 2598 - DIRECTED STUDY

Minimum Credits: 1
Maximum Credits: 6

Directed study provides an opportunity for focused work with faculty supervision. The student must present a plan for the independent study for approval by the supervising faculty member prior to registration for the course.

Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SU3 Basis

PSYED 2599 - THESIS

Minimum Credits: 1
Maximum Credits: 6

Designed to help the student to carry out his or her research or creative project and to write an acceptable thesis. This course is subject to repeated registration.

Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

PSYED 2605 - CHILD AND YOUTH CARE BASIC COURSE

Minimum Credits: 3

Maximum Credits: 3

This strategy-based course, offered in partnership with the Allegheny partners for out-of-school time (APOST) of the united way, is attended by both University students and local youth workers. Hands-on, interactive sessions introduce essential concepts and skills in professional child and youth care, geared towards settings including early childhood education, after-school programming, foster parenting, residential treatment, basic care, emergency shelters, recreation, corrections, community youth services, and developmental disabilities. The course prepares participants for child and youth care certification with topics such as professional ethics, assessment, developmentally-based programming, and activity development. University students taking this course for credit will complete reading and writing assignments to accompany the practice-focused sessions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PSYED 2622 - CHILD LIFE PRACTICUM

Minimum Credits: 1

Maximum Credits: 3

Credits for approved hospital-based child life practicum experience.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

PSYED 2632 - APPLIED RESEARCH DESIGN

Minimum Credits: 3

Maximum Credits: 3

This introductory methods seminar focuses on applied research design including developing conceptual definitions, applying models of theory testing and theory building, and developing relevant policy and practice research questions. This course will cover key debates occurring in the field of applied research in terms of producing evidence to support policy, practice, and program development, and is designed to encourage practical skill development; experiential learning opportunities are integrated into course content. Students will gain an understanding of applied research design and an improved skill set in proposing, designing, and evaluating applied studies of interventions and programs.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PSYED 2722 - CHILD LIFE INTERNSHIP

Minimum Credits: 1

Maximum Credits: 6

Credits for approved hospital-based child life internship placement.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad HSU Basis

PSYED 2765 - COMMUNITY-BASED PRACTICE LEARNING 1

Minimum Credits: 1

Maximum Credits: 3

This course provides students with the opportunity to participate in an individual community-based practice learning experience with a partner agency. As part of the placement, students engage in activities that lead to the production of an agreed-upon, tangible product to meet an identified need for the agency. This product will also meet the requirements for the student written capstone project for the master's program and will serve as the presentation topic for the master's comprehensive exam. This course is taken concurrently with the ADP Professional Seminar I & II.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad Letter Grade

PSYED 2766 - COMMUNITY-BASED PRACTICE LEARNING 2

Minimum Credits: 1

Maximum Credits: 3

This course provides students with the opportunity to participate in an individual community-based practice learning experience with a partner agency. As part of the placement, students engage in activities that lead to the production of an agreed-upon, tangible product to meet an identified need for the agency. This product will also meet the requirements for the student written capstone project for the master's program and will serve as the presentation topic for the master's comprehensive exam. This course is taken concurrently with the ADP Professional Seminar 1 & 2.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad Letter Grade

PSYED 3190 - RES SEM IN PSYCHOLOGY IN EDUC

Minimum Credits: 3

Maximum Credits: 3

Advanced seminar in research for doctoral students in psychology in education.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PSYED 3197 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 3

Independent study for doctoral students in psychology in education.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

PSYED 3408 - HIERARCHICAL LINEAR MODELING

Minimum Credits: 3

Maximum Credits: 3

This course is on hierarchical models for continuous and discrete outcomes. Hierarchical models are used when the units of observation are grouped within clusters. Observations in a cluster typically are not mutually independent for given covariate values as required by conventional linear and logistic regression models. Longitudinal or repeated measures data can also be thought of as clustered data with measurement occasions clustered within subjects. The focus of the course is on hierarchical linear models and their assumptions, as well as practical aspects of developing models to address research questions and interpreting the findings.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: PSYED 2410 or PSYED 3410

PSYED 3410 - REGRESSION ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

Various types of regression analyses will be covered such as simple linear regression, multiple regression, nonlinear regression, and logistic regression. Model selection, validation, residual analysis, diagnostics, and remedial measures of regression analyses will be discussed. Some of the remedial measures that will be covered are robust regression, ridge regression and bootstrapping. Regression analyses of qualitative and quantitative predictors as well as interaction effects of these variables will also be covered. These topics will use matrix algebra which will be introduced in class. SAS will be used.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: PSYED 2016 or 2019

PSYED 3412 - GENERAL LINEAR MODELS

Minimum Credits: 3

Maximum Credits: 3

Various types of analysis of variance will be introduced from the general linear models framework. One-way, two-way, higher-order ANOVA and ANCOVA using within-subjects, between-subjects, and mixed designs will be covered. Simple effects (simple main effect, simple comparisons, marginal comparisons, and interaction contrasts) analyses will also be discussed. Issues related to equal and unequal sample sizes as well as ANOVA diagnostics and remedial measures (e.g., transformation and weighted least square) will be covered. Some of the advance topics include incomplete design, fractional factorial, Latin Square, and nested designs. These topics will use matrix algebra.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: PSYED 2016 or 2019

PSYED 3416 - MULTIVARIATE STATISTICS

Minimum Credits: 3

Maximum Credits: 3

Topics include an introduction to the multivariate normal distribution, q-q plots, and box-cox transformations and assumptions for applying multivariate linear models. The analysis of two group designs, manova, mancova mixed models, repeated measurement designs and seemingly unrelated regression (sur) models are analyzed in the course. Also included are the exploratory data analysis techniques of principal component analysis, discriminant analysis, canonical correlation analysis, cluster analysis, and multidimensional scaling.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: PSYED 3410

PSYED 3417 - STRUCTURAL EQUATION MODELING

Minimum Credits: 3

Maximum Credits: 3

This course will introduce structural equation modeling (SEM). Some fundamental materials necessary for SEM will be reviewed; i.e. Matrix algebra, covariance algebra, multiple regression; and factor analysis. SEM is a family of techniques. Some of the different SEM techniques that will be discussed include path analysis, confirmatory factor analysis, general SEM, and mediation/moderation models. Advance SEM techniques will also be discussed, e.g. Mean and covariance SEM, latent growth curve models, multi-sample/multi-group SEM, dealing with missing and non-normal data, and mixture modeling.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: PSYED 2410 or PSYED 3410

PSYED 3419 - MEANING-CENTERED APPROACHES TO STUDYING DEVELOPMENT: PARTICIPATION OBSERVATION IN THE FIELD

Minimum Credits: 3

Maximum Credits: 3

Course introduces one of the main methods of qualitative research, participant observation. Students will learn by doing and are, therefore, required to conduct fieldwork in order to complete a pilot study of their choosing. The primary purpose of course is to provide a hands-on, in-depth understanding of the epistemological and methodological aspects of qualitative data analysis. Course includes a project that requires you to spend time in youth-serving organizations. Clearances are required prior to first site visit: (a) federal criminal history record, (b) Pennsylvania criminal record check, and (c) Pennsylvania child abuse history clearance. Clearances less than 3 years old will be accepted. Outcome objectives include: 1. Understand reciprocal relationship between generating & using theory in participant observation studies. 2. Write ethnographic fieldnotes capable of supporting research studies. 3. Identify and resolve ethical issues that arise during fieldwork. 4. Gain knowledge of components of qualitative data analyses including: articulating conceptual definitions, developing research questions, using existing research and theory, determining the unit of analysis, developing conceptual categories, coding, displaying data and findings. 5. Identify sources of invalidity in qualitative research. 6. Develop a basic understanding of apa style of writing up a research study.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PSYED 3420 - COMPUTER APPLICATIONS TO RESEARCH METHODOLOGY

Minimum Credits: 3

Maximum Credits: 3

Course in advanced computer-based applications. Topics include design and conducting Monte Carlo studies, computer adaptive testing, and application of Bayesian methods to education. Students will learn the required steps for conducting a monte Carlo study or a computerized experiment: how to design the study, how to simulate data, and how to evaluate results. Procedures in SAS as well as other programs will be considered. Students will also design and implement a small monte Carlo study. For the computer adaptive testing (CAT) component, students will be introduced to cat and issues related to cat assessments: developing and maintaining item pools, selecting items, estimating ability, and validity of scores from cat assessments. Students will be introduced to the theory of Bayesian methods, application of Bayesian methods in educational measurement and statistics, and software that is available to implement Bayesian methods.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PSYED 3450 - INTRO TO EDUCATIONAL EVALUATION

Minimum Credits: 3

Maximum Credits: 3

Issues relevant to doing evaluation and utilizing results are addressed. Both evaluation "theory" and practical experience are utilized to prepare people who will be providing or using evaluation information. Special emphasis is given to: a) differences between evaluation and research; b) problems in using quantitative or qualitative methods when assumptions are not met; and c) issues that affect the usefulness of information in decision making.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PSYED 3471 - CONSTRUCTING QUESTIONNAIRES AND CONDUCTING SURVEYS

Minimum Credits: 3

Maximum Credits: 3

Introductory course in survey research methodology. The course considers practical considerations in the construction of questionnaires including determining questionnaire content, selection of item types and wording of items, selection of an administration method, piloting questionnaires, and locating existing questionnaires. Discussion about conducting survey research considers sample selection, analyzing information obtained from questionnaires using SPSS, evaluating questionnaires, sources of error and how to reduce measurement error in survey research.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: PSYED 2001 and (2014 or 2018)

PSYED 3472 - CAUSAL INFERENCE IN EDUCATIONAL RESEARCH

Minimum Credits: 3

Maximum Credits: 3

Many key questions in the field of education are framed causally. Do investments in full-day kindergarten pay off in terms of improved school readiness? Does project-based learning in mathematics and science increase the pipeline of students into STEM-related fields? Does the introduction of a generous merit-based scholarship program improve students' motivation to prepare rigorously for postsecondary education? Despite this causal framing, analytic tools commonly applied to questions such as these allow for statements about relationships but not about causation. For example, we may observe correlational evidence that communities with full-day kindergarten also have higher levels of school readiness. These same communities, however, may also serve children from higher-income families. Given students' backgrounds, their levels of readiness may have been unchanged by participation in full-day kindergarten. In this course, we will focus on framing research questions with a causal lens and on research designs and analytic techniques that provide the tools for answering these key questions in a causal framework. Specifically, we will learn about

research designs for drawing causal inferences, including randomized trials, regression discontinuity, differences-in-differences, instrumental variables, and propensity score and other matching techniques. Our learning will be grounded through the semester in reading scholarly articles in which these techniques are applied to questions in education. Assignments throughout the semester will include preparation for class participation, a referee report to critique the work of another scholar, and a final course project. At the start of the semester, students will be asked to identify an area of focus and potential sources of data for the final course project.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PSYED 3475 - PSYCHOMETRIC THEORY

Minimum Credits: 3

Maximum Credits: 3

Basic course in classical and modern psychometric theory. Topics include basic formulations, composite tests, validity and reliability, test length, factors affecting precision, estimation, prediction, item parameters, test construction, and test equating. Both criterion-referencing and norm referencing applications are included.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: PSYED 2072 and (2014 or 2018)

PSYED 3477 - ITEM RESPONSE THEORY

Minimum Credits: 3

Maximum Credits: 3

Continuation of PSYED 3475. Advanced measurement topics in item response theory models and their applications to achievement, aptitude, and attitude measurement. Includes one-, two-, and three-parameter models; item and test information functions; test characteristics curves; test design; item fit and selection; tests for unidimensionality and model fit; IRT equating; adaptive testing strategies; item banking; and Bayesian, maximum likelihood, and EM estimation. Reviews major computer packages for IRT parameter estimation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: PSYED 3475

PSYED 3484 - ADV TOPICS IN MEASUREMENT

Minimum Credits: 3

Maximum Credits: 3

Seminar on specialized topics in educational and psychological measurement organized around faculty and student interests. Students may request a specific seminar series on topics not covered by ordinary course offerings.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: PSYED 3475

PSYED 3485 - ADV TOPICS IN RESEARCH DESIGN

Minimum Credits: 3

Maximum Credits: 3

Includes new strategies in research design, and application of mathematical and behavioral design models for educational research. Topics vary each term around interests of the students enrolled.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PSYED 3491 - SUPERVISED RESEARCH IN RES METH

Minimum Credits: 1

Maximum Credits: 18

The student demonstrates ability to apply research skills by planning and completing a research project under direction of an appropriate faculty member.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

PSYED 3495 - TEACHING INTERNSHIP IN RES METH

Minimum Credits: 3

Maximum Credits: 3

Provides students with training in teaching a section of a research methodology course. It includes the development of course lectures, assignments, and part of the midterm or final exam and the delivery of the lectures.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

PSYED 3498 - DIRECTED STUDY IN RES METH

Minimum Credits: 1

Maximum Credits: 3

Student pursues study of various topics under the direction of faculty.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

PSYED 3499 - DISSERTATION RESEARCH IN RESEARCH METHODOLOGY

Minimum Credits: 1

Maximum Credits: 18

Student registers for this course while conducting research for a doctoral dissertation.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad LG/SNC Basis

PSYED 3531 - FAMILY INFLUENCE ON CHILD DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

This course provides an analysis of the multiple pathways through which parents, siblings, and families shape child development. Each of several pathways--the determinants of parenting, parental influences, marital influences, and sibling influences--is examined and discussed across three developmental periods: infancy, early childhood, and middle childhood. Primary attention will be paid to the unique impact of parental care on early development.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PSYED 3532 - FAMILY RESEARCH METHODS AND ISSUES

Minimum Credits: 3

Maximum Credits: 3

This course is designed to introduce students to research methods relating to human relationships and families. Students survey a variety of research methodologies including experimental, correlational, and qualitative designs and observational and self-report measurement. Assessment techniques and instruments currently used in family research will be illustrated and discussed.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PREQ: PSYED 2016 or 2019

PSYED 3535 - CULTURE AND COGNITION

Minimum Credits: 3

Maximum Credits: 3

This course will examine cultural influences on children's cognition. Students will be introduced to thinking and research in cross cultural psychology. The implications of this work for the assessment of children's learning and development will be discussed. A multicultural perspective on the education of minority children in the United States will be presented and evaluated.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PSYED 3587 - SPECIAL TOPICS 2

Minimum Credits: 3

Maximum Credits: 3

This course has two aims: (1) to understand how risk and resilience processes and competence develop in social contexts and (2) to explore how preventions and interventions based on this developmental information can enhance competence. The course will emphasize how developmental processes of risk and resilience are affected by social contexts. Contexts to be studied range from the small-group, organizational, and community contexts up to the level of public policy and culture. The course will review strategies and systems of prevention and intervention that target change in these social contexts, and thereby reduce risk or increase adaptation. The course will also draw on multidisciplinary content from the fields of human development, education, developmental and community psychology, psychiatry, public health, and public policy. The first part of the course will focus on developmental theories relevant to a contextual approach to risk, resilience, and competence. The second part will explore, in depth, a range of strategies for prevention, intervention, and social change that show evidence of positive impacts on child and youth development.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Psychology in Education (PHD)

PSYED 3589 - SPECIAL TOPICS

Minimum Credits: 3

Maximum Credits: 3

This course will provide a psychologically safe place to develop professional writing skills that are specific to our field. We will work on refining writing that students are working on already (manuscripts, conference proposals, revise and resubmit letters, CVS, dissertation proposals, etc.). This will include self-reflection and analysis, peer-review, and whole group discussion. Weekly topics will include grammar/APA style, tone, and flow, integrating evidence, and staying motivated and engaged in your writing. Students will have many opportunities to give and receive feedback.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad SN Basis

Course Requirements: PLAN: Psychology in Education (PHD)

PSYED 3590 - SPECIAL TOPICS 3

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad SN Basis

PSYED 3591 - SUPERVISED RESEARCH IN APPLIED DEVELOPMENTAL PSYCHOLOGY

Minimum Credits: 1

Maximum Credits: 18

Students will pursue selected topics under the guidance of a faculty member.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

PSYED 3592 - PRACTICUM IN COLLEGE TEACHING

Minimum Credits: 3

Maximum Credits: 3

The practicum in college teaching allows doctoral students the opportunity to teach, or assist in teaching, a course in educational psychology. Students may be assigned to assist a faculty member with a course, or be assigned a course as primary instructor, under faculty supervision. In addition to a full range of responsibilities involving course preparation, planning, classroom instruction, testing student progress, assigning grades and course evaluation, students are expected to attend an accompanying seminar in college teaching.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

PSYED 3598 - DIRECTED STUDY IN APPLIED DEVELOPMENTAL PSYCHOLOGY

Minimum Credits: 1

Maximum Credits: 6

Federal and state reforms in recent decades have focused on the establishment of standards and assessments as means of improving teaching and learning and closing the achievement gap between more and less privileged students. Reforms such as no child left behind, the common core state standards, and the federal race to the top competition have resulted in a proliferation of standards and high-stakes tests, and have been accompanied by both desirable and undesirable changes in school and district practices. In this course we will explore the debates surrounding these various standards and assessment reforms. The topics this course will address include the use of assessments to lever instructional change, the assumptions about learning that underpin different types of assessments and test-based accountability, and research investigating the influence of high-stakes testing on instruction and learning. This course also will consider research pertaining to high-stakes teacher evaluation including value-added models, pay for performance, and direct assessment of teaching quality.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

PSYED 3599 - DISSERTATION RESEARCH IN APPLIED DEVELOPMENTAL PSYCHOLOGY

Minimum Credits: 1

Maximum Credits: 18

Student registers for this course while conducting research for a doctoral dissertation.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

PSYED 3632 - APPLIED RESEARCH DESIGN

Minimum Credits: 3

Maximum Credits: 3

This introductory methods seminar focuses on applied research design including developing conceptual definitions, applying models of theory testing and theory building, and developing relevant policy and practice research questions. This course will cover key debates occurring in the field of applied research in terms of producing evidence to support policy, practice, and program development, and is designed to encourage practical skill development; experiential learning opportunities are integrated into course content. Students will gain an understanding of applied research design and an improved skill set in proposing, designing, and evaluating applied studies of interventions and programs.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Public & Int'l Affairs

PIA 2003 - SEMINAR IN RESEARCH DESIGN AND METHODS

Minimum Credits: 3

Maximum Credits: 3

This seminar provides knowledge and skills in designing quantitative and mixed methods research. The term research design refers to a strategy or plan for getting the best possible answers to research questions. When we want to conduct research that helps solve practical problems, these questions tend to be about causal inferences linking policy and management interventions to socially valued outcomes. In a policy and management context, research designs usually answer the question: 'what works?' Research in policy and management is often based on inadequate research designs, that is, research designs that fail to provide plausible answers to research questions. In an effort to address these inadequacies there has been a movement toward experimental and quasi-experimental research designs in areas of health, education, welfare, security, energy, and the environment. Indeed, in the past two decades we have seen a virtual explosion of experiments, quasi-experiments, and natural experiments in the social sciences and social professions. The term mixed methods refers to the concurrent use of quantitative and qualitative methods for collecting, analyzing, and interpreting data. 'Qualitative' methods do not refer merely to non-quantitative methods, for example, methods of case study analysis or small-n research. The term 'qualitative' properly refers to methods for making sense of, or interpreting, actions in terms of the meanings people bring to them. Ethnography is a qualitative method; case study research, when it fails to uncover the meanings of actions to persons other than ourselves as researchers, is qualitative only in the limited sense that it involves small nonrandom samples which prohibit the use of common quantitative procedures such as correlation and regression analysis. When genuine qualitative methods such as ethnographic interviews and focus groups are used in conjunction with quantitative modeling techniques we usually use the term "mixed method."

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2011 - MANAGING INTERNATIONAL ORGANIZATIONS

Minimum Credits: 3

Maximum Credits: 3

This course, designed for students in all GSPIA masters programs, examines the challenges of management of international organization, that is, organizations that are comprised of states. It approaches management at three levels: at the macro level, we will explore the political environment and governance structures of international organizations; at the micro level, we will look at how individual managers cope with the standard management tasks, including managing staff and budgets, in an international environment, and at a Meso level, we will study the challenges of project management and of inter-organization coordination. We will also look at cross-cutting issues, including the problem of corruption, the continued attempts to reform international organizations, and the relationships between management and policy in an international environment. Students will select a specific international organization for in-depth analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: African Studies, Global Studies

PIA 2020 - ADMINISTRATION OF PUBLIC AFFAIRS

Minimum Credits: 3

Maximum Credits: 3

We are in the middle of a revolution transforming public administration and government to a new dynamic built on public management and governance. Government, politics, and bureaucracy are replaced with networks, partnerships, and interrelationships between the public, nonprofit, and private sectors. Governments continue to be critical players, but, that's not "the whole story." Government actors, both elected and appointed, now spend most of their time engaged in intersectoral relations and intergovernmental relations. Modern management is no longer simply the effective utilization of personnel, but the effective negotiation and linkages of partnership relations external to the organization.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2021 - INTERNATIONAL AFFAIRS

Minimum Credits: 3

Maximum Credits: 3

This is an introductory course in the field of International Affairs (IA). It is designed to give students knowledge of the major theoretical approaches and issues in international politics. The course introduces students to basic concepts and schools of thought in IA and examines major institutions and processes through which foreign policies are made and implemented. A major objective is to relate theories and models to major national and international policy debates through the close examination of case studies. Reference will be made throughout to contemporary developments. The interlocking objectives of this course are: 1) to provide a grounding in the nature and characteristics of International Affairs; 2) to develop a broad understanding of the outstanding features of today's world and how it differs from other periods; and 3) to learn the key concepts for categorizing and analyzing the dynamics of international politics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: African Studies, Global Studies, West European Studies

PIA 2022 - QUANTITATIVE METHODS

Minimum Credits: 3

Maximum Credits: 3

Introduction to quantitative methods is a foundation course that provides an overview of statistical methods and hands-on applications to managerial decision-making in the public sector. Understanding statistical analysis and being able to work with data are important competencies of professionals in public policy and administration. Course topics include program evaluation, data collection and measurement in public policy and administration, descriptive statistics, hypothesis testing, processes for selecting statistical tests and assessment of statistical assumptions, measures of association and other bivariate statistics, index variable construction, regression analysis, and an overview of selected other statistical and quantitative methods applied to problems of public administration. Students get hands-on experience through the use of a statistical analysis tool. Recognizing the social, political, and economic context of data collection, analysis, and reporting practices in the public sector, this course also discusses the ethics of data analysis and information technology policy and management.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2023 - INTERMEDIATE QUANTITATIVE METHODS

Minimum Credits: 3

Maximum Credits: 3

The goal of this course is to provide an introduction to econometrics for policy analysts. The focus of the class will be on applied data analysis to practical problems. We will discuss some basics of econometric theory to support your understanding of the applications of these techniques. In the first part of the semester, we will introduce regression analysis and the assumptions underlying it. In the later part of the semester, we will see extensions of this basic idea: time series and panel regression, regression with a limited dependent variable, instrumental variables regression, and experiments. After this class you should be able to: 1. Understand basic empirical research in the social sciences. 2. Understand the theory behind basic econometric techniques. 3. Perform basic empirical analysis on social and political behavior.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2024 - ECONOMICS FOR PUBLIC AFFAIRS

Minimum Credits: 3

Maximum Credits: 3

The course covers the economics principles necessary to understand economic policy debates. In addition to demand-supply and the consumer theory, students are explained how firms pricing and output decisions depend on market structures and behavior of competitors. The course also covers macroeconomics topics such as national production, employment, prices, monetary and fiscal policy. After completion of this course, students

will have a better understanding of how government policy affects macroeconomics outcomes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Global Studies

PIA 2025 - MICROECONOMICS

Minimum Credits: 3

Maximum Credits: 3

The course covers the microeconomic principles necessary to understand economic policy debates. In addition to demand-supply and the consumer choice theories, students are explained how firms pricing and output decisions depend on market structures and behavior of the competitors. The course also covers microeconomic topics such as government interventions to the markets, market failures, provision of public goods, externalities and international trade. After completion of this course, students will have a better understanding of how the markets and government policies affect economic outcomes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Graduate School of Public and International Affairs

PIA 2027 - MACROECONOMICS

Minimum Credits: 3

Maximum Credits: 3

This course applies tools from PIA 2024 economic of public affairs course (or equivalent) to examine current economy-wide challenges. These topics include economic development, environment, energy, health, international trade, and recent financial crisis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Graduate School of Public and International Affairs

PIA 2028 - PUBLIC POLICY ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

How can we improve the ability of society to choose between alternative policies? This course provides a framework to assess alternative policies on the dimensions of efficiency, equity, and political feasibility. The comparative institutional framework requires an interdisciplinary perspective which draws on economics, political science, and political economy. Throughout the course, we will consider how insights from these disciplines provide insight into the choices confronting policymakers seeking to bring society closer to their conception of the good life. The course is organized into three parts: an introduction to policy analysis; a framework for comparative markets and governments; and applications of the framework. One of the main goals of the course, besides mastering the material (as evidenced by an in-class midterm), is a series of papers applying these concepts as well as an original research paper conducting a policy analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: PIA 2001 or 2008 or PIA 2022 or PIA 2024; PROG: Graduate School of Public and International Affairs

PIA 2029 - PROFESSIONAL COMMUNICATION IN MANDARIN 1

Minimum Credits: 2

Maximum Credits: 2

This language course is offered by the International Business Center (IBC) and the graduate school of public and International affairs (GSPIA) and is specifically designed for graduate students in business, public administration, and international affairs.

Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2030 - PROFESSIONAL COMMUNICATION IN ARABIC 1

Minimum Credits: 2

Maximum Credits: 2

This course is intended to provide a solid foundation for both spoken and written Arabic with an emphasis on the mastery of Arabic phonics and communication skills. The student will be introduced to the basic grammatical structure of Arabic, and a vocabulary of at least 800 basic words. Many of these words open up varieties of word families, so the student's effective vocabulary should be well in excess of 2000 words. While the concentration is on speaking Arabic, there will be also a major exposure to reading and writing, which builds up vocabulary as well as encourages students to learn about the dialects, the customs and traditions of the Arab world. Students' participation and group activities engaging conversation in Arabic are vital to the course. The course is conducted entirely in Arabic.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: African Studies

PIA 2031 - PROFESSIONAL COMMUNICATION IN MANDARIN 2

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PIA 2032 - ADVANCED QUANTITATIVE METHODS: CAUSAL INFERENCE FOR POLICY ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

What are the true impacts of a policy? Does the policy in question achieve its desired goals? Even with good data, this question is often difficult to answer, as policies are rarely introduced in isolation. This means that patterns in data may reflect the impacts of policies, but may also reflect the influences of various confounding factors. Through lectures, discussions, and hands-on data projects, this course will introduce students to quantitative methods aimed at identifying the causal impacts of policies. Methods introduced will include: difference-in-differences, regression discontinuity, and instrumental variables. By reading and discussing academic research papers, we will see that these methods can be applied to a wide variety of settings. Topics of these applications may include: the relationship between government spending and charitable giving, taxation, education policy, the impacts of the characteristics of politicians on policy outcomes, crime, among others. Students should have some pre-existing familiarity with regression analysis and experience in working with data in a statistical analysis package like Stata.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: PIA 2023 or 3000

PIA 2033 - ADVANCED METHODS CAUSAL INFERENCE

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the challenge of causal inference in the social sciences. We will begin by approaching causal inference from the standpoint of experimental analysis. We will then study several non-experimental methods that aim to recover causality using observational data, including matching, instrumental variables, difference-in-differences, and regression discontinuity. The class will combine methodological training with exposure to important recent research in the social sciences that employ these methods. The goal of the class is not only to convey the concepts central to causal inference but there is also a heavy emphasis on helping students develop their capacity for research design.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PIA 2034 - AMERICAN ELECTORAL BEHAVIOR

Minimum Credits: 3

Maximum Credits: 3

This seminar complements PS 2230: Mass Politics. Like 2230, this seminar examines the American micropolity. But while 2230 focuses primarily on what happens in citizens' proverbial heads when they think about politics, this course will emphasize the practical applications and consequences of those thoughts - what people do in the electoral arena, what factors influence that behavior, and how electoral outcomes can be predicted or explained.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PIA 2035 - COMPARATIVE PARTIES AND ELECTIONS

Minimum Credits: 3

Maximum Credits: 3

In this seminar, graduate students will be introduced to a wide variety of readings in the history of Western Europe.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PIA 2036 - AUTHORITARIAN POLITICS

Minimum Credits: 3

Maximum Credits: 3

This course surveys important questions driving past and current research in the fields of regimes, regime change, and authoritarian governance. Students will be able to identify important research questions based on existing scholarship and execute sound research designs.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PIA 2037 - INTERNATIONAL POLITICAL ECONOMY

Minimum Credits: 3

Maximum Credits: 3

This seminar explores in eclectic fashion a number of major conceptual thrusts and policy problems in the international political economy. Some of the work deals with system level properties of international political economy, while other work compares how various advanced industrial states deal with similar foreign and domestic economic challenges.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PIA 2038 - PEACEMAKING AND PEACEKEEPING

Minimum Credits: 3

Maximum Credits: 3

This course is designed to introduce graduate students to the literature on conflict resolution and post-conflict recovery. In the first part of the course, we will examine the process by which belligerents in Civil Wars reach cease-fires and negotiate peace, why peace sometimes lasts and sometimes falls apart and what can be done to make peace more stable. Next, we will explore the longer-term prospects for economic and democratic rebuilding as well as reconciliation after Civil Wars. We will end the course by considering the consequences of Civil Wars for the regional and international peace and focus on terrorism, refugees, and weak states as destabilizing factors.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2039 - ADVANCED METHODS: TEXT AS DATA

Minimum Credits: 1.5

Maximum Credits: 1.5

This is a course in advanced methodology in political science. The class will focus on topics related to measurement.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PIA 2040 - ADVANCED METHODS: TEXT AS DATA

Minimum Credits: 3

Maximum Credits: 3

The amount of social science relevant information stored in text presses against the boundaries of human comprehension. From corpora of international and national speeches and documents, through repositories of human rights reports, news archives and blog posts, to streaming social media feeds, a font of knowledge awaits those that have the creativity and ability to model and learn from text as data. This class is a lower case, but more than cursory, introduction to the use of natural language processing, machine learning and Bayesian inference frameworks and tools to accelerate innovations in key social science research. The workload is significant but should not give anyone a stroke. We will cover lexical methods such as dictionary-based sentiment analysis, topic modeling and more general supervised learning techniques, as well as research designs that leverage syntactic information. Theoretical lectures will be punctuated with hands-on coding assignments. The point of the class is to increase student's confidence in utilizing text in their applied work.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PIA 2041 - POLICY ANALYSIS FOR CYBERSECURITY AND INTELLIGENCE STUDIES

Minimum Credits: 3

Maximum Credits: 3

This course provides a multidisciplinary framework for analyzing cybersecurity and intelligence policies developed after the Intelligence Reform and Terrorism Prevention Act of 2004. Methods of policy analysis include expert forecasting and prediction markets, benefit-cost and benefit-risk analysis, performance monitoring and evaluation, problem diagnosis with structured analytic techniques, and the development of transparent policy arguments. Case studies are used to exemplify the interplay of policy analysis and the politics of policymaking in the pursuit of efficiency, equity, political feasibility, and ethics. The course is organized into three parts: I. A Framework for Policy Analysis; II. Methods for Policy Analysis; and III. Methods for Communicating and Using Policy Information. Case materials in cybersecurity policy and intelligence analysis will be used throughout the class. Requirements include two 5-page policy memos, an in-house midterm exam, and a take-home final. This course satisfies the GSPIA core course requirement in public policy analysis.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PIA 2090 - FOREIGN STUDY

Minimum Credits: 3

Maximum Credits: 12

Enrollment in graduate courses at an approved institution outside the United States.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2091 - FOREIGN EXCHANGE STUDY

Minimum Credits: 1

Maximum Credits: 12

Academic Career: Graduate

Course Component: Directed Studies
Grade Component: Grad HSU Basis

PIA 2094 - PROFESSIONAL DEVELOPMENT PROGRAM

Minimum Credits: 0
Maximum Credits: 0
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad HSU Basis
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2096 - CAPSTON SEMINAR:

Minimum Credits: 3
Maximum Credits: 3
The intent of the capstone seminars is to provide students with a focused experience in working on a real world problem of policy and management in a team setting under expert faculty guidance. Each seminar is focused on a prescriptive question - what should a specified public official or institution do about a specified problem?
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: PIA 2009 or PIA 2028; PROG: Graduate School of Public and International Affairs
Course Attributes: Asian Studies, West European Studies

PIA 2097 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 6
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad HSU Basis
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2098 - INTERNSHIP

Minimum Credits: 0
Maximum Credits: 6
Academic Career: Graduate
Course Component: Internship
Grade Component: Grad HSU Basis

PIA 2099 - THESIS

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad HSU Basis

PIA 2101 - MANAGING EMERGENCIES AND DISASTERS

Minimum Credits: 3
Maximum Credits: 3
This course provides a broad overview and practical exercise of frameworks and principles of emergency management in the United States and

global contexts. The course builds on these frameworks to consider how communities understand and plan for risk; adapt plans and make decisions in response to actual emergencies and disasters; engage effectively in short and long-term recovery; and consider resilience and mitigation as they build back.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2103 - MANAGING PEOPLE IN THE PUBLIC AND NON-PROFIT SECTOR

Minimum Credits: 3

Maximum Credits: 3

This course, designed for students in all GSPIA Masters programs and for PhD students, links the fields of human resources management, organizational behavior, and leadership with hands-on exercises and cases to provide a basic understanding of the skills needed for successful supervision and management of people in public and non-profit organizations. Skills covered include effective hiring, motivation, and direct supervision of staff; evaluation and reward systems; effective communication in a multicultural or international environment; labor management relations; and participative approaches to management.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2104 - FINANCIAL MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

Financial management plays a central, if not strategic and controlling role in public administration. It is the one element that can, and does, most easily shape and condition administrative behavior patterns. It involves the allocation and management of scarce resources. This course introduces the students to the basic financial management concepts and practices in the public and non-profit sectors. The purpose of the course is to familiarize potential administrators with the elements of financial management and how these various elements are (or can be) used to help accomplish organizational goals and objectives. The ability to read and understand basic financial statements used in the public and nonprofit sectors will be emphasized. One does not need to be an accountant to take this course. The course will focus on understanding the financial world of governments, how they are financed; the major expenditure elements; how to read and understand the major financial documents and financial statements. Several classes will focus on the non-profit sector. A significant amount of time will be spent reviewing the major taxes used to finance governments as well as understanding the significant tax policy issues surrounding the use of these taxes. Major items impacting upon the financial conditions of governments including the funding of public pension systems; capital budgeting; and debt management will also be reviewed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2108 - MATCHING MONEY WITH MISSION

Minimum Credits: 3

Maximum Credits: 3

This course traces the historic origins and contemporary expressions of philanthropy to offer an overview of the multiple dimensions of this growing and increasingly global source of capital and innovation in the nonprofit sector. Students become familiar with who gives, why, and how they structure their philanthropy. The course assesses different strategies and how new approaches like ephilanthropy and giving circles open and diversify the field. Global, faith-based, and venture philanthropy are among the topics covered. Market-based approaches like social enterprise and corporate social responsibility, along with accountability, impact measures, transparency, and their public policy implications are explored. The course draws on case studies and guest speakers. Students participate in GSPIA's student philanthropy project, gaining hands-on grant-making experience throughout the semester by awarding funds to area nonprofits. This exercise links philanthropic theory to practice. At the end of this course students are able to articulate a robust definition of philanthropy's goals and the structures that advance them; demonstrate a range of hands-on grant-making skills; connect applied learning in grant-making to policy and practice issues examined in the course; model effective team work and decision-making practices that enhance grant-making; incorporate knowledge gained from practitioners and course work into personal philanthropic practices; recognize how contemporary issues in philanthropy intersect with the nonprofit, public and civic sectors; develop a research topic that contributes to peer learning; better assess community needs through an enhanced understanding of the Pittsburgh nonprofit sector.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2109 - REBUILDING AND BUILDING US PUBLIC INFRASTRUCTURE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2115 - ENVIRONMENTAL ECONOMICS

Minimum Credits: 3

Maximum Credits: 3

This course will combine multi-disciplinary environmental topics in an introductory level course. The concept of environmental policy and its impact on environmental management will be introduced. It will focus on the various scientific, technical and social disciplines including the basic sciences as well as law, engineering, public health and economics. Attention will also be given to the effects of developing and changing environmental policy on selected industries as well as natural resources.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Global Studies, Russian & East European Studies

PIA 2117 - PUBLIC PROGRAM EVALUATION

Minimum Credits: 3

Maximum Credits: 3

This course gives students knowledge, skills, and experience to define and measure program and policy impacts on clients/consumers, meet accountability requirements of funders, and design and revise programs to address the changing needs of stakeholders. Through in-class exercises, case studies and written assignments, students will be able to apply their new knowledge and skills to real life evaluation designs, implementations, and reporting. In addition, students will be asked to develop a plan to evaluate a public program of their choice including proposed methods of data collection and analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2119 - POLICY DESIGN/IMPLEMENTATION

Minimum Credits: 3

Maximum Credits: 3

Uses concepts, models and strategies for developing new and more appropriate solutions for public policy problems. Analyzes constraints and opportunities surrounding the implementation of public policies and programs. Emphasis on strategies of planned change, dissemination of innovations, and knowledge utilization in the public sector.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2122 - MANAGING AND FINANCING URBAN SERVICES

Minimum Credits: 3

Maximum Credits: 3

This course examines issues related to the public economy of local government taxation and spending. The problems facing central cities and metropolitan areas are highlighted using the Pittsburgh and Allegheny County region as context. The course is designed to maximize the student's participation while making the learning environment as "real world" as possible. To accomplish those goals students select either a city to develop a financial plan, a particular coping strategy to deal with fiscal stress, or an analysis of a nationally recognized best practice for the budget process. Students learn how to finance public services, infrastructure, and economic development (a model is discussed early in the course).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2124 - COMPARATIVE METROPOLITAN GOVERNANCE

Minimum Credits: 3

Maximum Credits: 3

This course is about the governing of metropolitan regions in the United States. The concepts of metropolitan region is relatively new. Faced with rapid growth of suburbs, the creation of satellite cities, new modes of transportation, an academic roundtable of regional planning proposed that a "new political or administrative entity" at the metropolitan level needed to be created that was different from the precinct, ward, municipality, county, or state. The year was 1926. Seventy-one years later, Anthony Downs lamented, "as congress shifts many federal powers to lower levels of government it is missing a unique opportunity to resolve a fundamental flaw in America's government structure; the absence of any authority at the metropolitan regional level. Metropolitan regions have become the most important functional units of economic and social life in almost all modern societies" (Downs, 1997). The road to the metropolitan region takes us through the land of local government. Local governments are the building blocks of the metropolitan regions. The American system of governing and government is best understood as a territorial based distribution of power and responsibility. It is steeped in both law and popular culture. Over 40 years ago, Arthur Maas (1959) defined the structure of local government in the United States as an "areal" division of power wherein the territorial bounded local governments were by culture and practice, an integral part of the system of organizing the divided power between the federal, state, and local governments. With this background, we will compare and contrast governance strategies that have been or are being considered in regions throughout North America. These strategies will be analyzed through lectures, discussions, innovation presentations, brief policy memos and the use of formal debates between teams of students organized early in the semester.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Global Studies

PIA 2125 - CITY AND REGION THEORY AND PRACTICE

Minimum Credits: 3

Maximum Credits: 3

This course is about the current challenges faced in cities and regions, nearby and around the world - and how those challenges might be met. The majority of the world's citizens live in cities, and therefore one cannot talk about human progress without thinking about progress in cities. As "mega-regions" consolidate, small cities grow rapidly, and older industrial cities shrink, the managerial, policy, and planning capacities of governments come under increasing stress. How can cities meet these challenges? To facilitate understanding of these dynamics and issues, this course is divided into two parts. The first part provides a general background necessary for the second part. We define the general concepts of "city" and "region," and we talk about measurement issues involved in understanding what is happening to them. We also learn about the policy and planning process involved in addressing any issue in a city or region. The second part focuses on the challenges cities and regions face, and how to solve them. Solving them implies having a theory about what causes them, so this part will begin with a discussion of what urban scholars define as an ideal city and region. It will then move on to cover specific urban policies such as transit oriented development, the use of eminent domain for urban projects, community development, etc. Emphasis will be placed on understanding the practical issues of implementing urban and regional policies, and learning about actual experiences with such policies in particular places.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Global Studies

PIA 2126 - STATE GOVERNMENT POLICY AND POLITICS

Minimum Credits: 3

Maximum Credits: 3

The course will review the decision process in state government. It will provide an overview and an insider analysis of the diverse strategies used by political officials, lobbyists, community activists, media and local governments to produce policy outcomes to their liking. The course is a seminar that will review and analyze theory; provide practical knowledge through case studies and presentations by elected officials, lobbyists, media, and citizen groups.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2129 - LAW AND CIVIL SECURITY

Minimum Credits: 3

Maximum Credits: 3

This course is designed to acquaint students with the maintenance or creation of civil society in conditions of political instability prompted by such things as security threats, disasters, or political upheaval. In particular, the course will explore the rule of law and the protection of rights and liberties as a bulwark of civil society and consider the requirements for their continued preservation. Upon completing this course students should be able to critically assess the concept of civil society and its requisite components from a historical, philosophical, and legal perspective and understand the role of rights, liberties, political processes, organizations, institutions, and norms to preserve civil society even in periods of conflict. The course is divided into (1) historical and theoretical foundations of civil society; (2) management of political, economic, and natural disasters and rights and liberties; (3) analysis of public policy solutions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2131 - LEADERSHIP

Minimum Credits: 3

Maximum Credits: 3

This course examines theories about leadership and provides students with feedback on their own leadership styles. Teams, as one context for demonstrating leadership, are explored in depth and methods for recognizing and managing group dynamics are introduced. Students learn how to explore concepts regarding leadership, teams and organization culture; assess their own leadership skills and style; receive feedback from colleagues on their style and behavior; and plan for their own leadership development.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2140 - FINANCIAL PRACTICES FOR ECONOMICS AND ENVIRONMENTAL SUSTAINABILITY

Minimum Credits: 3

Maximum Credits: 3

This course examines the financial practices and processes required to promote economic and environmental sustainability (both public and private comparisons). Emphasis is put on how the economic component husbands the wise use of resources to effectively achieve specific organizational successes, promoting societal or external long-term prosperity, enhancing the opportunity for living things in the environment. On the environmental and social sides stress is put on respecting things and people both in particular organizational and external community. Next focus is put on financial indicators (both early warning and long term) that have been developed and applied to predict potential financial problems before they arise. Attention is focused on financial indicators (the financial monitoring trend system-ftms) that have been developed to promote stable and sustainable financial management.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2145 - BENEFIT COST ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

This course is intended to give the students a grounding in the concepts and tools of benefit-cost effectiveness analysis. In determining whether or not to undertake a program or project, which of several possible projects should be undertaken, or how to evaluate an ongoing or completed project, benefit-cost analysis is a widely used method. The advantages or and limitations of benefit-cost analysis will be covered in order to give a perspective on public vs. private considerations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2156 - ETHICS AND POLICY IN CYBER SPACE

Minimum Credits: 3

Maximum Credits: 3

Information technology and the information that it generates has increasingly become part of our daily lives shaping our practices, discourses, and institutions in fundamental ways. Personal information is used by consumers, professionals, and organizations to a variety of ends and in a number of different settings. The growing reliance on personal information not only challenges long standing demarcations between public and private institution in terms of responsibilities, obligations, and limits, but also calls for a reconsideration of how to ensure the protection of long standing civil liberties and civil rights. This course will consider the impact of emerging technologies within existing constitutional, statutory, and international guidelines and will then explore a range of policy solutions for managing the use of personal information in our public and private sectors.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2164 - NATURAL RESOURCES GOVERNANCE AND MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

Natural resource management is complex, and emerges from frameworks of governance - the rules that govern ownership in society and the political and administrative institutions that have responsibility for management of natural resources. The course will examine resource ownership and management by government, private owners, and communal property actors. Institutional frameworks reflect nature of the resource being managed, the characteristics of the community seeking to manage the resource, and historical socio-economic factors. Geographically, the course will take a global view, with regional illustrations. The course will look at the theoretical approach referred to as "managing the commons." Institutionally, the course will examine government entities, international organizations, communities, non-governmental organizations, and trade associations. Substantively, the course will look at land, soil, and forests; water and rivers; oceans, fisheries, and coastlines; energy and mineral resources; and ecosystem services, and species protection.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2170 - MANAGEMENT NON-PROFIT ORGANIZATIONS

Minimum Credits: 3

Maximum Credits: 3

Nonprofit organizations and nongovernmental organizations are a part of what is generally referred to as civil society. While this course is primarily an introduction to leadership, management and policymaking in nonprofit organizations, it will, however, briefly, cover nongovernmental organizations. In the main, the readings, assignments, and course materials are designed to enhance your understanding of the nonprofit sector in the U.S. and to build conceptual and practical skills needed to perform effectively in positions of significant management responsibility in nonprofit

organizations/nongovernmental organizations. Students who have substantial experience in the nonprofit/nongovernmental sector will relate the course materials to their own experiences and perspectives. But students who have no prior managerial experience (or limited experience) will also find the course to be valuable and instructive.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2180 - COMPARATIVE PUBLIC ADMINISTRATION

Minimum Credits: 3

Maximum Credits: 3

Emergencies and disasters create an extraordinarily difficult set of challenges for public managers. In disaster, public managers are legally responsible for the protection of life, property and continuity of operations in their respective communities. Yet, they are suddenly confronted with situations they may have never seen before. How do they assess the situation? How do they formulate a strategy of action to bring the situation under control? What information do citizens need to protect their own lives and property? How do managers of nonprofit and private organizations make informed decisions under the urgent stress of disaster, when lives and property are at risk? As the world's population increases, the incidence of disasters, both natural and man-made, also increases as people move into vulnerable coastal regions and amass in megacities. This course will examine the conditions that confront public, private, and nonprofit managers in communities exposed to risk from natural, technological, and deliberate disasters. It will review the current organizational plans for assessing risk, and examine the requirements for enabling communities to reduce their exposure to risk.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2185 - STRATEGIC MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

This course deals primarily with the concept of organizational strategy ' how organizations position themselves to succeed in an ever changing environment. Secondly, it deals with managerial strategy ' how leaders and managers in organizations make important decisions under conditions of uncertainty. Strategic management consists of a set of tools to help organizations thrive in dynamic and (sometimes) competitive environments. The essence of strategic management is the ability to leverage the organization's strengths and 'comparative advantages' to respond to emerging opportunities and challenges in its external environment. In government and nonprofit organizations, the practice of strategic management is complicated by the need to work effectively within the political system and to collaborate with other agencies for the delivery of goods and services. Purely competitive strategies must be tempered by a broader view of what is in the best interests of society at-large, not just the organization's self-interests. This course will help you to understand and apply the concepts and methods of strategic management in public and nonprofit organizations. Strategic planning is one of the many tools of strategic management. Strategic planning is a step-by-step process, usually undertaken every 3-5 years, to help an organization develop its strategy for the future. The strategic plan might, for example, highlight opportunities for the organization to grow by offering its services in new locations, add new services to its portfolio, alter its mission statement, or even merge with another organization. Alternatively, a strategic plan might identify ways for the organization to reduce its size, cut programs and staff, or even go out of business in an orderly way.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2187 - INEQUALITY, POVERTY AND PUBLIC POLICY

Minimum Credits: 3

Maximum Credits: 3

Inequality of income and wealth has increased substantially in the United States in recent decades. This course will examine the dimensions of those changes, their causes and the costs and benefits of different possible remedies. In addition, it will explore the linkages between these financial measures and changes in social inequality and social behavior and in the worldviews of citizens. Finally, it will investigate political changes linked to these changes in society.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2188 - ECONOMIC DEVELOPMENT STRATEGIES AND PRACTICES

Minimum Credits: 3

Maximum Credits: 3

This course focuses on sub-national, local economic development. This course will encompass theory, policy, process and practice in state and local economic development. Our focus will be largely in the North American urban context over the post-World War II period, with international comparisons. We will also use examples from Pittsburgh in furthering our understanding of local economic development practice. We will find that in the U.S. Context, there are different interpretations and meanings to economic development, both in theory and practice. These certainly differ at the international scale, as well. Specific topics include: equity issues in economic development, economic cluster analysis, tax increment financing, brownfields revitalization, retail, and regional governance. The purpose of the course is to provide the student with knowledge of the approaches to economic development in theory and practice, techniques and methods of analysis, and debates ongoing in the field. Students will select one economic development policy or case to analyze in depth over the course of the term.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Global Studies

PIA 2189 - SEMINAR POLITICAL INSTITUTIONS

Minimum Credits: 3

Maximum Credits: 3

The basic question of this seminar is "what difference do institutions make"? The first part of the seminar attempts to focus on that question, while defining it more precisely, through comparative, formal, and evolutionary analyses of institutions. The second part of the seminar examines proposals for reform of institutions, particularly in the American context. Seminar participants will be asked to analyze particular proposals for institutional reform and evaluate them.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Global Studies

PIA 2192 - ETHICS AND PUBLIC LIFE

Minimum Credits: 3

Maximum Credits: 3

In order to understand the role of ethics in public life, this course will explore the intersection of ethics, management and public policy. The first section of the course will be devoted to a discussion of the nature of ethics and applied ethics. Here a framework useful in the ethical analysis of issues, problems and dilemmas in public life will be constructed. The second section will demonstrate the use of this framework in the analysis of managerial problems in public organizations while, in the third section, an evaluation of policy issues from a normative point of view will be undertaken.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2200 - AMERICAN GOVERNMENT AND POLITICS

Minimum Credits: 3

Maximum Credits: 3

This seminar provides an opportunity to analyze selected aspects of government and politics in the United States through a program of intensive reading, seminar discussions, and written essays. Some prominent interpretations of American government and politics are identified and examined.

Readings on and discussion of topics such as political leadership and mass behavior provide a basis for consideration of the seminar's major theme, leader-follower interaction.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2202 - BEHAVIORAL ECONOMICS AND GAME THEORY

Minimum Credits: 3

Maximum Credits: 3

In this class you will sharpen and systematize your understanding of incentives and psychological motivation, identify and model strategic issues in real world cases in public and international affair, and communicate your analysis in a compelling and concise manner.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2204 - GRANT WRITING AND FUNDRAISING

Minimum Credits: 3

Maximum Credits: 3

Grant writing and fundraising are critical skills for people working in the nonprofit sector. "Grants" are funds donated by an organization such as a foundation; donations from individuals are obtained through a variety of other fundraising strategies. This course aims to provide an introduction to grant writing and fundraising for nonprofit organizations (NPOs/NGOs). No matter what type of position you have, as a program coordinator, executive director, corporate/community liaison, or a development officer, all nonprofit and public sector professionals need to be familiar with how nonprofit organizations obtain funding. Moreover, the writing, planning, analysis, and collaboration skills required for grants and fundraising are applicable and useful in every profession. You will learn how to research a variety of funding sources, write a grant proposal, and develop fundraising materials based on the needs, services, and constituents of a nonprofit organization. You will select one NPO/NGO to serve as the basis of a grant proposal and then work with a group to develop a fundraising plan for another "client" organization. More details and instructions about selecting a nonprofit organization to work with will be given in class. The course first focuses on grants, mainly from private (foundation and corporate) sources, and how to write a standard grant proposal that could be submitted or adapted to a variety of prospective funders including public/government funding programs. The course will then explore fundraising strategies for individual donors, including appeal letters, planned giving, event planning, the use of social media, and other tools.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2207 - SPATIAL PLANNING IN CONTESTED PLACES

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2208 - ENERGY PRODUCTION AND THE LOCAL ECONOMY

Minimum Credits: 3

Maximum Credits: 3

The production of primary energy resources ' oil, gas, coal, solar, wind, and water ' can have broad implications for local economies, affecting employment and income, local government revenues and liabilities, property values, and more. The course will emphasize policy issues related to energy production as well as conceptual frameworks for understanding the energy-local economy nexus. Much of the course will address issues raised by oil and gas production in the continental U.S., but attention will also be given to renewable energy and energy production in developing countries.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2209 - MANAGING DIVERSITY FOR ORGANIZATIONAL AND REGIONAL EXCELLENCE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2210 - RACE, GENDER, LAW AND POLICY

Minimum Credits: 3
Maximum Credits: 3
This course focuses on the definition, protection and conflicts of identity—gender, sexuality, race, religion, and ethnicity—in law and policy in the United States. The course considers the historical and philosophical justifications that have been used to broaden the definition and protection of identity and engages in an analysis of how these efforts continue today. From desegregation of the past to race conscious admissions of today, the way we define and remedy racial discrimination involves complicated considerations of our legal definition of equality and the institutionalization of policy in the public and private sectors with Constitutional limits in mind. Similarly, policy guarantees against gender discrimination and the broadening of LGBTQIA+ rights once relied on biological justifications, but now claims of gender fluidity alter the kinds of legal and policy protections we are able to seek. The landscape of expanding legal and policy accommodation of emerging forms of identity also includes a consideration of conflicts and intersectionalities with other existing protections for identity. Religious exercise and practice, for example, can clash with those seeking accommodation of LGBTQIA+ rights, while law and policy struggles to strike a balance. This course will engage legal analysis, case based examples and structured student debates on emerging policy issues involving identity and its place in American society today.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2215 - SYSTEMS THEORY

Minimum Credits: 3
Maximum Credits: 3
Increasingly, the social, economic, and political context in which public organizations function is characterized by interdependent, evolving systems of individuals, organizations, and systems of systems. Understanding this complex world of interacting organizations and systems presents a challenging, fascinating, difficult, but always interesting task. In this seminar, we will follow the evolution of this process over the last six decades and assess how these theoretical frameworks have changed our conception of public policy and the operational context for public organizations. Since systems theory is strongly interdisciplinary, we will also explore basic concepts as they were borrowed from physics, mathematics, biology, engineering, and computer science to inform current organizational frameworks of complex adaptive systems and their application to policy and practice in current public and international affairs. Students will write five short papers assessing the evolving state of complex systems and the impact of theoretical framework in analyzing public policy issues today.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2216 - ECONOMICS OF SOCIAL POLICY

Minimum Credits: 3
Maximum Credits: 3
This course will use the tools of economics, and draw on empirical research from economics, to explore issues around racial, ethnic, and gender disparities in the United States. We will consider questions such as: Why are there persistent gaps in labor market outcomes across groups? Why are there persistent differences across groups in educational attainment and opportunities? What drives the dramatic underrepresentation of minority groups and women in government, and to what extent does this impact the distribution of government spending? For each of these issues, we will consider the impact of policy on reducing, or in some cases exacerbating, these disparities.
Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2220 - ADVANCED SEMINAR: EVIDENCE AND INFERENCE IN POLITICAL SCIENCE AND PUBLIC POLICY

Minimum Credits: 3

Maximum Credits: 3

The main purpose of the seminar is to probe patterns of evidence and inference in the policy sciences. This purpose will be attained by focusing on methodology, that is, the systematic and critical examination of methods and theories used to make knowledge claims in disciplines and specialties we will treat as "argument fields". The central organizing device of the seminar is that of argumentation, specifically, the "structural model of argument" developed in the early 1950s by Stephen Toulmin and detailed in the main text of the seminar.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PIA 2221 - ECONOMIC INEQUALITY AND AMERICAN DEMOCRACY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PIA 2227 - ADVANCED METHODS OF POLICY RESEARCH ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

This course in advanced methods of policy analysis focuses on four types of methods: -structured analytic techniques used in the intelligence community to make intelligence estimates and to identify national security threats; -problem structuring techniques used to solve ill structured or 'wicked' problems in areas of technology assessment, development planning, intelligence analysis, and economics; -forecasting techniques based on expert judgment which are appropriate when quantitative data are unavailable to make estimates of future states of energy, environment, technology, and related areas; -argument mapping techniques used to assess the quality of scientific and policy reasoning and to enhance critical thinking capabilities among professional policy analysts and planners. The seminar will feature short (30-45 minute) presentations by members of the Security and Intelligence Studies (SIS) program and professional analysts, researchers, and trainers in the Intelligence Community (IC) and elsewhere. Students should note that the methods covered in this course are part of a current analytic reform movement among intelligence analysts and elsewhere in the wider public, private, and nonprofit sectors. The course is open to qualified masters and doctoral students.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PIA 2230 - MASS POLITICS

Minimum Credits: 3

Maximum Credits: 3

This course will focus on the political behavior of citizens in modern Western democracies, especially the United States. Since much of this behavior is institutionalized through elections, we will spend much of our time examining electoral behavior and participation. We will also deal with public opinion, political reasoning, and information processing, and mass-elite communication.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2231 - CONTEMPORARY US ENERGY POLICY

Minimum Credits: 3

Maximum Credits: 3

This class examines the energy policy choices facing U.S. policymakers. The choices involve myriad issues, including: allowing fuel exports, regulating greenhouse gas emissions, subsidizing renewable fuels and energy efficiency investments, allowing drilling on public lands, and allocating funds for research across energy sources and technologies. Broader issues include: understanding and evaluating the justifications used to support energy policies; making policy when costs and benefits are uncertain, occur in long term, and are hard to quantify; what's the 'right' price of energy; market and government failures ' what are they and how do we address them?

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2232 - POLICIES FOR MANAGING RISKS TO HEALTH AND SAFETY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2233 - SEPARATION OF POWERS

Minimum Credits: 3

Maximum Credits: 3

This course will focus on the relationships among the branches in a separation of powers system, particularly the interplay between the legislature and the president. Most specifically, the course will consider the implications of a separation of powers system on representation: can a system specifically created to check the government's ability to act meet the demands for representation of a diverse constituency? How should we think about representation in a separation of powers system? The course will focus on the US political system, but will have implications for the comparative study of these systems.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PIA 2290 - TOPICS IN PUBLIC ADMINISTRATION

Minimum Credits: 1

Maximum Credits: 3

This course traces the historic origins and contemporary expressions of philanthropy to offer an overview of the multiple dimensions of this growing and increasingly global source of capital and innovation in the nonprofit sector. Students become familiar with who gives, why, and how they structure their philanthropy. The course assesses different strategies and how new approaches like ephilanthropy and giving circles open and diversify the field. Global, faith-based, and venture philanthropy are among the topics covered. Market-based approaches like social enterprise and corporate social responsibility, along with accountability, impact measures, transparency, and their public policy implications are explored. The course draws on case studies and guest speakers. Students participate in GSPIA's student philanthropy project, gaining hands-on grantmaking experience throughout the semester by awarding funds to area nonprofits. This exercise links philanthropic theory to practice. At the end of this course students are able to articulate a robust definition of philanthropy's goals and the structures that advance them; demonstrate a range of hands-on grantmaking skills; connect applied learning in grantmaking to policy and practice issues examined in the course; model effective team work and decision-making practices that enhance grantmaking; incorporate knowledge gained from practitioners and course work into personal philanthropic practices; recognize how contemporary issues in philanthropy intersect with the nonprofit, public and civic sectors; develop a research topic that contributes to peer learning; better assess community needs through an enhanced understanding of the Pittsburgh nonprofit sector.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2301 - INTERNATIONAL POLITICAL ECONOMY

Minimum Credits: 3

Maximum Credits: 3

This course focuses on institutions, policies and political relationships that have shaped international economic affairs. The course will explore relations between economic processes and political processes in the context of international politics, with particular reference to the dilemmas that such relations present to policy-makers. The questions to be asked include: 1. What analytic challenges arise in trying to understand the interaction between the exercise of power and the pursuit of wealth? How do different 'schools' of International Political Economy (IPE) depict this relationship? 2. What are the most influential such schools, what are the assumptions, key concepts and values of each and what are the implications of each for public policy? 3. Historically, what are the main economic and political forces that have shaped the international economy? 4. What domestic and external strategies have states adopted in order to develop their own economies and to benefit from exchanges with other countries (while minimizing their vulnerability)? 5. For what purposes have states sought to cooperate with each other in the management of the international economy? How successful have their efforts been? What kinds of institutions have they created so as to protect their national interests while cooperating with others? What have been the strengths and weaknesses of particular international organizations, and what might be done to strengthen them? 6. To what extent has the ability of states to direct their own economies been weakened by the advent of 'globalization'? 7. What are the major challenges currently facing policy-makers in the management of the international economy?

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: African Studies, Asian Studies, Latin American Studies, Russian & East European Studies, West European Studies

PIA 2302 - INTERNATIONAL FINANCIAL POLICY

Minimum Credits: 3

Maximum Credits: 3

The course focuses on the international financial system and its significance for policy-making. Topics include: the balance of payments, foreign exchange markets, fixed and flexible exchange rates, purchasing power parity, the eurocurrency markets and alternative monetary regimes. The course is designed to give students a command of the basic theoretical tools used in analyzing international financial issues and the ability to apply this theory to the real world. A team project on a current or historical international financial issue is a course requirement.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Asian Studies, Global Studies, Russian & East European Studies, West European Studies

PIA 2303 - SECURITY AND INTELLIGENCE STUDIES

Minimum Credits: 3

Maximum Credits: 3

Many argue that the 21st century security environment is fundamentally different from and more dangerous than that which existed in previous eras. There is some evidence to suggest that this claim might be true; the security challenges absorbing the majority of states' time, money, and military efforts since the end of the cold war ' and especially since 9/11 ' are notably different from those of the past and, at times, they seem more pervasive. However, it does not necessarily follow that such proximate differences are symptomatic of a deeper shift in the nature of the inherently dangerous international arena. This course explores the nature of the international security environment ' past and present ' and considers whether and to what degree the logics for coping with security challenges have changed over time. In doing so, students will be introduced to the arguments and debates in the academic literature on security and intelligence issues and learn to apply them to contemporary challenges. We will spend the first third of the semester examining traditional security studies concepts and issues like war, coercion, effectiveness in nuclear and conventional warfighting, and the effects of regime type on security policies and achievements. The second third will then be dedicated to considering the utility of traditional concepts in understanding the nature of and strategically-preferable responses to security challenges pervasive in the current international arena like asymmetric warfare, nuclear proliferation and missile defense, terrorism, and space and cyber warfare. The last third of the course examines the nuts and bolts of the United States national security apparatus to better understand how theory is (or should be) transformed into policy. We conclude by considering the costs and benefits of different American grand strategies moving forward.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Asian Studies, Global Studies, West European Studies

PIA 2305 - FOREIGN POLICY AND DIPLOMACY

Minimum Credits: 3

Maximum Credits: 3

This course examines how the United States government makes foreign policy and conducts its diplomatic relations with foreign governments and international organizations. It is designed for students who want to pursue a career in foreign affairs. Its main focus will be the state department and embassies, but it will also look at the role of the president and the national security council, the pentagon and other government agencies, congress, the media and think tanks. Key concerns will be the interagency process and the interaction of Washington with overseas missions. The course will acquaint students with how the state department and embassies are organized and function. It will discuss how recent secretaries of state have used the department's machinery, and it will introduce students to key diplomatic activities: working with allies, dealing with Russia, negotiating treaties, conducting shuttle diplomacy. Students will be introduced to the relevant functions of foreign service officers. There is a strong emphasis on drafting: press guidance, briefing memos, reporting cables, etc. Students will also assume the role of 'desk officer' and manage an issue of their choice throughout the course. Normally there will be a field trip to Washington to meet people working at state, on the hill, at think tanks and in foreign embassies. At the conclusion of the course, students will participate in a crisis management exercise that they design and execute. The goal is to develop the professional drafting, reporting, briefing and policymaking skills required to function effectively in Washington's foreign affairs community.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2306 - COMPETING PERSPECTIVES ON GLOBAL ENERGY: FROM WESTERN PA TO EASTERN EUROPE

Minimum Credits: 3

Maximum Credits: 3

This course provides professional school students in the fields of business, law, engineering, public policy and other areas with a first-hand experience of the global impact of contemporary developments in the natural gas and other energy sectors. Participants will first witness the effect that Marcellus shale has had in Western PA and then see how these developments are impacting the US's foreign policy and trade practices. After this, students will be familiarized with a very different side of the global natural gas and energy equation by travelling to Moscow, where they will see the kremlin's view of global and regional gas and energy markets. The course ends with an exploration of the role that transit states like Bulgaria play in global energy markets and efforts by these players to use their territory and energy alternatives to bargain with larger states at both ends of energy pipelines. Throughout this exploration, students will be exposed to a variety of stakeholders and gain an understanding of energy's impact on domestic and international politics, economies, societies and the environment.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2307 - HUMAN SECURITY

Minimum Credits: 3

Maximum Credits: 3

This course introduces the core concepts of human security, examines the institutions that promote them, and probes the advantages and limitations of human security as a means of addressing difficult policy issues. Human security treats individuals and communities, rather than states and institutions, as the fundamental units of analysis. It calls for an integration of individuals' security and integrity with state security and sovereignty. Analyzing security at the level of individuals instead of states raises important challenges and opportunities for observers and practitioners of development, conflict and peace, human security, and investigate substantive policy agendas affecting human security on a range of global issues. We grapple with both direct and structural violence especially among vulnerable populations, and with debates about prioritizing or narrowing human security threats and referents. And we explore how a diverse set of actors develop global public policy responses by articulating new policy agendas and defining policy recommendations. Throughout the term we assess the advantages and drawbacks of the human security.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Global Studies

PIA 2308 - COVERT ACTION IN WORLD POLITICS

Minimum Credits: 3

Maximum Credits: 3

What is covert action? How does it differ from other hidden tools of statecraft? What are the common drivers of covert action across time and space? What are some of the major successes and failures of covert action over the past 70 years and what can these episodes teach us about secret operations in the 21st century? How has the proliferation of new technologies impacted the ways in which states think about and use covert action today? At present, there exists a mismatch between the relatively high frequency with which states turn to covert action to achieve foreign policy objectives and popular understanding of the subject, which is oftentimes limited and sometimes sensationalist. In this course, we will take a deep dive into the secret world of covert action, exploring the many faces of, and dispelling the many myths surrounding, this unique tool of statecraft. In order to accomplish these goals, we will examine the theoretical, historical, and contemporary research on covert action.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2310 - MARKETS AND STATES

Minimum Credits: 3

Maximum Credits: 3

Markets and States considers how governance explains why some countries are rich and others are poor. In the context of this course, "governance" refers to the formal and informal rules that liberate and constrain individuals and groups in their efforts to improve their economic situation. The course begins by considering the economic foundations of prosperity, including the role of competitive markets, private property rights, and foreign aid in the process of economic development. It then considers the role of the state in economic development, with emphasis on analysis of the political factors that create incentives for governments to do what is in society's best interests. Its empirical focus is on developing countries, but will also consider some examples of the political economy of development in the U.S., including when the U.S. was a developing country. The course will also focus on evaluation of development policies, including understanding the logic of randomized impact evaluations and other methods used to analyze the causal impact of public policies seeking to improve prospects for economic development. The course is relevant for students in international development, public administration, and international affairs.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Global Studies, Russian & East European Studies, West European Studies

PIA 2311 - ADVANCED INTELLIGENCE ANALYTICAL TECHNIQUES

Minimum Credits: 3

Maximum Credits: 3

This course is intended for students who have already gained skill in writing intelligence analytical pieces from Introduction to American Intelligence, Terrorism as an Intelligence Problem, or Intelligence Perspectives on the Cold War Era. We will review some of the basic literature on intelligence analysis, study some of the more-advanced analytical writing techniques, and then will put them into practice in writing and orally briefing analyses on topics of current intelligence interest. During the course, each student will develop and research a topic -- chosen in consultation with the instructor -- of interest to the student and drawing on the student's own knowledge and expertise. The instructor and other students in the course will act as policymakers to critique the analyses for their insights and value to the policymaking process. Each student will produce a medium-length analytical product suitable for use as a professional writing sample of value in their career search.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2317 - LAWS OF WAR

Minimum Credits: 3

Maximum Credits: 3

This course examines the historical development and current role of international humanitarian law - conventionally known as the laws of war. War,

despite its often chaotic appearance, is a highly regulated affair. Understanding the rules can facilitate the creation of better, and more effective strategy, operations, and tactics. Starting with early thinkers seeking to develop common understandings about access to shipping lanes and ending with contemporary debates about topics like torture and the regulation of artificial intelligence on the battlefield, students will grapple with the political, legal, and moral questions of developing, applying, and enforcing rules in wartime.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2319 - INTERNATIONAL TRADE

Minimum Credits: 3

Maximum Credits: 3

International trade is important and controversial. All countries participate in international trade. Yet all countries restrict trade. In all countries there are people and groups who favor freer trade and there are others who oppose it. This course will introduce the student to the key issues and controversies in the study of international trade. We will examine economic explanations and analyses of why countries trade. What are the key determinants of trade - factor endowments, resources or skills? We will also analyze the benefits and costs from trade and how these are distributed within a country. Throughout we will adopt a policy perspective and will rigorously examine some elements of trade policy such as tariffs, quotas, subsidies, export taxes, and, the economics of free trade arrangements. We will look at the controversial issue of international trade and the balance of payments. Time permitting; we will analyze the effects of trade and international factor mobility on economic growth and development. We will broaden and deepen our knowledge of the specific subjects and improve our skills in applying the analytical tools that economists have developed to help understand these complex phenomena.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Asian Studies, Global Studies, Russian & East European Studies, West European Studies

PIA 2323 - INTELLIGENCE ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

This course will empower students with a deeper understanding of the myriad ways U.S. intelligence analysts support policy makers. Students will have hands-on experience drafting written assessments in the style and format used by the intelligence community, including for the President's Daily Brief and in longer intelligence assessments such as National Intelligence Estimates (NIE). Students will also hone their oral briefing skills through in-class exercises. Examples for written and oral exercises will be drawn from the range of experience real-world intelligence analysts face, including providing strategic assessments of political and economic developments in support of U.S. bilateral and multilateral relations, analysis of terrorist groups and other non-state actors, and military analysts' support to the war fighter. Class readings will focus on understanding the delicate balance between intelligence analysis and foreign policy making, and what happens when policy makers disagree with analytic assessments or when intelligence analysts fail to provide timely and accurate information to policy makers.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2324 - PEACEMAKING AND PEACEKEEPING

Minimum Credits: 3

Maximum Credits: 3

This course offers case studies of multilateral peacekeeping and peacemaking efforts in relation to regional and ethnic conflicts, such as those in Bosnia, Kosovo, Rwanda and Somalia. It looks at the underlying rationale for intervention in such conflicts and the problems and dilemmas that arise.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Global Studies, Russian & East European Studies

PIA 2327 - TERRORISM AND COUNTER TERRORISM

Minimum Credits: 3

Maximum Credits: 3

This course will deepen our understanding of the post-9/11 security environment by examining contemporary terrorist groups and the history from which they spring. We will address a number of questions, including, what is terrorism and how has the terrorist threat changed over time? What are the data that we use to understand terrorist behavior and the patterns of terrorism? What motivates terrorists to engage in political violence against non-combatants? At what point does violent militancy cross over into terrorism? Does terrorism ever succeed, and, if so, under what circumstances? How does terrorism end? While much of our focus will be on so-called 'Islamist terrorism,' we will also explore other types of terrorism, including secular and sacred groups active in the United States, Western Europe, and elsewhere. Time permitting, we will also consider a number of other topics, including 'cyber-terrorism,' deradicalization, and state terrorism. As befitting the complex nature of terrorism, we will draw on numerous academic disciplines in studying these topics, including political science, sociology, psychology, history, anthropology, and economics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: African Studies

PIA 2328 - ETHICS AND NATIONAL SECURITY

Minimum Credits: 3

Maximum Credits: 3

This graduate seminar focuses on the ethical quandaries confronting principals who make decisions on national security policy. Students practice articulating foreign policy arguments, paying attention to the political, ethical, and social scientific aspects of those arguments. Issues covered include just war, humanitarian intervention, counterintelligence, counterterrorism, immigration, economic sanctions, foreign aid, and distributive justice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2329 - INTELLIGENCE & FOREIGN POLICY

Minimum Credits: 3

Maximum Credits: 3

As societies have become more reliant on information technologies, so they have become more vulnerable to disruption through attacks on information systems. This course examines the national information infrastructure, highlights its vulnerabilities to both criminal exploitation and attacks by terrorists or hostile nations, and look at what can be done to enhance security in this area.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2335 - APPROACHES TO CONFLICT RESOLUTION

Minimum Credits: 3

Maximum Credits: 3

The resolution of disputes at national and international levels requires creative approaches to conflict resolution. Resolving disputes through successful negotiation has become a valued skill and could even be considered a "fine art." Of course, some disputes cannot be completely resolved, especially those which have evolved into violent conflict. In these cases, successful negotiation can lead to a more peaceful and productive situation which could eventually evolve into a permanent settlement. This course first examines the nature of conflicts: how they begin and can sometimes lead to violence or even war. We then analyze the role of negotiation and its potential for mediation to defuse disputes. This course covers both the theory and the practical application of conflict resolution using case studies and role playing. The course objective is to provide students with both the theory of conflict resolution as well as the skills involved in successful negotiation. In relation to the negotiation process, the course focuses on the following questions: when is negotiation feasible and desirable as an approach to conflict resolution? What format (bilateral/multilateral) and procedure is appropriate for a given negotiation? What are the main issues in setting up a negotiation? How can negotiation "formulas" be devised

and evaluated?

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2336 - STRATEGIC INTELLIGENCE IN INTERNATIONAL SECURITY STUDIES

Minimum Credits: 3

Maximum Credits: 3

This course seeks to make students familiar with the challenges the United States confronts in adapting its intelligence community in ways appropriate to the security challenges of the twenty first century. Phenomena such as terrorism, transnational organized crime, humanitarian disasters, environmental degradation, emerging and re-emerging diseases and cyber-threats have replaced soviet military power and political expansionism as key items on the national security agenda. This poses new and demanding requirements for United States intelligence collection and analysis. Consequently, the course not only elucidates the nature of these challenges, but also gives particular emphasis to the kinds of skills and ways of thinking that are relevant to meeting them. In addition, it is designed to provide opportunities for students to use the skills they obtain in a practical manner that is relevant to contemporary national security challenges and problems. Consequently, several sessions will introduce the class to analytic methods and software tools that are used in intelligence analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Global Studies

PIA 2340 - SPACE AND NATIONAL SECURITY

Minimum Credits: 3

Maximum Credits: 3

This course examines how space-based services provide critical support to military and intelligence operations and contribute to national security more broadly. The course is designed to investigate several interrelated themes, weaving together relevant aspects of technology, strategy, and policy. The material is approached from both functional and historical perspectives, exploring the basics of military and intelligence space operations and ending with an examination of the space-related technical, strategic, and political challenges facing the nation today and in the foreseeable future. The course is taught in a relaxed atmosphere, combining lecture and discussion, and is aimed at achieving a deep understanding of the material and a vibrant exchange of ideas. Upon completion of this course students should be able to understand and evaluate policy proposals for national security space and intelligence systems, strategies, and operations. Students should be able to perform competent policy analyses, develop well-reasoned positions, and communicate those positions in concise, persuasive professional papers. The course is taught in three phases. Phase 1 focuses on the fundamentals of satellite operations. Here students explore, at a non-engineering level, the basic principles of orbit and learn what kind of military and intelligence missions are flown in space, at what orbit each mission is flown, and why. Phase 2 surveys key developments in space operations and national policy in the cold war. Students examine how military satellite programs developed during that period and what missions they came to support. Phase 3 examines America's dependence on space today, surveys emerging threats to the nation's space infrastructure, and considers the implications of these developments for U.S. National security policy. Students weigh the pros and cons of such controversial programs and concepts as ballistic missile defense, anti-satellite weapons, space control, and orbital weapons designed to attack targets on earth.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2346 - INTRODUCTION TO AMERICAN INTELLIGENCE

Minimum Credits: 3

Maximum Credits: 3

This course will focus on how the U.S. intelligence community collects and analyzes information to support U.S. national security and foreign policy objectives. Students will examine the historical foundations of the intelligence community and consider how the role of intelligence has changed over time, particularly after the attacks of September 11, 2001. Students will also consider the legal, moral, and ethical factors that influence the roles and conduct of the U.S. intelligence community. Finally, this course will take a closer look at selected current intelligence topics, such as Russia, China, terrorism, weapons of mass destruction, and cyber security.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2347 - GLOBAL HOT SPOTS

Minimum Credits: 3

Maximum Credits: 3

This course integrates gender as a category of analysis with conventional and critical approaches to the study of international security. It draws on feminist theories to consider: 1) ways in which gender hierarchies underpin the traditional war system and inform the mainstream security discourses; 2) what gender can add to conventional understandings of security; and 3) how gender lens enables us to think more broadly about the meaning of security in the new century.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Global Studies

PIA 2350 - THE POLITICS OF INTERNATIONAL TRADE

Minimum Credits: 3

Maximum Credits: 3

This redesigned class will cover the political economy of trade, broadly defined to include global production and the activity of multinational firms. As the examples of Brexit and the protectionist policies and rhetoric of the Trump administration remind us, openness to the international economy is a political choice. Indeed, all governments face a dilemma: how to balance the demands of economic actors (workers, industries, firms) who demand protection from global competition, while guarding the benefits of globalization - jobs created, gains to consumers, growth-inducing innovation - from protectionist (i.e. anti-globalization) rhetoric and policies (e.g. trade barriers). We will examine how governments in developed and developing countries can manage this dilemma through trade policy, social welfare policy, industrial policy, and development strategy. To understand how this dilemma shapes the politics of trade within and between countries, we will first cover major economic theories of trade, foreign investment and global production (i.e. offshoring). These theories tell us which economic actors are the winners and losers from trade. Second, we will examine the political process that shapes trade policy at the domestic level. Finally, we will cover the international politics of trade, including free trade agreements and the WTO. The class will also help students develop their policy analysis skills. One requirement will be a short data-driven research project. Class time will be devoted to spending time on data collection, data preparation, and analysis.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2351 - ESPIONAGE, COVERT ACTION, AND COUNTERINTELLIGENCE

Minimum Credits: 3

Maximum Credits: 3

Few aspects of intelligence are as misunderstood or wrongly portrayed as human intelligence (HUMINT). Movies, books, television, and even scholarly works do not address the nuances of the oldest profession: stealing secrets. This course will provide an in-depth examination of the role, impact, and conduct of HUMINT espionage, covert action, and counterintelligence. Emphasis will be placed on gaining as complete of an understanding of these three disciplines as is possible in an unclassified setting. Case studies and readings taken from actual events will form the basis of students conducting operational role-playing, target analysis exercises, agent recruitment, handling, debriefing, and report writing. Extensive practical tradecraft exercises will give these classes added realism. Readings will also be drawn from published memoirs of recently retired CIA operations officers and historical studies of modern US intelligence operations. The course grade will derive from a mid-term essay exam, but the majority of the grade will come from class practical exercises where students will learn and demonstrate tradecraft skills.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: PIA 2346; PROG: Grad Sch of Pub & Int'l Affrs

Course Attributes: Russian & East European Studies

PIA 2352 - STRATEGY AND POLICY

Minimum Credits: 3

Maximum Credits: 3

This course examines the nexus of military strategy and national policy, exploring the development and use of military power for political ends. In short, it is about how states make war. The course is designed to investigate several interrelated themes. First is the role of military theory as a foundation for doctrine and strategy. The second explores the relationship of military strategy to national objectives and political decision-making. The context in which the foregoing issues are examined is provided in the third theme: the social, technical, and intellectual evolution of warfare from the early nineteenth century to the present. The course is taught in a relaxed atmosphere, combining lecture and discussion, and is aimed at achieving a deep understanding of the material and a vibrant exchange of ideas. The course is taught in five phases; the first is foundational and the four that follow are historically oriented. The course phases are: (1) basic concepts and theory; (2) the 19th century through the first World War; (3) the interwar period through the Second World War; (4) the Cold War; and (5) the post-cold war era and beyond. Phase 1 lays a theoretical foundation that students apply in analyzing historical developments presented in each of the four subsequent phases. Additional theories are introduced in phases 2 through 5 in context of the technological and intellectual developments that inspired them. In each of those phases, students also explore the evolving nature of civil-military relations and the impacts of social, intellectual, and technological developments on military strategy and national policy. At the end of the course, students are invited to synthesize their knowledge of military theory, strategy, and policy to assess the strengths and weaknesses of current U.S. Strategic thought and discuss prospects for more effective strategies and policies in the future.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2353 - CREATIVE APPROACHES TO INTELLIGENCE ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

Modern diplomatic thought is a survey course in diplomatic history. While emphasis is on the history of the Western world (U.S.-Europe), their relations with Asia, Africa, and their developing countries are also covered.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2354 - HISTORY OF AMERICAN INTELLIGENCE

Minimum Credits: 3

Maximum Credits: 3

This course is a survey of the history of U.S. Intelligence agencies and their roles in defense, foreign, law enforcement, and commercial policy. We focus on historical U.S. Trends in intelligence collection, analysis, covert operations, and how U.S. Policymakers have used them. We compare U.S. Approaches to intelligence in times of both peace and war. We contrast U.S. Intelligence methodologies with those of both our allies and our opponents. We spend some time examining the historical arguments in the U.S. Over ethics, civil liberties, resources, and the proper roles of U.S. Intelligence. Finally, we consider how these historical trends inform and influence the current evolution of the U.S. Intelligence community. The course is taught by a serving CIA operations officer with over three decades of experience in intelligence and diplomacy. He has served in East Asia, Europe, Latin America, the U.S., In CIA headquarters, and most recently in South Asia.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2355 - WWII,THE COLD WAR, AND THEIR IMPACT ON DEVELOPING NATIONS

Minimum Credits: 3

Maximum Credits: 3

This is a policy-relevant history course that examines the international relations of the 20th century, as well as the lasting legacy of the cold war today. After discussing the causes, conduct, and consequences of World War II, students study the rise of the Soviet Union and iron curtain, postwar trusteeships, and the process of decolonization by which large swaths of Africa and Asia obtained their independence. Class lectures cover just war theory, the geopolitics of war, the rise of NATO, and the major cold war conflicts in Cuba, Afghanistan, Iran, and Vietnam. Using historical case studies, students learn important practical skills useful for a career in diplomacy, international negotiation, or statecraft, as seen through the eyes of master practitioners.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Asian Studies, Russian & East European Studies

PIA 2356 - MODERN IRAN

Minimum Credits: 3

Maximum Credits: 3

This course covers the contemporary political structure and the recent historical development of the middle eastern state of Iran from the pre-revolution period forward to the modern day. Historical themes emphasized in this course include political Islam and theocratic government, US-Iranian relations (both pre-1979 and post-1979), oil and politics, the nuclear question, sectarian politics and political violence, and Palestine-Israel in the contemporary political setting. Course topics to be delivered focus on the modern epistemology of Iranian politics, history, and culture and use as the fulcrum of this analysis the 1979 revolution and its impact upon both regional and global societies. A common theme running through this course will be the relationship between Iran and the West, specifically the relationship between the current Iranian government and the United States since the 2008 presidential election. Students will access these and other topical themes through weekly class readings and authorship of original academic reviews, as discussed below. In addition students will author an original research paper of substantial length at the conclusion of the semester which will be based upon individually designed and instructor-approved research questions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2358 - POLITICAL ECONOMY OF THE INTERNATIONAL FINANCIAL SYSTEM

Minimum Credits: 3

Maximum Credits: 3

Why do states select the economic financial policies that they do, and with what effects? This elective course introduces students to the interplay of politics and economics within international financial system. Topics include the trilemma (fixed exchange rates, free capital movement, and independent monetary policy), and how reputation and perception 'distinct from policy choices' have real effects in areas as diverse as credit ratings, sovereign debt, and political risk. We will analyze large, rising powers within the international financial system, and explore the strength of financial and monetary policy special interests. Group presentations throughout the semester will address current events, touching upon each of the BRICS countries Brazil, Russia, India and China. Students develop transferable, professional skills as they engage with the above topics. The course will provide opportunities to practice business writing, verbal communication of complex ideas, and the creation of effective visuals (charts/graphs/figures) to organize and present information as a basis for policy analysis and evaluation. Students will engage in group presentations and will select a course-relevant, individual topic of interest to learn about throughout the semester. At the end of the course, each student will have developed a set of documents that reflect deep knowledge of his or her topic, communicated in simple, clear language that includes compelling evidence to establish a knowledge base and to support claims about cause and effect. For all exercises, the intended audience is a group of policy-makers who are non-experts in the specific topic under consideration.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Asian Studies, Global Studies

PIA 2359 - CIVIL WAR & CONFLICT RESOLUTION

Minimum Credits: 3

Maximum Credits: 3

The purpose of this course is to provide you with a framework for understanding and analyzing ethnic conflicts and Civil Wars, the most pervasive forms of armed conflict in the world. These intrastate conflicts killed millions of people, destabilize governments and entire societies, usually involve neighboring states and often undermine regional stability. Some conflicts engage the interests of distant international powers; many draw in international organizations. For these reasons, ethnic conflicts and Civil Wars are major security problems. The first part of the course is a brief overview that distinguishes conflict (an everyday occurrence) from violent conflict (a relatively uncommon event) and separates ethnic conflict from Civil War. The second part of the course analyzes the causes of violent conflict, ranging from psychological explanations to international factors. The third part of the course examines domestic strategies for dealing with ethnic and political differences, from accommodative strategies to violent ones.

The fourth and final part of the course examines international responses to intrastate conflict, including the use of economic, political and military policy instruments.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: African Studies

PIA 2360 - CYBER SECURITY POLICY

Minimum Credits: 3

Maximum Credits: 3

In our increasingly interconnected world, nearly everyone is reliant upon information technology as they go about their daily lives. This reliance on technology and people's related desire for immediate access to information, provides an opportunity for various actors to advance their personal goals, whether it be for political purposes, financial or other criminal endeavors, or as a platform to advance their social causes. As such, the need for solutions to this ever-growing problem goes beyond just technical solutions. In the course, students will learn how to approach cyber security from a policy and planning perspective. Students will be introduced to various threats and learn how to develop 'plans' at the operational and strategic level to mitigate them. Students will be introduced to various governmental policies, strategies and directives from both the US and non-US perspective that have been crafted to address the cyber threat. Finally, students will learn about the various governmental and non-governmental organizations that are working to deal with the daily challenges of cyber warfare.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2363 - INTERNATIONAL HISTORY

Minimum Credits: 3

Maximum Credits: 3

This course examines how history can inform policymaking. It does this by looking at key watersheds in international history - watersheds that continue to shape the world in which we live. One immediate goal of the course is to acquaint you with these watersheds, to increase what one might call your historical literacy - your knowledge of these key points in time - and your understanding of how these times continue to affect us. But the course does not stop with understanding, but tackles the question of how to act on that understanding. Unlike graduate history courses that focus on the "how" of history (how to research and write history - how we learn what happened), this course focuses on the "what" of history...And specifically what we do in light of what has happened. The idea is not just that history teaches lessons or that history can repeat itself or that "those who cannot remember the past are condemned to repeat it," but that an appreciation of how events have unfolded in the past may make us better able to deal with the complexity of what is going on at present.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: African Studies, Asian Studies, Global Studies, Russian & East European Studies, West European Studies

PIA 2365 - TRANSNATIONAL CRIME

Minimum Credits: 3

Maximum Credits: 3

Since the end of the cold war, threats to national and international security have become more varied and diffused. Some of these threats are subtle and insidious rather than overtly military in character. Transnational organized crime has this character. The course is intended to provide substantive knowledge about major transnational criminal organizations and the threats they pose to domestic and global governance and to international security and stability. Accordingly, it places the challenge posed by transnational organized crime in the context of broader issues of globalization, governance, and disorder. The purpose of this course is to examine the phenomenon of transnational organized crime, in all its variations and manifestations, to identify major transnational criminal organizations and activities, to assess the threat posed to national and international security and stability, and to evaluate the policy implications of this threat. Attention is given to the initiatives governments have taken in response to the transnational crime challenge, and an assessment made of the adequacy of these initiatives. Throughout the course students will be encouraged to become familiar with analytical techniques that are used by intelligence and law enforcement agencies in understanding, assessing, and responding to organized crime.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Asian Studies, Russian & East European Studies, West European Studies

PIA 2366 - INTERNATIONAL ORGANIZATIONS

Minimum Credits: 3

Maximum Credits: 3

This course examines multilateral diplomacy and international cooperation, paying special attention to the role that institutions play in shaping the modern world. Students learn practical skills relevant to a career in a multilateral setting, as well as information about the history of major institutions and some important political science theories on the nature of cooperation. The class is divided into three parts: part 1 examines the role institutions play in international politics and covers the various theoretical debates surrounding their efficacy. Part 2 covers the history, structure, and function of major international organizations like the United Nations, NATO, the European Union, African Union, Organization of American States, and others. Part 3 examines some managerial techniques important to working in a multilateral setting, and is designed to give students concrete skills that will be important in a career in multilateral diplomacy.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Global Studies, West European Studies

PIA 2370 - TERRORISM AS AN INTELLIGENCE PROBLEM

Minimum Credits: 3

Maximum Credits: 3

This course will focus on the important and topical issue of international terrorism and how the U.S. intelligence community responds to demands from U.S. policymakers and allies to detect terrorist threats, to collect intelligence on terrorist groups, and to analyze and assess their intentions, plans and capabilities. Rather than examining international terrorism from a theoretical point of view, we will look at the tactical and strategic issues of most concern to the U.S. intelligence community. As part of the students' professional development, the instructor also will teach the students to write brief intelligence analytical-style memoranda, a skill that will be useful in any professional career.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2372 - POLITICAL ECONOMY OF CHINA

Minimum Credits: 3

Maximum Credits: 3

This course is a graduate seminar designed to explore the content, process, and consequences of China's institutional reforms from a comparative perspective. Through a detailed examination of the literature on property rights, markets, and the role of the state in economic development, it is hoped that broader comparative insights may emerge about reform in China that distinguishes it from the experience of regimes in Eastern Europe, the former Soviet Union and developing and developed nations worldwide. The overarching question is what explains the course of China's institutional change. Specific questions include the following: Who were the key political actors involved? What was the role of the central state and its agents? What incentives motivated their particular responses to the reforms? What role did changes in property rights play in the success of China's reforms? Why were some reforms easier to implement than others? Who were the winners and losers in the different reforms? What major new problems have emerged as a consequence of piecemeal reform? How have those been handled?

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2374 - THEORY OF INTERNATIONAL RELATION

Minimum Credits: 3

Maximum Credits: 3

This course will survey a broad range of literature dealing with international relations theory. The course will view the literature in terms of the critical questions areas in international relations and will be designed to describe each approach and to evaluate the utility of the approach in terms of bringing understanding to some of these question areas.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Global Studies, West European Studies

PIA 2375 - CHINA IN THE WORLD

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2379 - INTRODUCTION TO CYBER CRIMES

Minimum Credits: 3

Maximum Credits: 3

Traditionally, crime has taken place in the physical world. Since the dawn of the internet, criminal activities on the web have been continually increasing. Crime is no longer restricted to a town, city, state or even country because internet crime transcends all different types of jurisdictions. In this course, students will learn the types of crimes that occur online, as well as receiving an overview of how these crimes are conducted. Since this course focuses on computing technologies, students will be given the basic necessities needed to understand the technologies they will be utilizing throughout this course, as well as future courses. Students will learn safe computing practices and how to gather the necessary data to help track down criminals on the web. Topics covered will include introduction to various technology topics, distributed denial of service attacks, ecommerce fraud, counterfeiting, 0-day exploits, discussion on various cyber criminals and nation state threats, etc. Lastly, students will learn about the different organizations, both public and private, and the various policies and laws that are intended to counter the increase in cybercrime.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Russian & East European Studies

PIA 2380 - HUMAN TRAFFICKING

Minimum Credits: 3

Maximum Credits: 3

According to some estimates, there are at least 10 times as many girls now trafficked into brothels annually as African slaves were transported to the New World in the peak years of the trans-Atlantic slave trade. More children, women and men are held in slavery right now than over the course of the entire trans-Atlantic slave trade. Human trafficking is the third largest international criminal industry in the world after illegal drug and arms trafficking, and it is the fastest growing. This course examines the domestic and international dynamics of human trafficking from a variety of disciplinary and practitioner perspectives. Assignments allow students to practice evaluating anti-trafficking policy on both scientific and ethical grounds and making persuasive arguments on the basis of that analysis. Prerequisite: None.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2382 - THEORY & CONCEPTS COMP POLITICS

Minimum Credits: 3

Maximum Credits: 3

This seminar focuses on theories of the modern state, especially in capitalist societies. The relationship of the state concept to various ideo-analytical frameworks and assumptions will be explored at some length as a way of evaluating the state concept as an analytical tool. These explorations form the basis for examining alternative images of the state in relation to society, to the role of leadership and statecraft in guiding the modern state, to alternative modes of organizing the state aid to making policy.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Global Studies, West European Studies

PIA 2383 - POLITICS OF THE EUROPEAN UNION

Minimum Credits: 3

Maximum Credits: 3

This course will investigate the formation and development of the European economic community although some emphasis will be on the history of its formation, the major emphases will be on the functioning of the institutions of the community and the impact of community policies on national policy.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Russian & East European Studies, West European Studies

PIA 2385 - COMPARATIVE LEGISLATURE

Minimum Credits: 3

Maximum Credits: 3

This course focuses on theories that relate to legislative organization, executive-legislative relations, and legislator behavior, and party politics from a comparative perspective. We frequently use literature on the US congress to frame the discussions, but read and analyze literature on Western and Eastern Europe, Latin America, Asia, and other parts of the world.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2387 - NATO AND ALLIANCE MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

This course introduces students to the organization and operation of history's most successful alliance, the North Atlantic treaty organization, as a key forum for international cooperation. In today's world nations are working together more intensely than ever and on a wider range of challenges. Thus, students who want to work in any branch of government are likely to find themselves working with their counterparts in other countries, particularly if they work in military and security related areas. Moreover, even if they are working in non-military fields, they may find themselves working alongside NATO-led forces, where an understanding of how the alliance works would also help. Throughout the course, students will follow and analyze current developments at nato, and they will also be introduced to its history since 1949. Special attention will be paid to nato's crisis management missions in Bosnia, Kosovo and Afghanistan, as well as to nato's relations with partners, including Russia, and with other international organizations, including the European union and the UN. There will also be an emphasis on negotiations among allies at nato. Normally the course will include a field trip to Washington to meet people working on nato issues today. At the conclusion of the course, students will also participate in a nato crisis management exercise that they design and execute. The goal of the course is to develop the knowledge and skills necessary to function effectively in a key international organization.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Russian & East European Studies, West European Studies

PIA 2388 - INTERNATIONAL LAW AND POLICY

Minimum Credits: 3

Maximum Credits: 3

This course begins with an exploration of the history and sources of international law. We then survey the legal process and the application of international law to explore laws governing relations among states, and its expansion to non-state actors (e.g., the private individual, international organizations, NGOS, and multinational corporations). Students will learn about how and why international law is created and develop an understanding of the mechanisms and institutions of its enforcement. The enforcement of international law, its successes and difficulties, will require students to learn about, inter alia, the nature of international disputes, the subjects of international law, and the forums in which disputes are settled. Throughout the course, we will consider the emerging challenges faced in an international law paradigm including, organized violence, global markets, cultural coherency and conflict, identity and citizenship, technological evolution, and environmental regulation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2389 - CRIMINAL OPERATIONS IN THE CYBERWORLD

Minimum Credits: 3

Maximum Credits: 3

This class will focus on how criminals conduct business in the online world. It will introduce students to various topics such as carding, transnational cybercrime, and web mobs. The class will explore specific communication channels and money transfer systems that are utilized by online criminals. Students will be exposed to criminal methodologies that have become popular in the cyber world. Students will also have the chance to analyze a criminal target and will present intelligence findings at a mock briefing as part of the final project.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Russian & East European Studies

PIA 2394 - ISSUES IN GLOBAL ECONOMIC AND FINANCIAL SECURITY (DC SEMESTER)

Minimum Credits: 3

Maximum Credits: 3

This course will discuss trends in global economic and financial security and ways to enhance it. The focus will be on ways to ensure global monetary and financial stability, including through appropriate regulation to reduce the incidence of financial crises and asset price bubbles. Other critical issues, including food and energy security and the role of finance in promoting development, will also be discussed. Although this is a policy course, students should expect to learn a good deal of economics and finance in the process of learning about these issues. These will be important intellectual tools as the future policy discussions on economic security and development will likely continue to focus more and more on finance and thus require more knowledge of finance than in the past. This course will be less narrowly technical, more policy and political economy oriented, but nonetheless appropriate for students concentrating in global markets, development, finance and trade.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Grad Sch of Pub & Int'l Affrs

Course Attributes: African Studies

PIA 2397 - INTERNATIONAL ECONOMIC NEGOTIATIONS (DC SEMESTER)

Minimum Credits: 3

Maximum Credits: 3

This course looks at a variety of different types of negotiations concerning economic issues, including multilateral trade and investment negotiations, bi- and pluri-lateral trade negotiations, and negotiations aimed at the settlement of specific disputes. We will discuss the influence of domestic politics, and the role of international organizations and non-governmental stakeholders such as NGOs, labor, multinational corporations, and domestic interest groups. The course is particularly useful for those considering careers in international trade, business, markets and finance.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Grad Sch of Pub & Int'l Affrs
Course Attributes: African Studies

PIA 2399 - INTERNATIONAL ECONOMIC ORGANIZATIONS

Minimum Credits: 3

Maximum Credits: 3

This elective course examines international organizations, with emphasis on institutions that govern countries' international economic policies and that affect international economic flows. We will study the Bretton Woods institutions (the GATT/WTO, the IMF, the World Bank) in-depth, along with regional economic arrangements (the EU), the OECD, the foreign aid regime (DAC), the system of bilateral investment treaties (BITS), international financial regulatory bodies (such as the BCBS, the FSB, and the FSF), and OPEC. Students will learn about international economic dilemmas that arise within an anarchic international system, and arrangements among countries to mitigate and govern such issues. Students will study how power and political processes work within and outside of international institutional arrangements. At the end of the course, students will be able to analyze the role of international economic organizations as both amalgamations of states that hold varying preferences, and as autonomous actors, within the international system within current events. Students develop transferable, professional skills as they engage with the above topics. The course will provide opportunities to practice business writing, verbal communication of complex ideas, and the creation of effective visuals (charts/graphs/figures) to organize and present information as a basis for policy analysis and evaluation. Students will engage in group presentations and will select a course-relevant, individual topic of interest to learn about throughout the semester. At the end of the course, each student will have developed a set of documents that reflect deep knowledge of his or her topic, communicated in simple, clear language that includes compelling evidence to establish a knowledge base and to support claims about cause and effect. For all exercises, the intended audience is a group of policy-makers who are non-experts in the specific topic under consideration.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2403 - JUDICIAL PROCESS

Minimum Credits: 3

Maximum Credits: 3

This course examines courts and judges as political actors. It emphasizes the non-legal factors that affect the decisions judges make and that influence judicial interactions with other political actors and institutions. Most material will focus on the US court system, but there will be some work of a comparative nature. Students will be responsible for critically analyzing reading materials and producing an independent research project.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2408 - DEMOCRATIC THEORY & DEMOCRATIZATION

Minimum Credits: 3

Maximum Credits: 3

This course has three objectives for students: 1) to develop a broad knowledge of the main currents in modern and contemporary democratic theory and a familiarity with their main problems; 2) to study how normative theories of democracy inform or might inform processes of democratization; 3) to apply this knowledge in solving some puzzle or problem by comparing cases, assessing claims, developing arguments, etc.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Global Studies

PIA 2410 - AMERICAN LEGISLATIVE PROCESS

Minimum Credits: 3

Maximum Credits: 3

This course will focus is on the journal literature of the last decade- involving representation, legislators and their behavior, legislative structures, legislative parties, interest groups, executive-legislative relations, legislative reform, national and subnational legislative systems.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2411 - AMERICAN FOREIGN POLICY

Minimum Credits: 3

Maximum Credits: 3

For students who already have some knowledge of this subject who wish to broaden or deepen their understanding. The course deals with major issues of U.S. foreign policy mainly through readings and discussions. Topics such as domestic sources, trade deficits and protectionism, nuclear and conventional arms control, deficit spending and U.S. strategy, soviet-American relations, China and its triangle, and vulnerable authoritarian regimes will be examined.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2412 - ANALYZING CRITICAL INTERNATIONAL SECURITY CHALLENGES

Minimum Credits: 3

Maximum Credits: 3

This course consists of three 15-hour weekend workshops 'meeting Friday 6-9pm, Saturday 9am-5pm (1-hour lunch break), and Sunday 9am-1pm' each of which explores a critically important international security topic in the news today. The topics planned for 2015 include: the pros and cons of nuclear abolition; assessing the need for missile defenses; and analyzing China's military capabilities. Using films, lectures, discussion and debate, and group simulations, these workshops will expose students to the key factors shaping each security challenge. The objective is to promote balanced and critical thinking in assessing threats and evaluating choices facing security and intelligence practitioners. In addition to a reading list of articles and monographs' all downloadable or available via the university's digital library' and two books (both provided courtesy of the instructor), the syllabus also provides students with a bibliography of books, journal articles, and major monographs for those wishing to pursue more advanced study. Grades will be determined on the basis of classroom participation and three take-home essays.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2419 - CYBERCRIME

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

PIA 2421 - FORMAL POLITICAL THEORY 2

Minimum Credits: 3

Maximum Credits: 3

This seminar introduces students to formal modeling of political and economic phenomena. It has a social choice and a game-theory component. The former explores issues involved in the aggregation of individual preferences through majority and other voting rules. The latter-larger of the two components-surveys non-cooperative game theory and explores its applications to various questions of interest to political scientists.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2424 - POLITICS ,DEVELOPMENT AND CONFLICT IN THE MIDDLE EAST

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2426 - SPECIAL INTELLIGENCE TOPICS

Minimum Credits: 3

Maximum Credits: 3

This course is designed to expose students to the key factors shaping three critical special intelligence topics that together are emblematic of the variety of major challenges facing intelligence practitioners and policymakers over the next decade. Case studies will be employed to illustrate each of the three special intelligence topics dealing with such issues as the intelligence/policymaker relationship, coping with the "politicization" of intelligence, recognizing the limitations of intelligence collection and analysis, and confronting tradeoffs between national security and personal liberties. Each workshop will commence with a film on Friday evening that is germane to the topic at hand. We then discuss and debate the film's implications, setting the stage for Saturday's lectures, class discussions, and possible group work or a guest speaker. On Sunday, we conclude with a national security simulation during which the class breaks down into smaller teams to address a challenging topic. Grading is based on class participation and the successful completion of a take-home essay due two weeks after each workshop.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2428 - STATE BUILDING

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

PIA 2429 - THE WAR ON DRUGS

Minimum Credits: 3

Maximum Credits: 3

The War on Drugs examines the history of drug control policy in the United States and the internationalization of drug prohibition. Topics include: the history of drug control policy in the US and internationally; the nature of drug abuse and addiction and current drug use patterns, the different components of drug control policy, including crop eradication, drug interdiction, leadership decapitation, law enforcement, and drug treatment and prevention; the structure of the drug trade in the Andes, Mexico, Afghanistan, and the US; and alternatives to drug prohibition, including legalization and harm reduction. The course highlights similarities and differences between the war on drugs and the war on terror with an eye towards understanding how our experience with the first can better inform our response to the second.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2430 - ETHNIC POLITICS

Minimum Credits: 3

Maximum Credits: 3

What is ethnicity and why is it such a powerful basis of politics? This seminar focuses on the role that ethnicity plays in four core areas of politics: mobilization, democratization, redistribution, and violence. We will read and discuss academic scholarship paired with contemporary policy-oriented work, with wide geographic coverage, on issues such as immigration policy, employment discrimination, ethnic favoritism in public goods provision, political campaigns, riots, and genocide. Students will then have the opportunity to develop and test their own argument related to ethnic politics in a final paper developed and critiqued through the semester that answers a question related to ethnic politics. Prerequisite: None.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2432 - ADVANCED SEMINAR: IN SECURITY AND INTELLIGENCE

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PIA 2434 - CIVIL-MILITARY RELATIONS

Minimum Credits: 3
Maximum Credits: 3

This course explores the relationship between militaries and the polities they serve. Militaries remain crucial institutions in the modern world, serving as the guardians of sovereignty and safety. However, militaries also possess the tools and capability to threaten the very people and polities they are meant to protect. Striking the proper balance between military capability and civilian control of the armed forces is therefore an essential task for all states. But how is this delicate balancing act to be achieved? What factors make success and failure in this venture more or less likely? In exploring these questions, we examine classical theories of civil-military relations and the direct rebuttals they spawned. We also consider some of the key issues in the study and practice of civil-military relations, including coups, the influence of civilians on battlefield performance, challenges raised by the increasing presence of civilian contractors on modern battlefields, the 'gap' between military and civilian values and beliefs, and the impact of the military's presence on college campuses. We conclude by examining the confluence of the various facets of the civil-military relationship and their manifestation in the George W. Bush and Barack Obama administrations.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

PIA 2440 - RUSSIAN FOREIGN POLICY

Minimum Credits: 3
Maximum Credits: 3

A reading course focusing on alternative interpretations of Russian foreign policy.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Russian & East European Studies

PIA 2441 - GOVERNMENT/POLITICS OF THE RUSSIAN FEDERATION

Minimum Credits: 3
Maximum Credits: 3

A reading seminar dealing with the alternative interpretations of the soviet political systems since the death of Stalin.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Russian & East European Studies

PIA 2448 - THE POLITICAL ECONOMY OF DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3

This course seeks to help you understand the causes of international inequality in the distribution of wealth. In simple terms, the course seeks to answer the question, "why are there rich nations and poor nations and rich people and poor people"? To answer this question we will need to

understand something about the factors related to economic development and how those factors are tied to income distribution. The course will expose you to some of the major theoretical and empirical literature on the political economy of development.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Attributes: African Studies

PIA 2449 - HUMANITARIAN INTERVENTION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2453 - ECONOMICS AND POLITICS OF COUNTER INSURGENCY

Minimum Credits: 3

Maximum Credits: 3

This co-taught seminar will examine five broad topics in the economics and politics of counterinsurgency (coin): (1) the causes of insurgency and Civil War, (2) patterns of recruitment and participation, (3) the organization of insurgent groups, (4) violent strategies used by warring factions, and (5) development policy targeted at reducing the ability of insurgent groups to produce violence.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2456 - COMPARATIVE POLITICAL BEHAVIOR

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2459 - POLICY APPLICATIONS OF GAME THEORY

Minimum Credits: 3

Maximum Credits: 3

This course is aimed at introducing game theory to graduate students in public policy. Game theory is a mathematical methodology for theory building, the use of which has ballooned within several disciplines, including political science and economics. As with any methodology, the ability to use game theory well comes only after much practice and exposure, more than can be achieved in one semester. However, the course has two goals, both of which are aimed at providing a foundation for understanding scholarly work in a policy context and for going on to future training in game theory if you desire. The first goal of the course is for students to understand some of the main types of strategic settings (games), and how to predict what strategies actors (players) will choose in those settings. In the first part of the course we will cover games of perfect information, which are games in which the players know all the relevant information about the strategic interaction in which they find themselves, including the other players' preferences. This is only one type of strategic setting. The final part of the course will touch on games of imperfect information, in which players are not certain of key aspects of the strategic environment. Other extensions of game theory are left for future classes. The second goal of the course is to give students a perspective on theory (in general) and how it is relevant to making policy prescriptions. We will of course be focused only on one type of theoretical argument'game theoretic ones'but some of the ways we use game theory will hopefully illustrate the importance of theory of any kind. Like any methodology, game theory has limitations, and like most, it can often be useful if employed properly. During the course, the goal is that students will gain an understanding of how game theory can be helpful for thinking about policy.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2460 - LATIN AMERICA SOCIAL & PUBLIC POLICY

Minimum Credits: 3

Maximum Credits: 3

This seminar explores contemporary issues of social and public policy in Latin America through complexity, systems, glonacal, policy diffusion, comparative, and case-study approaches. In the first section participants review general policy concepts and theories, to be followed by the historical, economic and political context of public and social policy in the region. The second section examines several policy areas such as education, employment, poverty alleviation, public administration, social security, health, minorities, and violence. Using complexity and systems perspectives it is possible to understand how social and public policy influences the development and practice of fields like education and it could be also influenced by those fields. Disciplines such as economics, history, health, political science, anthropology, and sociology shape and help to make sense of educational issues and vice versa. This seminar is an opportunity for students in education and other disciplines to engage in interdisciplinary deliberation on policy issues in this region and fulfills the requirements for certificates in Latin American studies. Materials for the class include current news, scholarly publications, videos and other material published in English, Spanish, and possibly Portuguese (students must be able to read at least basic Spanish).

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PIA 2461 - THE U.S. IN THE MIDDLE EAST

Minimum Credits: 3

Maximum Credits: 3

This course investigates the recent history of political, economic, and cultural interaction between the United States and the Middle East. The course will be conducted as a text-based, investigative seminar as opposed to a traditional, chronological history. Themes to be explored throughout the semester include the politics of oil, interactions between Islam and the West, American culture and politics post-9/11, Iranian-US relations, Iraq since 2003, and the ongoing Palestinian-Israeli conflict. Students will access these and other topical themes through weekly class readings and authorship of original academic reviews, as discussed below. In addition students will author an original research paper of substantial length at the conclusion of the semester which will be based upon individually designed and instructor-approved research questions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2462 - DIPLOMACY: THEORY AND PRACTICE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2463 - ORDER AND VIOLENCE: EVALUATING POLICY, ENHANCING GOVERNANCE

Minimum Credits: 3

Maximum Credits: 3

Establishing and maintaining political order in the state is essential for governance. This course first examines various threats to political order around the world and how they manifest in different forms of violence, including organized crime, gang violence, insurgency, genocide, terrorism, and riots. Armed with theory of causes of disorder and knowledge of specific cases, we review policy designed to address those types of disorder and evaluate effectiveness of those policies. Students will practice writing in short, analytical, policy-oriented memos, and how to evaluate policy using different kinds of evidence.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2464 - MONEY LAUNDERING

Minimum Credits: 1.5

Maximum Credits: 1.5

This course will introduce students to the main mechanisms and modalities of money laundering as well as to anti-money-laundering efforts and why their effectiveness is limited. Different money laundering methods will be explored and some consideration given to new technologies and how they might be exploited. The course will also examine money laundering case studies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2465 - FINANCIAL DIMENSIONS OF TERRORISM

Minimum Credits: 1.5

Maximum Credits: 1.5

This course will examine the financial dimensions of terrorism with particular emphasis on terrorist acquisition of resources and funds through criminal activities. Attention will be given to a variety of organizations and how they raise, move and spend money. The efforts by governments to combat terrorist financing will also be considered with a particular focus on why governments and the international community have had only modest levels of success.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2466 - DATA ANALYSIS VISUALIZATION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2467 - INTRODUCTION TO AMERICAN INTELLIGENCE

Minimum Credits: 3

Maximum Credits: 3

This course will focus on how the U.S. intelligence community collects and analyzes information to support U.S. national security and foreign policy objectives. Students will examine the historical foundations of the intelligence community and consider how the role of intelligence has changed over time, particularly after the attacks of September 11, 2001. Students will also consider the legal, moral, and ethical factors that influence the roles and conduct of the U.S. intelligence community. Finally, this course will take a closer look at selected current intelligence topics, such as Russia, China, terrorism, weapons of mass destruction, and cyber security.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2501 - DEVELOPMENT POLICY AND ADMINISTRATION

Minimum Credits: 3

Maximum Credits: 3

This is a survey of development policies, issues, institutions, and resources for professionals working in development. Lectures, discussions, and presentations in class focus on analysis of development policies, and on new and significant policy issues, skills, methodologies, and resources. The course helps students develop the ability to analyze development issues from several perspectives, understand the breadth of international development as a field of professional service and academic study, and clarify their priorities for acquiring skills in preparation for that service. Students completing the course will be able to grasp the history of approaches and experiences with development, identify and critically analyze major institutions involved, assess political and institutional environments of development, employ some key social science and administrative tools, and recognize and understand principles of other significant skills and emerging methodologies in development practice. The course is organized in three parts: 1) dynamics of development and social change; 2) development management: who's in charge; And 3) contemporary issues and skills. Throughout the course we will introduce, discuss, and return to case studies that illuminate key issues and themes: the global HIV/AIDS pandemic, microfinance programs in development, the chad-cameroon oil pipeline project, water system privatization, and the global and local food prices and

production.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: African Studies, Global Studies

PIA 2502 - POLITICAL ECONOMY OF GLOBAL ENVIRONMENT

Minimum Credits: 3

Maximum Credits: 3

The 1992 Rio Declaration on environment and development states that 'to achieve sustainable development, environmental protection shall constitute an integral part of the development process.' We discuss the linkages between development and the environment, and the role of women, indigenous peoples, and the poor in achieving equitable development and environmental protection. Using tools from economics and policy analysis, we explore the conceptualization of environmental problems (market or government failure); various policy instruments to rectify environmental problems (regulations, voluntary programs, taxes, tradable permits, payments for environmental services and international treaties such as the Basel Convention, the Montreal Protocol, and the Kyoto Protocol), and the link between trade and the environment. Students' case presentations illustrate the challenges of environmental management in developing countries and the roles of civil society, NGOs, corporations, and international institutions such as the world bank, world trade organization, and united nations environmental program. Over the course of the semester, students are responsible for several policy memos and PowerPoint presentations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Global Studies

PIA 2503 - CIVIL WAR & CONFLICT RESOLUTION

Minimum Credits: 3

Maximum Credits: 3

The purpose of this course is to provide you with a framework for understanding and analyzing ethnic conflicts and Civil Wars, the most pervasive forms of armed conflict in the world. These intrastate conflicts killed millions of people, destabilize governments and entire societies, usually involve neighboring states and often undermine regional stability. Some conflicts engage the interests of distant international powers; many draw in international organizations. For these reasons, ethnic conflicts and Civil Wars are major security problems. The first part of the course is a brief overview that distinguishes conflict (an everyday occurrence) from violent conflict (a relatively uncommon event) and separates ethnic conflict from Civil War. The second part of the course analyzes the causes of violent conflict, ranging from psychological explanations to international factors. The third part of the course examines domestic strategies for dealing with ethnic and political differences, from accommodative strategies to violent ones. The fourth and final part of the course examines international responses to intrastate conflict, including the use of economic, political and military policy instruments.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: African Studies

PIA 2506 - SEX AND HUMAN SECURITY

Minimum Credits: 3

Maximum Credits: 3

What effects do power relations between men and women, and between different gender and sexual orientations, have on human security? What is the connection between global gender inequality and experiences of security, development, and human rights as the three founding fields of human security? How does taking sex into account shift national and global policies, priorities, and human security outcomes? How well are international and national institutions doing in addressing connections between sex/gender and human security, and what remains to be done? The human security field has made such questions a priority by addressing neglected issues such as rape as a strategy of war, domestic violence as an obstacle to development, and gender/sexuality as a human right. More generally, it aims to address all human security issues comprehensively by including attention to gender. In this course, we focus on neglected gender issues and learn how to apply tools of gender analysis to our human security work more broadly. This means we examine human security using gender as a category of analysis, and that we address gender gaps in traditional

approaches to issues at the intersection of security, development, and rights. We begin by studying the merits of different gender analysis approaches relevant to human security issues. Through a gender lens we then critically examine the causes and implications of human security issues such as: violence that systematically targets a sex or gender as a particular group; rape as a strategy of war and a foil to peace keeping; inequality and domestic violence in non-conflict contexts. We also examine gender aspects of human security threats such as child soldiering, modern slavery, and environmental disasters. We critically assess institutional and policy responses and learn to develop more effective gender-aware human security responses.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2507 - HUMAN RIGHTS: POLITICS AND PRACTICE

Minimum Credits: 3

Maximum Credits: 3

In this course students examine global human rights as an evolving social and political institution, analyze human rights violations and the challenges of human rights practice, and learn how serious threats to human security may be addressed. We examine key human rights concepts, theories and laws, and related controversies that often obstruct international action on human rights (e.g. origins and nature of rights, universality and cultural relativity claims, conflicting rights, state sovereignty, and notions of obligations and accountability). We then examine the field of international action for human rights (e.g. states, inter-governmental actors, non-governmental actors and civil society) and the core dimensions and challenges of human rights work. Throughout the course, human rights target groups (such as women, children, and refugees) and current topics (such as genocide, child soldiering, gender violence, and peacekeeping) are examined as case studies, illustrating key principles and challenges, and providing insight into the range and depth of current human rights and their practice across fields. Students also select a specific human rights topic for major assignments, including a human rights issue brief and a comparative case study of international action on human rights.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Global Studies

PIA 2509 - PROJECT MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

Translating classroom theory into innovative field-based practice remains a project manager's most difficult challenge. The purpose of this course is to provide students with practical strategies and tools that can be used in the design and implementation of successful development projects. The course will be a highly interactive exploration of field-based development strategies and real-world projects that suffered lethal and catastrophic setbacks yet ultimately achieved solid and sustainable outcomes as a result of their innovative design. Students will be introduced to the basics of the project cycle, given specific management tools for project design and, working in groups, asked to develop project initiatives addressing a problem in a developing country of their choice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2510 - ECONOMICS OF DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

This course has three key objectives. The first is to provide students with an appreciation for the problems and constraints that poor or Less Developed Countries (LDCs) face. The second is to provide theoretical frameworks which facilitate analysis of these problems and generation of relevant policy implications. The third is to provide country and problem specific contexts within which students can apply the knowledge they acquire during the course. To accomplish these objectives, the course will employ a combination of lectures, case studies, exercises, and class discussion.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: PIA 2024 and 2025 or PIA 2026 or 2027; Graduate School of Public and International Affairs
Course Attributes: Asian Studies, Global Studies

PIA 2512 - POVERTY AND INEQUALITY

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2519 - COMPARATIVE GOVERNANCE

Minimum Credits: 3
Maximum Credits: 3
This is a graduate-level course in comparative governing institutions. It is a course that focuses on the political incentives and constraints faced by policymakers as they seek to develop and implement public policy. Our goal in this class is to understand the institutional environment in which politicians and policymakers operate. The most important objective will be to develop the ability of policy practitioners to understand the nature and transformations taking place in political institutions around the world as they seek to improve them. This course is part of a two-course sequence that is strongly recommended for students (both MA and PhD students) in the Governance and International Public Management concentration.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2520 - FOOD SECURITY: AGRICULTURE & RURAL DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
Focusing on food, hunger, agriculture and rural livelihoods in low- and middle-income countries, this course is a survey of nutrition, agriculture, and food policy issues. It is a course for non-specialists in agriculture who need to be able to work with agronomists and other specialists, in rural and community development.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.
Course Attributes: Global Studies

PIA 2521 - TOPICS IN COMPARATIVE POLITICS

Minimum Credits: 3
Maximum Credits: 3
Special topics in comparative politics will be discussed.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2522 - POLITICAL ECONOMY OF GLOBAL ENERGY

Minimum Credits: 3
Maximum Credits: 3
The global energy policy course applies tools from economics, science, and policy analysis to address energy issues. We examine various energy sources in the us/eu/developing countries including oil, gas, nuclear, hydro, biofuels, solar and wind. We discuss how market failures and government policies influence the gaps between private and social costs of energy. We examine incentive policies for the adoption of renewable energy and overall benefits from restructuring towards a greener economy. We examine the role of international trade, investment, technology transfer and climate policy in increasing energy efficiency and renewable energy worldwide.
Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2526 - NGOS CIVIL SOCIETY AND DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

This course explores the range of non-state actors in developing/transition countries that are important to promoting socioeconomic and political change. We will examine the origins, evolution and multiple roles played by this diverse group of non-state actors, including business and professional associations, trade unions and political movements, policy advocacy groups and civic education/democracy-building organizations. Among the issues preoccupying practitioners and researchers, and this course, are: what factors influence the presence and vibrancy of civil society in different countries? How has the state 'in various times and places' -- determined the context in which civil society organizations pursue their goals? With what strategies and with what success have civil society organizations been able to influence or change state policies? What autonomy and accountability issues arise in state-civil society relations, and how does the international donor community facilitate or complicate these relationships? In the process we will introduce specific tools from the social disciplines and development practice for working with civil society organizations, including assessing the strength of civil societies, measuring social capital, and assessing 'partner' organizations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Global Studies

PIA 2527 - FINANCIAL MANAGEMENT FOR NGOS AND NON-PROFITS

Minimum Credits: 3

Maximum Credits: 3

This skills course covers various accounting methods in both private sector organizations as well as Nongovernmental Organizations (NGOs). Upon completing this course students should be able to read and understand annual reports of profit and nonprofit organizations, analyze the published financial statements within the reports to ascertain the well-being of the organization, and to make managerial decisions based upon the results of this analysis. This course is divided into (1) understanding basics of accounting for all organizations; (2) measurements and analysis of financial statements using accounting tools such as common-size statements, liquidity and profitability analysis, debt vs. equity; and (3) budgeting and cost-benefit analysis using contribution margin.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2528 - GOVERNANCE, LOCAL GOVERNMENT AND CIVIL SOCIETY

Minimum Credits: 3

Maximum Credits: 3

This course will attempt to define this balance by looking at issues of local government, governance and civil society in Latin America, the Caribbean, Eastern Europe, Asia and Africa. It focuses on the dynamics of governance with primary attention being the grass roots base of democracy and their relationship to institutionalized state structures. Focus is on the nexus between theories of governance and the practical implications of that theory on political behavior. The basic source of our understanding about governance, will be the reading. It is lengthy and various. The categories under which reading is assigned are somewhat arbitrary and as we go along the re-examination of earlier readings will be essential when we get further into the course. Because of the length of each week's reading assignment, it is essential that students keep up with the reading from week to week. Failure to do so will result in academic "overload" as the course draws to an end. The course will be a mixture of in-class discussions and lectures. The lectures, it should be noted, are not intended to summarize the reading but rather give the independent views of the instructor. All students in the class should read the core readings. Each student should also read from at least one of the three topic lists. There will be four assignments for the successful completion of the course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Global Studies

PIA 2529 - POLITICAL ECONOMY ANALYSIS FOR GLOBAL AFFAIRS

Minimum Credits: 3

Maximum Credits: 3

This course introduces students to tools of applied Political Economy Analysis. Many government agencies around the world require such analysis before considering policy change or adopting new strategies. As a result of this course, students will have a framework to situate policy interventions within the context of the political and economic processes in a society including the incentives, relationships, distribution, and contests of power between groups and individuals. Such analysis supports more politically feasible and thus, more effective policy strategies by setting more realistic expectations of what can be achieved, over what time frame, with consideration of risk. Institutions matter for development, but Political Economy Analysis tells us how they matter and shows us what needs to be done in order to overcome obstacles to change. By helping to identify these incentives, this course provides a more grounded, informed approach to policy design. This structured analytical approach helps policymakers examine political, economic, and social forces that influence policy outcomes around the world.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2530 - GENDER EQUALITY AND THE UNITED NATIONS

Minimum Credits: 1.5

Maximum Credits: 1.5

In this year-long transdisciplinary course, students will collaborate directly with the United Nations Development Programme (UNDP) and other partner institutions on policy-relevant research on gender inequality in public institutions worldwide. Students will develop their skills in data collection, analysis, and reporting. Students' research will feed into an ongoing Pitt-UNDP collaboration and support gender equality as part of the United Nations 2030 Agenda for Sustainable Development. Students will have professional opportunities to interact with policymakers and practitioners at international and national levels, and are expected to present their research at the UN Secretariat in New York City during the spring semester. This course operates in conjunction with an internship program that places select students as junior researchers in partner institutions during the summer following the course.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PIA 2543 - INTERNATIONAL AND COMPARATIVE POLITICAL ECONOMY OF DEVELOPING COUNTRIES

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PIA 2550 - ECONOMICS MEETS COMPUTER SCIENCE

Minimum Credits: 3

Maximum Credits: 3

Introduction: How should we assign students to schools, doctors to hospitals, and organs to patients? These are the questions that motivated the development of matching theory, one of the most practical fields in economics. However, while theory provides guidelines for choosing one mechanism over another, these recommendations are made on the basis of assumptions that are often violated in real-life. In this course we will learn about the theory and application of matching markets, its strengths and limitations, the importance of contextual details in real-world implementation, and how empirical and computational methods complement this approach. There is no "required" math course, but would love to have them have open mind to mathematical logic and thinking. Recommended: Statistics, Discrete Mathematics, Basic Set theory.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2551 - GENDER AND DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

This course seeks to critically examine how development processes affect women, men and gender relations. By doing so it aims to contribute to an ongoing policy discussion on the meaning and operationalization of diverse, inclusive, and equitable development. The course begins with theoretical approaches to gender and development, development economics, feminist critiques, and their methodological implications for mainstreaming gender into development practice. In the second half, the course studies how gender relations are impacted by social change in the form of positive or negative development. In this policy applied section, the discussions focus on a set of policy issues including reproductive health, migration, climate change, ITCs, work, citizenship and leadership. The overarching goal in both sections is to encourage students to review and debate what we already know and what we still don't know about policies designed to close gender gaps globally. The course concludes with a discussion in the form of a mini-conference on the progress record of the United Nation's 2030 Agenda for Sustainable Development

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Global Studies

PIA 2552 - MANAGING ORGANIZATIONS IN DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

This course examines the management of organizations working in international development and humanitarian assistance with a focus on NGO management. This course has three key objectives. The first is to introduce students to the work and environment faced by development organizations. The second is to provide theoretical and practical frameworks for the analysis of management challenges and generation of relevant recommendations. Big questions we investigate include: why are NGOs fundamental for development? How can NGOs improve their accountability and effectiveness? How to best approach a complex decision problem? What are the key opportunities and dangers in organizational "partnerships" between governments and NGOs, northern and southern organizations, etc.? How can NGOs leverage community participation? The third objective is to help students develop transferable management skills, which will help them get a job in international development. Assignments emphasize primary research and focus on building critical writing, analytical, and presentation skills that demonstrate a broad understanding of the key management challenges facing development organizations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Global Studies

PIA 2553 - POLITICAL ECONOMY OF GLOBAL HEALTH

Minimum Credits: 3

Maximum Credits: 3

This course covers the millennium development goals prioritize investment in health for human welfare. We examine underlying economic problems and proposed policy solutions to address major diseases health issues such as AIDS, TB, malaria, diarrhea, and respiratory illnesses. We examine challenges in addressing children's and women's health issues, including child labor and trafficking. We study World Trade Organization (WTO) provisions that assist or impede poor countries' access to drugs. We study WTO cases on health protection (e.g., US-EU beef hormone debate). We discuss the costs and benefits of genetically modified organisms in our food supply. Students' case presentations examine cases of successful global health interventions (e.g., Small pox eradication, arresting AIDS in Thailand) and new challenges (SARS, avian flu, health-related impacts of climate change), as well as the roles of the world bank, the world health organization, corporations, NGOs, and civil society in improving public health in developing countries.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Global Studies

PIA 2567 - TECHNICAL ASSISTANCE AND PROGRAM DESIGN

Minimum Credits: 3

Maximum Credits: 3

Instructor Permission is required. Field based learning and cultural emersion are vital to gaining the skills necessary to have successful careers in international development and human security. With this in mind, the African Studies Program, the School of Education and the Law School are collaborating to expand the University of Pittsburgh field-based activities programs into a full-fledged learning research seminar which will now be available for all of East Africa and in other parts of Africa, Asia and Central and South America for students who are interested. Over several phases, taking place in Pittsburgh and overseas, students will familiarize themselves with relevant literature, design a project for a research activity, an evaluation, or an organizational development opportunity in relation to the proposed project, and finally compile a policy/research paper on the project as part of a post-travel independent study. Students will work with organizations dealing with issues of gender violence, homeless and other vulnerable youth, social entrepreneurialism and income generation, as well as other topics developed by students. This course will not only increase the experiential learning profile of the university and its students but will be a continuing mechanism for increasing the partnerships and network between Pitt academic centers and alumni and development organizations in East Africa and other parts of the world. Graduate and upper-level undergraduate students (by invitation) will participate in a Pittsburgh infield-based learning research seminar for their overseas work in the summer of 2019. Their research project will be due on August 31. Students can register for the course either in the Spring semester or the Fall semester of 2019. The instructor will work independently with each person individually to develop their program. There will be three phases to the course/activity (depending on whether course credit is sought).

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PIA 2571 - THE ECONOMICS OF THE MIDDLE EAST AND NORTH AFRICA REGION

Minimum Credits: 3

Maximum Credits: 3

The focus of this course is on the countries of the Middle East and North Africa (MENA), the area comprising the Arab states, Iran, Israel, and Turkey. They face enormous economic challenges in the twenty-first century: stagnant real wages, deteriorating competitiveness, and rapidly growing populations and labor forces. Why after years of negative per capita income growth, has the region been unable to accumulate sufficient reform momentum to sustain economic growth? Do important differences across countries hold lessons for the future? What are the social consequences of economic stagnation, and how might future adjustment costs be managed to protect the poor? How have individual countries in the region defined the challenges ahead? And what issues must be addressed to realize a more prosperous future?

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: African Studies

PIA 2572 - EARNINGS AND EMPLOYMENT IN THE THIRD WORLD

Minimum Credits: 3

Maximum Credits: 3

Labor markets play a significant role in the development process. While growth rate indicators are still used to track the progress of an economy, development scholars distinguish between economic growth and 'job-generating' economic growth. This is a policy oriented course on how labor markets work in developing countries and how they compare to labor markets in the developed world. The course starts with developing an understanding on how wage and employment levels are determined in the labor market and if different labor markets behave differently. What is the role of education and why highly educated workers are unable to find jobs? Some of the topics discussed in this course are: 1) Brain drain and migration of the educated; 2) the role of microcredit in employment generation; 3) the consequences of government policies such as minimum wages and public sector guaranteed job schemes; 4) the role of institutions in the labor market: why institutions exist? How to rectify inefficient institutions? 5) Income inequality and poverty and their role in accelerating the growth of the informal sector; 6) Discrimination and the impact on the economy. Students are required to write a policy paper relevant to labor markets in a 'developing' country of their choice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Global Studies

PIA 2574 - AFRICAN DEVELOPMENT SEMINAR

Minimum Credits: 3

Maximum Credits: 3

This course explores development issues in Sub-Saharan Africa. It facilitates multidimensional considerations of these issues and examines the very meaning of "development" as a concept for Africa. Historical and contemporary paths of development in Africa are examined. Important analytical focuses of the course include the roles of both internal and external factors influencing development policy and management. This includes African regional organizations, nation states, and traditional societies; external factors such as, international regimes; as well as European, North American, Middle Eastern, and Asian state participants in African development activities. Students completing this course are expected to have: a better background for understanding Africa, African peoples and civilizations; knowledge of the social and cultural issues affecting development in Africa; alternative frames of reference for interpreting information about Africa; appreciation of various challenges facing Africa; and the capacity to develop and defend a well-designed policy position on an African development issue. The course is divided into: part 1 (the underdevelopment of Africa: scale and sources); part 2 (the non-development of Africa, 1960-present); part 3 (contemporary approaches to African development); part 4 (emerging challenges and opportunities for African development); and part 5 (African policy debates: where do we go from here?)

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: African Studies

PIA 2575 - POLITICS, ISLAM, AND THE STATE

Minimum Credits: 3

Maximum Credits: 3

The course provides an accessible and comprehensive account of political Islam over the span of the past century. Drawing on insights from comparative politics and Islamic studies, it explains the complex interaction between Islam, society, the state, and processes of globalization. The course demonstrates that political Islam, far from being a monolithic phenomenon, varies considerably from country to country depending on its position in relation to society, the state, and the broader political environment. The course provides a portrait of Islam and politics through a combination of detailed case studies and country overviews that span the globe, with a focus on the Middle East, Central Asia, and South Asia. It also provides a detailed account of the global jihadist movement.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Asian Studies, Global Studies

PIA 2582 - LATIN AMERICAN POLITICS

Minimum Credits: 3

Maximum Credits: 3

This course is a reading seminar designed to introduce graduate students to the basic international literature on political questions and problems in the Latin American context. The course will focus primarily on the topics of 'regime transition' in Latin America.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Latin American Studies

PIA 2584 - POLITICAL ECONOMY OF EDUCATION

Minimum Credits: 3

Maximum Credits: 3

In this class students will continue (from "economics of education") to develop techniques for economic analysis. The subject is placed in a broader intellectual and political context. Particular attention is given to critique of neoclassical economic analysis, to alternative frameworks for economic analysis, including class-conflict and institutional approaches, and the applications of economic analysis in the educational policy process.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2587 - ECONOMICS OF EDUCATION

Minimum Credits: 3

Maximum Credits: 3

This class introduces students to the economic analysis of education, with particular emphasis given to the economics of education in developing countries. Among the topics to be covered are: human capital theory, educational production functions, rate of return analysis, various issues in educational policy and finance.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2590 - FOOD LAND AND SUSTAINABILITY EAST ASIA

Minimum Credits: 3

Maximum Credits: 3

Introduction to the dynamics of world production & trade in foodstuffs & agricultural produce. Emphasis will be placed on using the tools of economic analysis to examine the evolution of agricultural sector with economic development, including the issues of agricultural self-sufficiency, & environmental degradation, the role of technical change in agricultural production, food security, famines, & food aid, the impact of economic policies on agricultural growth and performance, the institutions and mechanisms involved in international trade in agricultural products.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2602 - EVOLVING GLOBAL SECURITY LANDSCAPE (DC SEMESTER)

Minimum Credits: 3

Maximum Credits: 3

U.S. National security strategy and policy face great challenges in the 21st century. Political, military, legal, and economic factors will affect both strategy and policy. This course will assess those factors and their effects on possible solutions to those challenges. The course approaches national security from both military and government-wide perspectives and addresses the executive branch, the congressional, and the global environments. The professor will emphasize a practitioner's approach to issues and will use lectures, readings and original source documents, class discussions, and guest speakers from the national security community. Students will deliver short written papers, mostly in the form of one-page memos, and will undertake group assignments leading to oral class presentations. The primary focus is on contemporary issues and events, but the instructive value of history is also prominent throughout the course. For students who wish to take this course, prior knowledge of or study in national security is strongly recommended but not required. This course will help students with foreign policy and security studies concentrations prepare for the evolution and challenges of coming years.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Grad Sch of Pub & Int'l Affrs

PIA 2603 - DEVELOPMENT IN AFRICA: CHALLENGES, CONSTRAINTS AND STRATEGIES (DC SEMESTER)

Minimum Credits: 3

Maximum Credits: 3

A half-century after most African nations gained their independence, the continent continues to be a disproportionate generator of conflict and instability. Simultaneously its global importance grows, due to external preoccupations with energy security, anti-terrorism efforts, emigration, and disease. Despite these complex dynamics, the international community's engagement with Africa continues to be largely focused on crisis management and humanitarian assistance. This course will explore the underlying reasons: historic, political, economic and cultural -- for Africa's chronic weakness and dependency, as well as the West's often myopic response to these pressing problems. It will take a close look at some of the most destructive developments in the post-colonial period, including state collapse, genocide, and HIV/AIDS. We will then seek to better understand the manifestations of crisis in Africa and how to more effectively tailor our responses. To that end, we will delve into the world of humanitarianism, from its traditional charitable manifestations to more recent trends such as humanitarian intervention, r2p, and reconciliation.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Grad Sch of Pub & Int'l Affrs
Course Attributes: African Studies

PIA 2604 - GEOPOLITICS OF SOUTH ASIA (DC SEMESTER)

Minimum Credits: 3

Maximum Credits: 3

This course will look at the region against the historical backdrop of its relations with the world. But the major focus will be on the dramatic developments within South Asia during and since the 90's and the region's evolving relations with the US, China, Russia, Japan, Iran the middle East and central Asia. Especially how the US is helping India in realizing its aspirations for a big power status, and a factor of stability in the region, and Pakistan in its salvation from chronic weakness by building its capacity to reform itself. Pakistan, both as a partner and potential target, in the war against religious extremism and terrorism, has become a major foreign policy challenge for the us and is likely to occupy an important place in the national security and foreign interests of America for some time. The course will look at these threats and challenges specially the US war against extremism, more particularly the Taliban and Al Gaeda, being fought with the help of two critical allies, Pakistan and Afghanistan.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Grad Sch of Pub & Int'l Affrs

PIA 2606 - WASHINGTON PRACTICUM (DC SEMESTER)

Minimum Credits: 3

Maximum Credits: 3

The Washington practicum is an opportunity for D.C. semester students to combine the practical training and professional development of an internship with your graduate coursework. The practicum encourages you to develop in-depth knowledge of an organization and its relationship to certain issues and policy process, to define your own career aspirations, and to network in a professional setting. Students will prepare a job description with your internship supervisor, complete an institutional analysis of the internship site, and submit a policy memo. Your grade will be based on these three assignments.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

Course Requirements: PROG: Grad Sch of Pub & Int'l Affrs

PIA 2607 - STATE CRAFT AND SMART POWER IN THE DIGITAL ERA (DC SEMESTER)

Minimum Credits: 3

Maximum Credits: 3

This course examines new approaches to the practice of statecraft in an era of rapid global change. Globalization, including accelerating digital communication, is upsetting traditional international order and institutions, and changing the pace and intensity of decision making. Nation-state governments, while still the primary actors, must adjust to new sub-national, regional and transitional forces and players in a far more complex global arena. As digital communication brings publics into politics and policy far more than ever before, this course helps participants better understand and prepare for these and other current challenges for smart power. Features guided classroom discussion, presentations by officials and outside experts, and in-class exercises such as a resource allocation/strategic planning session (somewhat akin to one of the major elements of the PMF and FSO oral exams) as well as policy simulations. The course's emphasis on policy, institutional and professional concerns, will be particularly relevant to those seeking employment in public service, NGOs, public policy think tanks and consulting firms.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: Grad Sch of Pub & Int'l Affrs

PIA 2608 - DEVELOPMENT ASSISTANCE: POLICY, THEORY AND PRACTICE (DC SEMESTER)

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Grad Sch of Pub & Int'l Affrs

PIA 2609 - GLOBAL SUSTAINABILITY AND DEVELOPMENT (DC SEMESTER)

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: PROG: Grad Sch of Pub & Int'l Affrs

PIA 2610 - AFRICAN DEVELOPMENT: CHALLENGES, CONSTRAINTS, & STRATEGIES, WASHINGTON, D.C.

Minimum Credits: 3
Maximum Credits: 3
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Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2611 - CHALLENGES TO CRISIS AND DISASTER MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2612 - CHINA IN THE 21ST CENTURY, WASHINGTON D.C.

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2613 - GLOBAL ENERGY, ECONOMICS, AND GEOPOLITICS, WASHINGTON D.C.

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2614 - LOBBYING AND ADVOCACY- WASHINGTON D.C.

Minimum Credits: 3
Maximum Credits: 3

In this course, students will learn core knowledge and skills required for lobbying and advocacy work. Students will meet with guest speakers and

mentors who are lobbyists, will practice lobbying skills through exercises and assignments, and will produce policy writing samples. This course will focus primarily on lobbying in the federal legislative context; it will also address the federal agency context to a lesser extent

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2615 - POLICY-MAKING

Minimum Credits: 3

Maximum Credits: 3

This seminar explores the processes of federal law-making and public policy development. A primary purpose of the seminar is to enrich students' understanding of law-making and policy development by focusing on a series of case studies concerning particular laws and policies and introducing information about the relevant political dynamics, bureaucratic systems, and other real-world factors. Thus, in addition to studying written materials, students will talk with Washington-based attorneys and others who are experts in the relevant fields.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PIA 2616 - WHO WILL RULE THE 21ST CENTURY? WASHINGTON, DC

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2617 - ISSUES IN PUBLIC DIPLOMACY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PIA 2618 - SUSTAINABLE DEVELOPMENT SECURITY AND THE FRONTIER OF FINANCE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2619 - CURRENT ISSUES IN US LATIN AMERICAN RELATIONS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2620 - RISING CHINA AND CHALLENGES TO THE GLOBAL ORDER (DC SEMESTER)

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2621 - CONFLICT AND SECURITY IN CYBER SPACE (DC SEMESTER)

Minimum Credits: 3
Maximum Credits: 3
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2622 - CENTRAL CHALLENGES IN NATIONAL SECURITY LAW AND POLICY

Minimum Credits: 3
Maximum Credits: 3
Central Challenges in National Security Law and Policy Using a series of case study modules that jump off the front page, the course examines critically the hardest U.S. national security law and policy challenges of the decades ahead. The case studies range from decisions to intervene and what laws apply if we do intervene in humanitarian crises, insurrections, or civil wars, and what laws should govern when we are involved; dealing with the Arab Spring; dealing with Iran and North Korea related to nuclear weapons; anticipating and controlling new technologies in warfare and surveillance; managing civil/military relations in protecting the homeland; countering the cyber threats to our infrastructure and cyber attacks waged by nation states, such as China and Russia; managing public health as a national security issue; resource depletion and global warming as a national security issue. Students will learn to integrate legal and policy analyses, and will gain lessons in how policy is made and implemented with significant legal guidance.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2623 - RUSSIA AND POST-SOVIET POLITICS

Minimum Credits: 3
Maximum Credits: 3
Russia and Post-Soviet Politics. A survey of the major issues in contemporary politics in the post-Soviet region in general, and Russia in particular. The seminar will briefly examine the pre-Soviet and Soviet period, but the primary focus of the course is on developments since 1991. Topics to be examined include the Soviet collapse and transition, the nature of Putinism as a political and economic system, broader patterns of reform in the post-Soviet space, and Russian foreign and security policy, including US-Russian relations. We will meet with multiple guests from the DC area community of Russia scholars and practitioners. We also will watch two documentary films, one on social change and the transition from communism in Russia and one on Putin's motivations for interference in the US 2016 elections.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2705 - NEIGHBORHOOD AND COMMUNITY DEVELOPMENT

Minimum Credits: 3
Maximum Credits: 3
This course focuses on neighborhood and community development in urban areas. We will study characteristics of neighborhood development and the policies that have affected change over time. Students will learn to analyze neighborhood data, measure change, and understand the impacts neighborhood organizations play in their communities. The first part of the course will focus on urban theory, urban history and policy, particularly regarding housing and urban renewal, and data analysis. Students then study community revitalization planning and the rise of community development. Students will work on issues related to accessibility to parks and recreation for disadvantaged neighborhoods and populations in Pittsburgh and will work with the Pittsburgh Parks Conservancy on linking people and parks. This will include work on sustainability, transportation, and urban schools.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad Letter Grade
Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2707 - URBANZ & SUSTNBL DVLP INT'L CNTXT

Minimum Credits: 3

Maximum Credits: 3

This course examines the relationship between economic development and urbanization, with an emphasis on understanding how the process of growth is associated with urbanization and its consequences. The course is divided into three sections. The first is a general overview of global trends of urbanization and development, as well as an introduction to principal development debates. The second section covers the principal theories relating urbanization and development. The last section of the course focuses on key issues that have emerged during the rapid urbanization of the developing world, ranging from growing income inequality, poverty, and socio-economic exclusion, to the informal economy and rising violence. We examine the policies and processes that have attempted to address these issues, such as participatory community planning, antipoverty programs, etc. Though the course takes a broad theoretical perspective on these processes, there is a focus on Latin America when looking at examples.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2710 - BUDGETING

Minimum Credits: 1.5

Maximum Credits: 1.5

This course will introduce students to the local government budgeting process. Students will learn policies and procedures for preparing and adopting operating and capital budgets. The course will also focus on revenue, expenditure, tax, debt and pension policies along with some of the budgeting challenges faced by many local governments today.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2711 - CONTRACTING

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2713 - NON-PROFIT ADVOCACY

Minimum Credits: 2

Maximum Credits: 2

How do you turn anger into action? Protest into progress? Interest into influence? For starters, having history, morality, well-attended marches, or even facts on your side - though helpful - is never enough. Successful campaigns and their leaders have specific strategies and tools to move the public, policies and politicians in order to achieve their goals. This course offers an intensive, skills-based and highly interactive experience. Strategies and campaign components are drawn from the instructor's work on national and international policy and political campaigns, as well as interactions with some of the biggest campaigns and best policy campaign professionals in the world. The instructor's campaign experience includes appearing on Fox News, speaking on NPR, testifying before the U.S. Congress, organizing rallies in D.C. and New York City, writing or appearing in: the Wall Street Journal, Associated Press, ABC News, New York Times, Bloomberg, USA Today, The Hill, San Francisco Chronicle, Huffington Post, and having biographies re-printed in many state and local newspapers. Reports authored and campaigns led by the instructor have been cited in several books and a feature length documentary. The lectures, class participation and assignments will cover primary elements of a campaign -- from organizing your advisors to fundraising to being a spokesperson in the media. The instructor will provide the process and outcomes of effective strategy development. Each course component will use actual or real-time examples of how to (and how not to) execute the resulting tactics effectively. There's tough work and enormous satisfaction that comes when you stop talking about a problem and actually want to solve it. This course will challenge - and at times entertain - students willing to quickly apply what they learn to defend policy positions and to create the plans and elements of real campaigns. The urgency and need for skilled, smart and strategic advocates to fight for the public interest and protect our democracy has never been greater.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad Letter Grade

PIA 2715 - GIS FOR PUBLIC POLICY

Minimum Credits: 3
Maximum Credits: 3

A geographic information system (GIS) is a powerful tool for the public sector and used in a variety of disciplines. GIS builds on existing methods while offering new dimensions. This course provides students with a solid foundation of the principles and applications of GIS, an introduction to the desktop software ArcGIS, and demonstrates its uses in the public sectors. Students utilize ArcGIS to analyze and display spatial and demographic data. The construction of policy is then predicated on analysis. Skills learned in core courses can be brought to this course and built upon. Students have the flexibility to focus on their particular area of interest within the public sector through project work. The course is taught via lecture and hands-on experience using the ArcGIS software.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Global Studies

PIA 2716 - COMPARATIVE LOCAL DEVELOPMENT POLICY AND PLANNING

Minimum Credits: 1.5
Maximum Credits: 1.5

Issues of economic development, social equity and environmental sustainability are at the heart of local policy and planning, whether it is taking place in the US or in other countries. Looking at experiences in a comparative perspective, in this 1.5 credit course, students will gain a practical understanding of the commonly used tools by local governments, as well as their interaction with regional and central government actors.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2717 - STRATEGIC COMMUNICATIONS

Minimum Credits: 1.5
Maximum Credits: 1.5

Understand the strategic and tactical role of the communications function within a nonprofit/NGO organization. Develop ability to analyze audiences, establish positioning, craft messaging and write a communications plan for an organization, program or initiative in the nonprofit sector. Gain contacts with working communications professionals with nonprofit/civic experience in the region.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 2718 - COMPARATIVE CULTURAL REGENERATION IN PITTSBURGH, NEWCASTLE, UNITED KINGDOM AND ST. ETIENNE, FRANCE

Minimum Credits: 1.5
Maximum Credits: 1.5

Instructor permission is required. This is a course for required students who will be taking the Spring 2020 Capstone Seminar in Urban Planning and Governance: Cultural Regeneration in International Perspective. This course will review the theory and background of cultural regeneration, conduct a case study of cultural development and placemaking in Pittsburgh, and prepare background and time line for spring Capstone and field visit to Newcastle, United Kingdom, and St. Etienne, France.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PIA 2730 - COMMUNITY DEVELOPMENT AND FOCUS GROUPS

Minimum Credits: 2

Maximum Credits: 2

This eight-week workshop introduces students to the focus group as a data-gathering tool and prepares them to use focus groups in their work. Critical components of the class observation of and hands-on experience with facilitating discussions, taking notes and analysis for report preparation. By the end of this workshop students are expected to describe the theoretical underpinnings and processes of focus groups; identify situations in which focus groups are an appropriate methodology; design all aspects of focus groups, including sampling and writing questions; conduct focus groups; record focus groups; and analyze and report on focus groups' data. The workshop uses lectures, discussions, and interactive exercises to familiarize students with all aspects of focus groups, including the theoretical basis of focus groups, formulating questions, recruiting participants, facilitating the discussion, taking notes, and applying the data.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Global Studies

PIA 2732 - LOG FRAME AND DEVELOPMENT PLANNING

Minimum Credits: 2

Maximum Credits: 2

The design of an efficient and successful development project requires careful analysis and planning. The logical framework ("logframe") was designed to assist in this process. PIA 2561 Log Frame Skills will study the theory behind project design, implementation and evaluation through proper understanding of this tool. The course will use case studies and emphasize exercises in developing logframes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2740 - PLN & ANAL SUSTAINABLE REGIONS

Minimum Credits: 3

Maximum Credits: 3

This course is presented in three sections. The first section concerns foundations and perspectives of sustainable development, to include human relationships with the environment; economic models of sustainability; and equity and participation in sustainability issues. The second section concerns planning and analysis for sustainability within a regional context, to include governance, planning, and assessment frameworks. The final section focuses on sustainability in practice, considering regional approaches to sustainable energy and transportation, food and water systems, green infrastructure, and innovation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2742 - HUMANITARIAN CRISIS

Minimum Credits: 3

Maximum Credits: 3

This course examines more than a dozen major humanitarian crises from around the world during the past 25 years. It analyzes key cross-cutting themes and how response and recovery efforts have been managed, while giving additional attention to reducing disaster risks. Through readings, class discussions and negotiation exercises we will consider the performance and respective roles of primary actors such as united nations agencies, Non-governmental Organizations (NGO's), international organizations, military forces and the official authorities of affected countries. The course has a strong experiential emphasis as reflected by visiting speakers with first-hand field experience, and contact with disaster management graduate students and practitioners in other countries. Students will participate in three simulated negotiations by agencies working in Haiti, Darfur, and Pakistan. They will also work together in comparative research teams, engaging with selected overseas partners, and prepare a joint presentation. Two short papers also will be assigned. Broader themes will include the role of leadership, ethical dilemmas, state-NGO-military relations, policy advocacy by NGOs, the growth of local and national capabilities, the evolution of the international system of humanitarian response, and programmatic ideals such as 'do no harm' and 'disaster risk reduction'. By the end of the course, participants will acquire a deeper understanding of political, military, and humanitarian responses to major humanitarian crises, as well as current initiatives that seek to reduce people's exposure to future threats. This fifteen week course is designed for graduate students interested in working in humanitarian or international crisis activities,

whether on behalf of host governments, institutional donors, civilian international or local agencies, military forces, or the media.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 2801 - FOUNDATIONS OF QUANTITATIVE METHODS

Minimum Credits: 3

Maximum Credits: 3

This course is designed to introduce the beginning graduate student to the major conceptual and theoretical issues of contemporary political science. During the term, focus will be in three basic areas of inquiry; a) political science as a science; b) paradigms, frameworks, approaches; and c) examination of contemporary examples of applications of the above in various substantive fields of political science.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PIA 2802 - EMPIRICAL METHODS OF RESEARCH

Minimum Credits: 3

Maximum Credits: 3

This seminar is the second in a three-course methodological sequence required for graduate students in political science. It introduces students to techniques of research design and analysis, and is designed to enable students to read and understand empirical social science research. Problems of scientific method, concept formation, measurement, and statistical inference are explored; students learn to use some of the statistical techniques common in political research.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PIA 2803 - AMERICAN GOVERNMENT AND POLITICS

Minimum Credits: 3

Maximum Credits: 3

This seminar provides an opportunity to analyze selected aspects of government and politics in the United States through a program of intensive reading, seminar discussions, and written essays. Some prominent interpretations of American government and politics are identified and examined. Readings on and discussion of topics such as political leadership and mass behavior provide a basis for consideration of the seminar's major theme, leader-follower interaction.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PIA 2804 - THEORY & CONCEPTS COMP POLITICS

Minimum Credits: 3

Maximum Credits: 3

This seminar focuses on theories of the modern state, especially in capitalist societies. The relationship of the state concept to various ideo-analytic frameworks and assumptions will be explored at some length as a way of evaluating the state concept as an analytic tool. These explorations form the basis for examining alternative images of the state in relation to society, to the role of leadership and statecraft in guiding the modern state, to alternative modes of organizing the state and to making policy.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PIA 2805 - POLITICAL ECONOMY OF GROWTH

Minimum Credits: 3

Maximum Credits: 3

This graduate course is devoted to the study of international and comparative political economy in developing and emerging countries. These countries tend to face very different sets of constraints than their wealthier counterparts. The aim of this course is to analyze the determinants of welfare in poorer countries. Its main focus is to study the political economy of income and examine how domestic and international incentives shape crucial economic policies (e.g. trade, monetary, or education policies). In the last part of the semester, we broaden our horizon to examine other important components of welfare, such as environmental quality. This course is resolutely focused on the macro level and limited to developing countries.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

PIA 2806 - DEMOCRATIC THEORY & DEMOCRATIZATION

Minimum Credits: 3

Maximum Credits: 3

The course has three objectives for students: 1) to develop a broad knowledge of the main currents in modern and contemporary democratic theory and a familiarity with their main problems; 2) to study how normative theories of democracy inform or might inform processes of democratization; 3) to apply this knowledge in solving some puzzle or problem by comparing cases, assessing claims, developing arguments, etc.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PIA 2807 - ADVANCED METHODOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course aims to provide students with an overview of statistical methods appropriate for the analysis of longitudinal data, or data collected on multiple units (individuals, states, dyads, countries) at more than one point in time. The course will focus on models for the analysis of 'panel data,' which (by convention) is used to describe data with relatively large number of units and relatively few time points. We will cover different approaches to the analysis of panel data, including structural equation models, fixed and random effects models, dynamic econometric models, and longitudinal hierarchical growth ("multi-level") models.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PIA 2808 - POLITICAL PSYCHOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course will focus on the political beliefs, attitudes, values, and behaviors of citizens in modern democracies. Because most of the theories and models were initially designed to analyze U.S. citizens, we will primarily examine the literature in American political behavior, though we will also discuss the degree to which such theories and models 'travel' to other contexts, leading us to some of the comparative behavior literature, as well. Much attention will be paid to the structure and content of citizen belief systems; additionally, we will examine the sources of such beliefs, including the media, political elites, and other citizens.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

PIA 2809 - LATIN AMERICAN POLITICS

Minimum Credits: 3

Maximum Credits: 3

The course is a readings seminar designed to introduce graduate students to the basic international literature on political questions and problems in the Latin American context. The course will focus primarily on the topic of "regime transition" in Latin America.

Academic Career: Graduate

Course Component: Seminar
Grade Component: Grad LG/SNC Basis

PIA 2896 - MPPM POLICY SEMINAR

Minimum Credits: 3

Maximum Credits: 3

This is the final required course for students in the executive degree program. Students prepare individual reports in policy analysis format on topics of their choice, approved by the instructor. Methods of policy analysis will be reviewed, and students will give an oral presentation as well as a final written paper.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 3000 - INTERMEDIATE QUANTITATIVE METHODS

Minimum Credits: 3

Maximum Credits: 3

This course introduces students to the fundamental techniques of regression analysis, focusing on the linear regression model. Emphasis is on applied econometrics, with the goals of the course being to enable students to interpret empirical results in social science work they read and to use statistical software to employ these techniques successfully in their own work.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 3004 - SEMINAR IN RESEARCH DESIGN AND METHODS

Minimum Credits: 3

Maximum Credits: 3

This seminar provides knowledge and skills in designing quantitative and mixed methods research. The term research design refers to a strategy or plan for getting the best possible answers to research questions. When we want to conduct research that helps solve practical problems, these questions tend to be about causal inferences linking policy and management interventions to socially valued outcomes. In a policy and management context, research designs usually answer the question: 'what works?' Research in policy and management is often based on inadequate research designs, that is, research designs that fail to provide plausible answers to research questions. In an effort to address these inadequacies there has been a movement toward experimental and quasi-experimental research designs in areas of health, education, welfare, security, energy, and the environment. Indeed, in the past two decades we have seen a virtual explosion of experiments, quasi-experiments, and natural experiments in the social sciences and social professions. The term mixed methods refers to the concurrent use of quantitative and qualitative methods for collecting, analyzing, and interpreting data. 'Qualitative' methods do not refer merely to non-quantitative methods, for example, methods of case study analysis or small-n research. The term 'qualitative' properly refers to methods for making sense of, or interpreting, actions in terms of the meanings people bring to them. Ethnography is a qualitative method; case study research, when it fails to uncover the meanings of actions to persons other than ourselves as researchers, is qualitative only in the limited sense that it involves small nonrandom samples which prohibit the use of common quantitative procedures such as correlation and regression analysis. When genuine qualitative methods such as ethnographic interviews and focus groups are used in conjunction with quantitative modeling techniques we usually use the term 'mixed method.'

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 3005 - FIELD SEMINAR IN PUBLIC ADMINISTRATION

Minimum Credits: 3

Maximum Credits: 3

This is the doctoral field course in public administration. This course reviews major developments in the field of public administration, beginning with its historical origins and then focusing on its current research frontiers. The purpose of the course is to prepare students to teach and conduct

research in the field of public administration. To that end, students will be expected to turn in weekly reviews of the readings (3 to 4 pages each week) and a research paper of sufficient quality for submission to an academic journal. The format of the course will involve some lecturing (for about an hour) followed by discussion (for about an hour). Students are expected to read thoroughly before the seminar and to come prepared to critically discuss the readings. This course is open to doctoral students in any field. Master's students with sufficient background, as judged by the instructor, may enroll with the permission of the instructor.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 3012 - COMPARATIVE GOVERNANCE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 3013 - ENVIRONMENTAL ECONOMICS

Minimum Credits: 3

Maximum Credits: 3

This course will combine multi-disciplinary environmental topics in an introductory level course. The concept of environmental policy and its impact on environmental management will be introduced. It will focus on the various scientific, technical and social disciplines including the basic sciences as well as law, engineering, public health and economics. Attention will also be given to the effects of developing and changing environmental policy on selected industries as well as natural resources.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 3014 - THE POLITICAL ECONOMY OF DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

This course seeks to help you understand the causes of international inequality in the distribution of wealth. In simple terms, the course seeks to answer the question, "why are there rich nations and poor nations and rich people and poor people"? To answer this question we will need to understand something about the factors related to economic development and how those factors are tied to income distribution. The course will expose you to some of the major theoretical and empirical literature on the political economy of development.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PIA 3015 - SYSTEMS THEORY

Minimum Credits: 3

Maximum Credits: 3

Increasingly, the social, economic, and political context in which public organizations function is characterized by interdependent, evolving systems of individuals, organizations, and systems of systems. Understanding this complex world of interacting organizations and systems presents a challenging, fascinating, difficult, but always interesting task. In this course, we will follow the evolution of this process over the last six decades and assess how these theoretical frameworks have changed our conception of public policy and the operational context for public organizations. Since systems theory is strongly interdisciplinary, we will also explore basic concepts as they were borrowed from physics, mathematics, biology, engineering, and computer science to inform current organizational frameworks of complex adaptive systems and their application to policy and practice in current public and international affairs. Students will write five short papers assessing the evolving state of complex systems and the impact of theoretical framework in analyzing public policy issues today.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 3019 - INTEGRATED SEMINAR IN INTERNATIONAL AFFAIRS

Minimum Credits: 3

Maximum Credits: 3

This course will introduce GSPIA Ph.D. students to the various approaches to the study of international affairs as well as a few broad areas of inquiry in the field. It covers 'great books' in the study of international affairs, concentrating each week on a classic or important new work. This approach will provide a stable platform from which international affairs students may delve deeper into the literature while apprising non-international affairs students of the general structure and large debates in the field. Given the vastness of the field, there are many topics that we will not be able to cover. However, familiarity with the arguments covered is essential for navigating and making sense of the sprawling literature. By the end of the semester, students will possess the theoretical frameworks and analytical toolkit necessary to identify, read, and assess the quality of divergent positions on the topics we do and do not cover.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 3020 - ADVANCED SEMINAR: EVIDENCE AND INFERENCE IN POLITICAL SCIENCE AND PUBLIC POLICY

Minimum Credits: 3

Maximum Credits: 3

This seminar examines methodological disputes in the policy sciences. We will use a structural model of argument based in large part on the work of Stephen Toulmin, the English-born philosopher and applied philosopher of science who spent the latter part of his career working with well-known international relations and public policy specialists at the University of Southern California. Much of Toulmin's structural model of argument was built into the computer program we will use this term. The program is called rationale and it was developed by a Pitt philosophy of science Ph.D., Tim Van Gelder, who also gained significant expertise in computer science. He is at the Melbourne University in Australia. We will use rationale to study the methodology of the policy sciences. By using the structural model of argument to study methodology we will expand the range of research methods available to us as policy-oriented social scientists. Hopefully, this will protect us from the dogma that there is one set of 'approved' methods and from the despair that comes from believing that 'anything goes.' In addition, it will alert us to the dangers of winding up in one or another methodological cul-de-sac in which orthodoxy reigns.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 3022 - PHD INTEGRATIVE SEMINAR

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PIA 3050 - QUALITATIVE RESEARCH: DESIGN AND METHODS

Minimum Credits: 3

Maximum Credits: 3

This is a core doctoral course organized as a practicum aimed at giving doctoral students hands-on qualitative research experience. Explicit in the organization of the course is teaching doctoral students "when" and under what conditions researchers use qualitative methods. While there are numerous qualitative methods that can be used, in this practicum students conduct interviews as the primary method for collecting data. Upon completing this course, doctoral students should be able to carry out a qualitative study using interviewing as the method of data collection. By the end of the term, students should be able to articulate a rationale for a qualitative study through a literature review; formulate researchable questions to be answered by interview data; develop an interview protocol; conduct face-to-face interviews; prepare and code text data for analysis; analyze text data; and use text data as the basis for answering the questions posed in the study. The course is divided into five parts: Part 1 reviews the basic assumptions underlying a qualitative approach to social research. Part 2 focuses on the steps involved in doing research in the applied social sciences. Part 3 is hands-on and involves collecting data by interviewing informants. Part 4 involves the preparation and analysis of text data. Part 5 is the presentation of each student's study to the class. The final product in this class is a paper that summarizes the study's findings. Assignments consist of

a mix of reading; going out into the field to interview; preparing and analyzing data; organizing and presenting research findings.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 3090 - ADVNACED SEMINAR

Minimum Credits: 3

Maximum Credits: 3

This is a master's-level course open to doctoral students.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 3096 - COMPREHENSIVE EXAMINATION PREPARATION

Minimum Credits: 1

Maximum Credits: 9

This course is an independent reading course for Ph.D. students who are actively preparing for their comprehensive exams. The student will work under the supervision of a faculty advisor. The advisor and student agree on bibliographies in advance, and the student is encouraged to discuss the readings on a regular basis with his or her advisor and other division faculty.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad HSU Basis

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 3097 - INDEPENDENT STUDY PHD

Minimum Credits: 1

Maximum Credits: 6

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad HSU Basis

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 3098 - DOCTORAL TEACHING PRACTICUM

Minimum Credits: 1

Maximum Credits: 3

In an increasingly competitive academic job market, teaching experience can be a decisive factor in doctoral students' ability to secure an academic job after graduation. This practicum provides an opportunity for doctoral students to develop teaching skills by creating and delivering a course to members of the community. The practicum will begin with pedagogical and teaching policy training. Under the supervision of the course instructor, doctoral students will then be responsible for all elements of teaching a course in one of GSPIA's doctoral fields (creating a syllabus, delivering lectures, leading class discussions, creating and evaluating course work). After every class delivery, doctoral students will have a rare and invaluable opportunity to receive instant feedback on their performance. At the end of the practicum, students will put together a teaching portfolio which includes a statement of teaching philosophy, the teaching materials developed during the practicum, student feedback and a reflection upon the feedback received.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 3099 - DISSERTATION PHD

Minimum Credits: 1

Maximum Credits: 6

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad HSU Basis

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 3119 - POLICY DESIGN/IMPLEMENTATION

Minimum Credits: 3

Maximum Credits: 3

Uses concepts, models and strategies for developing new and more appropriate solutions for public policy problems. Analyzes constraints and opportunities surrounding the implementation of public policies and programs. Emphasis on strategies of planned change, dissemination of innovations, and knowledge utilization in the public sector.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 3227 - ADVANCED METHODS OF POLICY RESEARCH ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

This course in advanced methods of policy analysis focuses on four types of methods: -structured analytic techniques used in the intelligence community to make intelligence estimates and to identify national security threats; -problem structuring techniques used to solve ill structured or 'wicked' problems in areas of technology assessment, development planning, intelligence analysis, and economics; -forecasting techniques based on expert judgment which are appropriate when quantitative data are unavailable to make estimates of future states of energy, environment, technology, and related areas; -argument mapping techniques used to assess the quality of scientific and policy reasoning and to enhance critical thinking capabilities among professional policy analysts and planners. The seminar will feature short (30-45 minute) presentations by members of the Security Intelligence Studies (SIS) program and professional analysts, researchers, and trainers in the intelligence community (IC) and elsewhere. Students should note that the methods covered in this course are part of a current analytic reform movement among intelligence analysts and elsewhere in the wider public, private, and nonprofit sectors. The course is open to qualified masters and doctoral students.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 3303 - ADVANCED SEMINAR: IN SECURITY AND INTELLIGENCE

Minimum Credits: 3

Maximum Credits: 3

This field seminar is designed to guide graduate students through the large and complex security studies literature. It is intended primarily to help prepare GSPIA Ph.D. students for the foreign and security policy comprehensive exam, but other students are welcome. Students in this seminar will master the foundations of the academic literature on questions like theories of international relations, the balance of power and its effects, causes of war and peace, coercion, foreign policy decision making, nuclear and conventional warfighting, security institutions, terrorism, violent non-state actors, military and humanitarian intervention, the future of power, and intelligence studies. Due to the vast nature of the security and intelligence studies fields and the limited timeframe of a single semester, we will not be able to cover many of the topics and debates in the literature. By the end of the semester, however, students will have the theoretical frameworks and analytical toolkit necessary to identify, read, and assess the quality of divergent positions on security and intelligence topics we do not cover.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

Course Attributes: Russian & East European Studies

PIA 3317 - LAWS OF WAR

Minimum Credits: 3

Maximum Credits: 3

This course examines the historical development and current role of international humanitarian law ' conventionally known as the laws of war. War, despite its often chaotic appearance, is a highly regulated affair. Understanding the rules can facilitate the creation of better, and more effective strategy, operations, and tactics. Starting with early thinkers seeking to develop common understandings about access to shipping lanes and ending with contemporary debates about topics like torture and the regulation of artificial intelligence on the battlefield, students will grapple with the political, legal, and moral questions of developing, applying, and enforcing rules in wartime.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PIA 3393 - COMPARATIVE PUBLIC ADMINISTRATION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 3394 - FIELD SEMINAR: PUBLIC POLICY

Minimum Credits: 3

Maximum Credits: 3

This field seminar covers the literature of public policy. Taken in its entirety this literature is vast and unmanageably huge. Therefore, we will focus on key areas of this literature, which should be mastered at various levels of competency by students who wish to be academically qualified in the field.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 3395 - SEMINAR IN INTERNATIONAL DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

Course Requirements: Graduate School of Public and International Affairs students only.

PIA 3396 - FIELD SEMINAR IN IA

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

PIA 3434 - CIVIL-MILITARY RELATIONS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Public Health

PUBHLT 2002 - ESSAY-MMPH

Minimum Credits: 1

Maximum Credits: 2

The essay is designed to provide the student with an opportunity to integrate the major components of the public health learning experience.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Requirements: PREQ: Multidisciplinary MPH

PUBHLT 2011 - ESSENTIALS OF PUBLIC HEALTH

Minimum Credits: 3

Maximum Credits: 3

The course provides GSPH students enrolled in MS degree programs with an introduction and overview of the scope and history of public health, as well as core concepts in public health not covered in the core epidemiology and biostatistics courses.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: BCHS-PHD or (BIOST-MS or BIOST-PHD) or (EOH-MS or EOH-PHD) or (EPIDEM-MS or EPIDEM-PHD) or GNCSLG-MS or (HUGEN-MS or HUGEN-PHD) or HPM-MPH or HSRP-PHD or HSRP-MS or (IDM-MS or IDM-PHD)

PUBHLT 2012 - MMPH PUBLIC HEALTH ESSAY

Minimum Credits: 1

Maximum Credits: 1

This course will support MPH students who are writing the public health essay. No more than two credits of the essay classes may count toward the MMPH degree. This course counts as one credit toward the public health essay allowance.

Academic Career: Graduate

Course Component: Workshop

Grade Component: Grad HSU Basis

PUBHLT 2015 - PUBLIC HEALTH BIOLOGY

Minimum Credits: 2

Maximum Credits: 2

This core course will provide an introduction to the biological foundations of many systems that are important in public health. The major determinants of human disease will be considered from an integrated ecological perspective that brings together molecular and population-based approaches to the study of infectious disease (with particular focus on HIV/AIDS, polio, emerging infections, and disease outbreaks following natural disasters) and genetically-determined diseases including "simple" genetic diseases such as cystic fibrosis and "complex" diseases such as hypertension). The host response to infection will be considered, as will the disorders that result from defects in this system, including allergy and asthma. Current developments in genomic science will be covered, including the ethical, legal and social implications of the increased capability to detect and predict disease outcome in individuals and populations. On completion of this course, students will have an understanding of the biological bases of many conditions that are important to public health, and that they will encounter as public health students and practitioners.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PUBHLT 2018 - OVERVIEW OF LESBIAN, GAY, BISEXUAL AND TRANSGENDER HEALTH DISPARITIES

Minimum Credits: 2

Maximum Credits: 2

Students will review the historical development of lesbian, gay, bisexual and transgender health focus area. The impact of stigma and disparity on the

health of populations will be explored. An overview, by systems, of conditions of greater prevalence among lesbian, gay, bisexual and/or transgender populations will be presented and discussed. Students will develop a greater understanding of the health disparities among lesbian, gay, bisexual and transgender populations and develop critical thinking skills regarding the impact of marginalization on the health and wellbeing of subpopulations, using lesbian, gay, bisexual and transgender populations as a model. Course will include lectures and active participation in class discussions. This course will serve as the introductory overview course for the lesbian, gay, bisexual and transgender health and wellness certificate program.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: EPIDEM 2110; PLAN: Graduate Sch of Public Health (CERT-4)

PUBHLT 2019 - PUBLIC HEALTH SPECIAL STUDIES

Minimum Credits: 1

Maximum Credits: 15

Properly qualified students may undertake advance study under the guidance of a faculty member.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

Course Requirements: PLAN: MultidisMPH or CommBasedPrctipRes&Prac or EnvrHlthRiskAssmnt or EvalPHPromo&HlthEducProg or GblHlth or LGBTHlth&Wlnss or MinrtyHlth&HlthDisparits or PHGentcs or PH Preparednss & Disaster Resp or Peace Corps or Peace Corps Master's Intl

PUBHLT 2020 - ADVANCED TOPICS IN LESBIAN, GAY, BISEXUAL, AND TRANSGENDER RESEARCH

Minimum Credits: 3

Maximum Credits: 3

This course will provide a critical overview of current cutting edge research topics in the field of lesbian, gay, bisexual and transgender (LGBT) health. Students will be expected to review the existing literature on these topics, summarize the strengths and weaknesses of individual papers, and then design a study or set of studies that would be expected to add to the evidence base on a given health topic.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: PUBHLT 2018; PLAN: Epidemiology (PHD) and Graduate Sch of Public Health (CERT-4)

PUBHLT 2022 - THE DEAN'S PUBLIC HEALTH GRAND ROUNDS

Minimum Credits: 0

Maximum Credits: 0

The purpose of this course is to socialize our students to the broader profession of public health through engaging them in substantive programs on a wide range of topics that reflect the breadth of public health. This course will enable them to interact with researchers and practitioners from other settings and universities around the world. The course will help to build their capacity to work in interdisciplinary teams to address challenging and complex public health problems. This course requires that all GSPH students (with the exceptions noted below) participate in GSPH sponsored lectures, symposiums, and other events, outside of the classroom, during the first fall and spring terms for which they are enrolled and in residence in Pittsburgh. Two terms are required for graduation. Joint degree students, certificate only students and non-degree students are exempt from this requirement.

Academic Career: Graduate

Course Component: Colloquium

Grade Component: Grad SN Basis

PUBHLT 2024 - GLOBAL HEALTH SEMINAR

Minimum Credits: 1

Maximum Credits: 1

This course explores the field of global health, including the roles and agendas of key actors; ethical and human rights aspects of global health disparities and research and service programs designed to address these disparities; socio-cultural considerations for global health research and service programs; and the rewards and challenges of working in a resource-poor setting or with an underserved population. Students will also be

exposed to resources for internships, field placements, and career opportunities in global health. Health and safety issues r/t working abroad will also be covered.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad HSU Basis

Course Requirements: PLAN: Global Health (CR4) or Peace Corps (TR); LVL: Graduate Year 1

PUBHLT 2025 - CONCEPTS AND METHODS IN GLOBAL HEALTH

Minimum Credits: 2

Maximum Credits: 2

This course is designed for students who plan to work in global health and is required for students enrolled in the GSPH global health certificate and peace corps master's international tracks. The course focuses on public health in low- and middle-income countries and also covers issues related to globalization. The course will provide students with the theoretical knowledge and practical skills needed to 1) identify, collect and interpret health and economic data, 2) produce a report on public health priorities at the country level, and 3) propose a course of action (including activities, partners, and measureable indicators) for a priority health issue.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Global Health (AC or CR4); or SUBPLAN: Peace Corps (PCORPS-TR)

PUBHLT 2026 - GLOBAL HEALTH PRACTICUM

Minimum Credits: 1

Maximum Credits: 3

The practicum provides an opportunity for certificate students to integrate and apply knowledge in global health through a structured, supervised field experience. Learning objectives, assignments, and site are based on the learning needs and career goals of the student and determined in consultation with the certificate director.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

PUBHLT 2027 - TRANSFORMING GLOBAL HEALTH EDUCATION INTO ACTION

Minimum Credits: 2

Maximum Credits: 2

This course is a capstone experience for students in the global health certificate. It is designed to give students the opportunity to apply what they have learned in their training to the challenge of real-world problem-solving in collaboration with individuals and organizations in the developing world. Students will form two teams, and each team will collaborate with experts from a developing country on a significant health issue in that country. The final product will be a policy paper analyzing the problem and proposing relevant, timely and actionable interventions. This course is different from typical courses that follow a prescribed syllabus. It is a hands-on experience, and for the most part the activities and content of each week will be determined as the course goes along, as students, working in their groups, pursue the background research, consultation, and brainstorming necessary to produce their policy papers. Accordingly there is a great emphasis on independent work (in teams), self-motivation, and active learning.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PREQ: PUBHLT 2025; PLAN: Global Health (CR4)

PUBHLT 2028 - PEACE CORPS MASTERS INTERNATIONAL INTERNSHIP

Minimum Credits: 0

Maximum Credits: 0

This course is restricted to students in the graduate school of public health peace corps masters international track and is to be used by students during the peace corps field experience portion of the PCMI program.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad SN Basis

Course Requirements: SUBPLAN: Peace Corps (PCORPS-TR or PC-TR) or Peace Corps Master's Intl (PCMI-TR)

PUBHLT 2029 - MMPH PRACTICUM

Minimum Credits: 1

Maximum Credits: 3

This course is designed to build and expand upon the experience of the individual student in the MMPH program. The practicum will blend the students existing clinical and/or professional work with additional practical experience with a major public health focus.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad HSU Basis

PUBHLT 2030 - RESEARCH ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH

Minimum Credits: 1

Maximum Credits: 1

This course provides an introduction to topics in research ethics and the responsible conduct of research particularly pertinent to basic and non-clinical, population-based research employing a variety of methods. Students will learn key concepts and methods of ethical reasoning and requirements of human subjects' protection and nonhuman animal research, and will analyze historical and contemporary examples of research misconduct, as well as ethical concerns arising in their own work. Using lecture and small group discussion of assigned readings and participants' research, the course will develop students' skills requisite to design and conduct ethical research, avoid research misconduct, and ethically negotiate the tasks and milestones of academic education and careers (e.g. issues of mentorship and publication). Students will be evaluated (by letter grade) on the basis of the quality of their discussion contributions and quiz/exam responses.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PUBHLT 2031 - TECHNIQUES FOR PROFESSIONAL WRITING

Minimum Credits: 1

Maximum Credits: 1

This course offers practical experience in a variety of writing styles encountered by professionals. The focus is on communication with general professional and lay audiences rather than on scientific or academic writing. You will learn to recognize communication issues and challenges, understand how they may be addressed in writing, and improve your ability to write effectively within your profession. This course is intended for students who are native and/or confident English writers.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

PUBHLT 2032 - HEALTHCARE IN SUB-SAHARAN AFRICA

Minimum Credits: 2

Maximum Credits: 2

This course provides an in-depth look at health services and healthcare systems in Sub-Saharan Africa. Students will explore the WHO health systems building blocks consisting of leadership/governance, health care financing, health workforce, medical products, information technology and service delivery. Students will also examine health systems databases to assess performance and to better understand the challenges to attain high quality care at low cost, enhanced patient experience and improved outcomes. A variety of teaching modalities will be employed throughout the course including lecture, news headlines, case studies, class discussion, audio-visuals and student presentations. Guest speakers will be invited to share experience and expertise on various topics. A research paper with in-depth exploration of one of the six building blocks in a specific sub-Saharan country is required in addition to a global health case competition group presentation. Course enrollment is capped at 20. This course is a graduate-level course that is open to undergraduates.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Letter Grade

PUBHLT 2033 - FOUNDATIONS IN PUBLIC HEALTH

Minimum Credits: 1

Maximum Credits: 1

This one-credit course is required during the first term for incoming MPH students and is aimed at introducing students to core foundational concepts of public health and providing them with an overview of notable PITT Public Health and Pittsburgh based successes. The course was designed so that students can learn on their own and at their own pace. Course content is divided into seven on-line modules containing brief video lecture and case example segments and organized in a recommended (though not required) sequencing. Students will be allowed seven weeks to progress through the content and assessments. The course will conclude with a mandatory meeting at the middle of the term (approximately week 8). A resource list of relevant PITT Public Health courses will be included in each module in order to encourage additional exploration of the topics.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

Course Requirements: PLAN: All Public Health MPH plans

PUBHLT 2034 - PUBLIC HEALTH COMMUNICATIONS

Minimum Credits: 2

Maximum Credits: 2

This course provides hands-on training in the principles and practice of effective communication. The emphasis is on the types of communication used by public health professionals. Students will briefly cover fundamental principles of communication theory, learn to critically analyze examples of communication, and then have the opportunity to practice applying those principles to a wide variety of different types of communication, including health promotion, routine business communication, and scientific communication. Multiple media types will be discussed, including print, web, and video.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PLAN: All Public Health MPH plans

PUBHLT 2035 - APPLICATIONS IN PUBLIC HEALTH

Minimum Credits: 2

Maximum Credits: 2

This is the final course in the public health core curriculum. Students will apply a problem solving methodology to analyze current public health issues. Working in interdisciplinary groups in the classroom, students will develop and assess interventions to address specific problems.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: PREQ: EPIDEM 2110 and (BIOST 2011 or 2041) and PUBHLT 2015 and PUBHLT 2022 and BCHS 2509 and EOH 2013 and HPM 2001 and PUBHLT 2033 and PUBHLT 2034; PROG: School of Public Health

PUBHLT 3000 - INTRODUCTION TO TRANSLATIONAL RESEARCH IN THE HEALTH SCIENCES

Minimum Credits: 2

Maximum Credits: 2

Course will provide students with a comprehensive survey of the processes involved in translating research discoveries into practices that promote health and prevent disease. The specific topics to be covered include five goals: 1) Introduce students to the NIH roadmap and to discuss the conceptual framework for multidisciplinary and interdisciplinary research. 2) Provide perspectives on objectives outlined at the national level in healthy people 2010/2020 and at the global level by organizations such as the world health organization. 3) Provide an understanding of the models of translational research. 4) Introduce students to the methods of clinical and translational research. 5) Interpret and explain the drug and therapeutic development process. Also, topics include the implementation of new therapies as standards of care and the application of innovative preventive services. Various research methodologies, including those encompassed in the drug development process will be discussed. Course will offer lectures via electronic media and will use a collaborative learning approach to classroom activities.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Public Works & Engr Admin

PWEA 2996 - SPEC INVSTGTN FOR MPW STUDENTS

Minimum Credits: 1

Maximum Credits: 6

A special project course in which students may broaden their knowledge by studying approved topics or problems in public works engineering or administration under the guidance of a faculty member.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

PWEA 2997 - RESEARCH, M.P.W.

Minimum Credits: 1

Maximum Credits: 15

Non-thesis option research project under the guidance of the faculty advisor.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

PWEA 2999 - M.P.W. THESIS

Minimum Credits: 1

Maximum Credits: 15

Research for the M.P.W. Thesis under the guidance of the major advisor.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Quantv Methods-Operations Mgt

BQOM 2060 - INDEP STUDY QUANTITATIVE METHODS

Minimum Credits: 1

Maximum Credits: 6

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BQOM 2061 - INDEP STUDY OPERATIONS MGMNT

Minimum Credits: 1

Maximum Credits: 6

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BQOM 2139 - SIX SIGMA THEORY AND PRACTICE

Minimum Credits: 3

Maximum Credits: 3

Six Sigma theory and practice has been designed to provide the student with: "strong theoretical knowledge of the six sigma green belt body of knowledge. Practical, hands-on, experience with the Six Sigma methodology. A Katz Six Sigma green belt certificate, for students earning a grade of "B" or better. Six Sigma is a disciplined, data-driven approach to process improvement aimed at the near-elimination of defects from every product, process, and transaction. Lean topics will be included in this course. Six Sigma utilizes the following five-phase problem solving methodology known by the acronym DMAIC: 1. Define the projects, the goals, and the deliverables to customers (internal and external). Describe and quantify both the defect and the expected improvement. 2. Measure the current performance of the process. Validate data to make sure it is credible and set the baseline. 3. Analyze and determine the root cause(s) of the defects. Narrow the causal factors to the vital few. 4. Improve the process to eliminate defects. Optimize the vital few and their interrelationships. 5. Control the performance of the process. Lock down the gains. To integrate theory and practice, students will be grouped in teams and work under the mentorship of a Six Sigma black belt on an industry client field project.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BQOM 2401

BQOM 2401 - STATISTICAL ANALYSIS: UNCERT

Minimum Credits: 3

Maximum Credits: 3

This course provides students with a set of integrated statistical tools and methodologies useful in a managerial environment. The emphasis is on the use of real data for modeling and solving problems in the areas of marketing, finance, human resources and operations management. Topics covered include: data analysis and modeling, estimation, confidence intervals, hypothesis testing, simple and multiple regression, analysis and design of experiments and statistical quality control.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BQOM 2421 - DECISION TECHN IN MFG & OPER MGT

Minimum Credits: 2

Maximum Credits: 2

This course provides a foundation in the use of decision technologies for solving complex management problems in a variety of functional areas.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: BQOM 2401; PROG: Katz Graduate School of Business

BQOM 2501 - ENTERPRISE SYSTEMS AND INTEGRATION OF BUSINESS PROCESSES

Minimum Credits: 3

Maximum Credits: 3

This course introduces concepts in ERP and integrated nature of business processes. Students are introduced to all the major components of SAP ERP. The course participants in enterprise systems and integration of business processes will gain extensive theoretical foundations of the enterprise resource planning (ERP) using the SAP ERP software. The theoretical knowledge is practically implemented and deepened during the course by the use of case studies and hands-on exercises using the SAP ERP system. After completion of the course, students have a comprehensive, theoretical and practical knowledge of the central SAP ERP modules. This includes the organizational and data structure and the integration of a variety of business processes and functional areas. This course is designed to prepare the student for the SAP ERP10 certification exam. The certification - as completion of the course - will be held at the University of Pittsburgh and is a three-hour, 80 multiple-choice questions based knowledge test. Passing the exam leads to a sap certification widely acknowledged in business: the SAP certified business associate with SAP ERP 6.0. The course addresses the following functional areas of the SAP ERP systems: logistics, finance, controlling and human capital management. Furthermore, the integration with the SAP systems SAP business intelligence (BI) and SAP strategic enterprise management (SEM) is presented.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BQOM 2511 - REVENUE MANAGEMENT AND PRICING ANALYTICS

Minimum Credits: 2

Maximum Credits: 2

Increasingly, due to shortening product life cycles and capital-intensive capacity decisions, companies are being forced to place greater emphasis on managing constrained, but perishable inventory and capacity. In this course, we study quantity and pricing strategies to improve profitability. The main goals of this course are to provide the insights and tools that will enable students to: (1) be able to identify pricing and revenue opportunities; (2) understand the critical differences among different types of opportunity and the approaches needed to address them; (3) understand key concepts including the impact of constrained capacity, opportunity costs, customer response, demand uncertainty, and market segmentation; and (4) be able to formulate and solve pricing and revenue optimization decisions as constrained optimization problems at the level necessary to estimate potential benefits. The focus of the course will be on imparting a broad understanding and grasp of basic techniques rather than the technical nuances of a particular algorithm.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BQOM 2401 and (BQOM 2421 or BQOM 2411); PROG: Joseph M. Katz Grad Sch Bus

BQOM 2512 - ADVANCED DECISION TECHNOLOGY

Minimum Credits: 2

Maximum Credits: 2

While contemporary decision technologies are increasingly important in today's competitive environment for dealing with complex problems, they can also yield wrong or misleading solutions. The course will consider current applications of these technologies in these areas and students will analyze a variety of cases in these areas using commercial software packages. Emphasis in the course will be given to the potential and limitations in using decision technologies and to alternative approaches to dealing with complex problems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BQOM 2401 and (BQOM 2421 or 2411); PROG: Joseph M. Katz Grad Sch Bus (PKATZ)

BQOM 2521 - DECISION MAKING COMPLEX ENVRNMNT

Minimum Credits: 2

Maximum Credits: 2

Examines in detail the thought processes of the decision maker when faced with social, personal, business or contemporary political problems. Through the analytic hierarchy process, decision makers use a framework to organize thoughts in a consistent way and to compare elements and criteria which weigh most heavily in arriving at the best alternative among given options.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BQOM 2523 - PROCESS ENGINEERING

Minimum Credits: 2

Maximum Credits: 2

This course studies the design and engineering of the business processes - the way businesses organize "work" in service as well as manufacturing operations.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BQOM 2411 or 2421; PROG: Katz Graduate School of Business

BQOM 2524 - PROD MGT & PROCESS IMPROVEMENT

Minimum Credits: 2

Maximum Credits: 2

This course is concerned with the continuous improvement principles involved in the production of goods and services.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BQOM 2523; PROG: Katz Graduate School of Business

BQOM 2531 - GLOBAL SUPPLY CHAIN MANAGEMENT

Minimum Credits: 2

Maximum Credits: 2

A continuation of distribution networks (BQOM 2530).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BQOM 2411; PROG: Katz Graduate School of Business

BQOM 2533 - GLOBAL SUPPLY CHAIN MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

This course will consider multi-facility supply and demand network management from all three perspectives: operational, tactical and strategic. We will emphasize the creation and maintenance of value in the supply network, an activity critical to the survival of all organizations. Value creation can be accomplished by increasing revenue (e.g., By making the delivery system more flexible and responsive to the customer) and/or by decreasing cost (e.g., By eliminating unnecessary activities, and efficiently managing the others, from the distribution channel). Topics covered will include those in the shorter version of the course but in more detail. In addition, network design in uncertain situations, inter-organizational partnerships for effective inventory control, and revenue management will be covered. Using real-life case studies and software packages, we will examine these intricacies of supply and demand network management, learning about the underlying tools, methodologies and decision support systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: CREQ: BQOM 2411 or 2421; PROG: Katz Graduate School of Business

BQOM 2534 - STRATEGIC PROCUREMENT AND SOURCING MANAGEMENT

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BQOM 2535 - HEALTHCARE OPERATIONS AND SUPPLY CHAIN MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

This course allows students to engage in experiential learning through a project course that specializes in a topic that may touch one or several of these areas: supply chain management, value chain management, supplier diversity and global sourcing.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BQOM 2537 - FORECASTING

Minimum Credits: 2

Maximum Credits: 2

This course will cover traditional forecasting methodologies along with an overview of the state-of-the-art of forecasting with methodologies ranging from judgmental to statistical knowledge sources.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BQOM 2401; PROG: Katz Graduate School of Business

BQOM 2544 - PROCESS MANAGEMENT AND CONTINUOUS IMPROVEMENT

Minimum Credits: 1.5

Maximum Credits: 1.5

This course is intended to study the interactions that govern the efficiency of the process, process of converting raw material in the most efficient way- products and services - resulting in a "satisfied" customer. The course first will focus on the study of process fundamentals. We will then illustrate complementary and contradictory relationships among the non-financial measures of process performance, thereby suggesting ground rules for value based process architecture. We will examine some of these interactions, and discuss general principles and concepts managers need to know to understand the impact of their decisions on the organization as a whole. We will present 'what if' scenarios to facilitate the continuous improvement in the business enterprise.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BQOM 2546 - PROJECT MANAGEMENT FUNDAMENTALS AND ANALYTICS

Minimum Credits: 2

Maximum Credits: 2

Project management fundamentals and analytics

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BQOM 2411 or 2421; PROG: Joseph M. Katz Grad Sch Bus

BQOM 2549 - STRATEGIC COST ANALYSIS

Minimum Credits: 2

Maximum Credits: 2

This course deals with strategic implications of alternative methods of product cost measurement. The discussions will primarily be case-based and will cover cost measurement issues in both conventional and modern manufacturing environments.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BACC 2401 AND 2528; PROG: Katz Graduate School of Business

BQOM 2557 - MULTIVARIATE DATA ANALYSIS 1

Minimum Credits: 1.5

Maximum Credits: 1.5

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BQOM 2558 - MULTIVARIATE DATA ANALYSIS 2

Minimum Credits: 1.5
Maximum Credits: 1.5
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BQOM 2559 - APPLIED SIMULATION AND OPTIMIZATION

Minimum Credits: 1.5
Maximum Credits: 1.5

The purpose of this course is to enhance the problem-solving skills of Pitt Business students to the level necessary for them to deal with complex decision problems using optimization and simulation. It is an introduction to predictive analytics which can be roughly divided into two approaches: pattern recognition and simulation. In this course we focus on simulation, where you start by using human knowledge of cause and effect to create a model of the system in which the problem operates. You then connect the data you have available with that model to obtain a future projection. Simulation, integrates signals missing in the data and has relatively low data acquisition and processing costs while giving highly reliable predictions.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

BQOM 2578 - DATA MINING

Minimum Credits: 3
Maximum Credits: 3

Data mining is the process of extracting useful information and knowledge from a set of data. Mining is typically done on data sets too large to be analyzed by hand, but the same techniques are applicable to small, complex data. This course is an introduction to the most popular methods used in managerial data mining, and provides you with experience in using commercial software to explore real data sets. Models considered include those from statistics, machine learning, and artificial intelligence, such as discriminant analysis, logistic regression, clustering, neural nets, tree/rule induction, and association rule modeling. The course is methods oriented, as opposed to being methodology oriented, so you will learn about when and how to use techniques and how to interpret their output rather than the details about how those techniques work. A laptop computer is required.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: PREQ: BQOM 2557; PROG: Katz Graduate School of Business

BQOM 2700 - SUPPLY/VALUE CHAIN MANAGEMENT PROJECT

Minimum Credits: 2
Maximum Credits: 2

This project course is an opportunity for students to apply their management skills and develop their understanding of the challenges of supply/value chain management. In this course a select group of students will work closely with a faculty member to create a specific deliverable that meets the needs of a client organization. This course allows students to engage in experiential learning through a project course that specializes in a topic that may touch one or several of these areas: supply chain management, value chain management, supplier diversity and global sourcing.

Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BQOM 2801 - STATSTCL ANAL: UNCERT

Minimum Credits: 3
Maximum Credits: 3

Provides students with a set of integrated statistical tools and methodologies useful in a managerial environment. The emphasis is on the use of real data for modeling and solving problems in the areas of marketing, finance, human resources and operations management. Topics covered include data analysis and modeling, simple and multiple regression (estimation, testing and prediction), analysis and design of experiments, nonparametric statistics and statistical quality control.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BQOM 2811 - DCSN TECHNLOGY IN MFG & OPERATNS

Minimum Credits: 3

Maximum Credits: 3

This course provides a foundation in the use of decision technologies for solving complex management problems in a variety of functional areas. Emphasis is given to the utilization of optimization and simulation. Particular attention is devoted to problems in manufacturing and operations management.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BQOM 2821 - HEALTH INSURANCE AND RISK MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

This course provides a broad overview of the organization, financing, and delivery of health care via health insurance. The course is organized as follows. In the first module, we will examine the history of the development of health insurance and health care delivery systems in the 20th century; including health insurance markets and the public and private providers of health insurance in the United States. In the second module, we will examine reimbursement for medical care, including incentive structures and risk adjustment. In the third module, we will assess efforts currently underway in the U.S. with respect to improving access to and quality of health care while reducing costs. In the fourth module, the class will focus on major challenges facing the U.S. health care system with case studies of high healthcare prices and social determinants of health as key challenges. This course focuses mainly on the U.S. system, with health systems in other comparable countries briefly discussed for comparison. Students are evaluated based on discussion form participation, 2 individual problem sets, one group problem set, and a take-home final exam/assignment.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: EMBA Healthcare- Business Administration

BQOM 2904 - PROBLEM SOLVING AND CREATIVITY

Minimum Credits: 1.5

Maximum Credits: 1.5

The focus of this course is on creativity and associated design thinking techniques. We will examine the role of creativity in the innovation process, and explore the benefits of knowledge diversity. We will explore how to draw insight from different knowledge domains to identify important questions whose answers can be a source of value, and to develop novel approaches to problem solving. In addition to practical exercises to understand the tools and techniques that foster value-added creativity and innovation, we will discuss recent research from a number of academic domains. Among others, we will explore the role of leadership and team work in the creative endeavor, as well as the fundamental elements of design thinking. Since the course includes several experiential components, it is not feasible to take this course without committing to attending all classes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BQOM 3005 - STATISTICS

Minimum Credits: 3

Maximum Credits: 3

Basic stochastic processes and their underlying mathematical theory. Areas covered include the poisson process, renewal theory and their applications, Markov Chains, regeneration processes, and Markov decision processes.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: Katz Grad School of Business students only.

BQOM 3010 - INDEP STUDY OPERATIONS RESEARCH

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad HSU Basis

BQOM 3011 - LINEAR PROGRAMMING

Minimum Credits: 3

Maximum Credits: 3

An in-depth coverage of the mathematical properties and algorithms of linear programming including the simplex and revised simplex algorithms, duality theory together with economic interpretations, and the dual simplex algorithm. Discusses special computational techniques for solving large-scale linear programs.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: Katz Grad School of Business students only.

BQOM 3016 - CURRENT TOPICS IN OPERATIONS

Minimum Credits: 3

Maximum Credits: 3

This course is intended to acquaint doctoral students with some of the most important current foci in MS/or by reading papers and listening to outside speakers. Students will be expected to write reviewer-like reports, to develop their own research proposals, and to defend their proposals in a group setting.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BQOM 3020 - SIMULATION

Minimum Credits: 3

Maximum Credits: 3

The purpose of this course is to give an up-to-date treatment of the important aspects of simulation methodology. The topics covered include: modeling and generating stochastic inputs, output data analysis, variance reduction techniques, experimental design and model validation.

Application of the simulation techniques in manufacturing, finance, marketing and other functional areas will be explored. An overview of the simulation languages including arena will be given.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BQOM 3023 - DATA MINING SEMINAR

Minimum Credits: 3

Maximum Credits: 3

This course is a primarily methodological and secondarily computational treatment of data mining topics of recent, current, and developing interest in the management science literature. Three subsets of the literature will be covered in depth: (1) data mining papers that have appeared in the KGSB a-journal list; (2) ensemble methods; and (3) optimization-based approaches to data mining. Grading in the course will be based on presentations and a term project. Familiarity with data mining topics and tools at least to the level of BQOM 2578 or equivalent or permission.

Academic Career: GRAD
Course Component: Seminar
Grade Component: Grad LG/SNC Basis

BQOM 3099 - READINGS IN OPERATIONS RESEARCH

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade
Course Requirements: Katz Grad School of Business students only.

Radiology

RAD 5330 - IMAGING CLERKSHIP (3 WEEKS)

Minimum Credits: 0
Maximum Credits: 0
Three-week course designed to increase experience in radiology and imaging. Will be accomplished by lectures, seminars and student case presentations. All lectures are at a senior medical student level emphasizing clinical applicability. By course end students are expected to understand basic uses and limitations of anatomic and physiologic imaging modalities in diag. rad., nuc. med., and MRI. Students will be expected to acquire basic understanding of common radiographic studies and understand indications and limitations of different imaging methods used in evaluating common clinical problems.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

RAD 5384 - EXPERIMENTAL RADIATION ONCOLOGY

Minimum Credits: 0
Maximum Credits: 0
Students undertaking this elective may join ongoing basic research projects in the laboratory or, with permission, initiate their own projects. Students will be expected to participate in all aspects of their segment of the ongoing research; experimental design, data collection, data analysis and reporting.
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

RAD 5421 - DIAGNOSTIC RADIOLOGY

Minimum Credits: 0
Maximum Credits: 0
A four-week elective in diagnostic radiology offered to those who wish to gain additional exposure to the field. Students may choose a broad based curriculum which will expose the individual to all areas of radiology or may choose to do a focused radiology elective in angio/interventional radiology, ultrasound, or neuroradiology.
Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

RAD 5422 - ADVANCED RADIOLOGY

Minimum Credits: 0

Maximum Credits: 0

A four-week intensive elective course in advanced diagnostic radiology for fourth year medical students. The course will include didactic lectures and demonstrations that will be presented by members of the radiology faculty. Students will also gain clinical exposure to radiology in some of the following assignments: thoracic imaging/musculoskeletal imaging/pediatric radiology/abdominal imaging/nuclear medicine/women's imaging/neuroradiology. Students will also have access to the radiology learning lab, teaching files, and other educational materials for individual study. Participants are required to present a comprehensive clinical case with an emphasis on the radiology features pertinent to their case presentation. The case should be of a patient the student encountered in prior clinical rotations. A written examination will be required at the end of the elective.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

RAD 5425 - VASCULAR/INTERVENTION RADIOLOGY

Minimum Credits: 0

Maximum Credits: 0

A four-week clinical elective. Service covers all aspects of angiographic and interventional procedures below the neck. Diagnostic procedures and common interventional procedures are performed. The medical student will scrub into interventional cases with radiology staff, fellows and residents, attend daily case review sessions, and perform clinical rounds on patients being followed by the interventional radiology service.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

RAD 5430 - NUCLEAR MEDICINE

Minimum Credits: 0

Maximum Credits: 0

Nuclear medicine involves the formulation and use of radioactive substances used as tracers of metabolic processes. They may be used in vitro or in vivo in patients for therapy or for diagnosis where radioactivity is quantified and displayed by various instruments. Students are brought into the service for hands-on demos of the various procedures exemplified by clinical material. The principle routine clinical studies include functional imaging of brain, heart, bones, kidneys, liver, thyroid, adrenal and various neoplasms by means of monoclonal antibodies.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

RAD 5435 - CLINICAL RADIOLOGY

Minimum Credits: 0

Maximum Credits: 0

A four-week elective designed to increase understanding of diagnostic radiology. Students will be assigned to one-week rotations in four different areas: thoracic imaging, musculoskeletal imaging, pediatric radiology, abdominal imaging, nuclear medicine, women's imaging, and neuroradiology.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

RAD 5440 - INDEPENDENT STUDY IN RADIOLOGY

Minimum Credits: 0

Maximum Credits: 0

Elective (4 weeks) is available to senior students with a particular interest in a subspecialty area of radiology. Student will design an intensive, independent study elective with a staff radiologist in the interest area. A written proposal is required to be submitted to the director of undergraduate

medical education in radiology outlining the goals and objectives of the elective which has been approved by the faculty advisor. The prospectus is required a minimum of one month in advance of beginning project for credit.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

RAD 5450 - CARDIOVASCULAR RADIOLOGY

Minimum Credits: 0

Maximum Credits: 0

This four-week clerkship allows a student to become involved in the clinical and experimental activities of an active cardiovascular radiology section. Patient evaluation, treatment, and follow-up are stressed and experimental invasive therapies are evaluated.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

RAD 5620 - CLINICAL RADIATION ONCOLOGY

Minimum Credits: 0

Maximum Credits: 0

This four week elective offers the student instruction and experience in clinical radiation oncology and an intro to radiotherapy physics at the joint radiation oncology center. Facilities will be at the university medical center, Magee Women's Hospital and Shadyside Hospital. The student will spend time with faculty members in consult, exam, treatment and follow-up of the particular subgroups of malignant disease managed by the individual physician. Student will attend department conference, treatment planning sessions, operative radioactive isotope insertion, etc.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

RAD 5630 - INTRODUCTION TO CLINICAL RADIATION ONCOLOGY

Minimum Credits: 0

Maximum Credits: 0

This four-week clinical elective offers the student instruction and experience in clinical radiation oncology and an introduction to radiobiology and radiation therapy physics in the Department of Radiation Oncology. The student will spend time with faculty members in consultation, examination, treatment, management and follow-up of the particular subgroups of malignant disease managed by the individual physician. The student will attend departmental conferences, treatment planning sessions, radiosurgery planning and treatment, operative radioactive isotope insertions, etc. The student will be introduced to the physics aspects of radiation therapy. The elective is planned so that each student will have the opportunity to obtain an overall view of the field of radiation oncology.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

RAD 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0

Maximum Credits: 0

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

RAD 5651 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0
Maximum Credits: 0
Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

RAD 5826 - EXPERIMENTAL RADIATION ONCOLOGY

Minimum Credits: 0
Maximum Credits: 0

Students undertaking this four week elective may join ongoing basic research projects in the lab or with permission, initiate their own related projects. This lab is involved in evaluating the role of biologic response modifiers on hematopoietic recovery after treatment of tumors in mice. In addition, we are inserting genes into hematopoietic stem cells that contain them. Objectives are experimental design, cell collection and counting, sizing and culture and DNA isolation. Involvement expected in ongoing research, experimental design, data collection, analysis and report.

Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

RAD 5827 - EXPERIMENTAL DIAGNOSTIC RADIOLOGY

Minimum Credits: 0
Maximum Credits: 0

This 4 week elective is designed for the student interested in a career in radiology and who wishes to pursue a research project. The student needs to find a radiology faculty member who is willing to collaborate in a research project. These research projects can vary according to the combined interest of the student and the faculty preceptor. The student and faculty preceptor need to submit a written research proposal before this elective can be approved.

Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

RAD 5840 - RADIATION ONCOLOGY RESEARCH

Minimum Credits: 0
Maximum Credits: 0

This elective provides research project opportunities in radiation oncology to interested and motivated students. Project areas include clinical studies, prospective or retrospective clinical studies, creating a database, evaluating outcomes of solid tumors. The objective is to teach the basic approach to research in the specialty.

Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U

RAD 5841 - RESEARCH IN RADIOLOGY

Minimum Credits: 0
Maximum Credits: 0

This elective is available to interested and motivated students. This elective provides opportunities to learn basic research methodology which may include approach to experimental design, protocol development, data analysis and evaluation of results. Student may participate in ongoing research in the lab and on patients.

Academic Career: Medical School
Course Component: Directed Studies
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 4

RAD 5899 - INDEPENDENT STUDY IN RADIATION ONCOLOGY

Minimum Credits: 0

Maximum Credits: 0

The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

RAD 5900 - EXTRAMURAL RADIOLOGY

Minimum Credits: 0

Maximum Credits: 0

A clinical experience in radiology may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

RAD 5901 - EXTRAMURAL RADIATION ONCOLOGY

Minimum Credits: 0

Maximum Credits: 0

A clinical experience in radiation oncology may be arranged at an institution other than the university of Pittsburgh school of medicine.

Arrangements must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Restorative Dentistry

RESTD 2113 - CLINICAL OMF RADIOLOGY CONFERENCE 3

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

RESTD 2116 - CLINICAL OMF RADIOLOGY CONFERENCE 6

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

RESTD 5111 - DENTAL ANATOMY AND MORPHOLOGY

Minimum Credits: 2

Maximum Credits: 2

In this course, students will develop a practical understanding of tooth anatomy, structure, function, and related terminology; the relevance of these anatomic features to the practice of clinical dentistry will be emphasized. This course includes lectures and class discussions. The accompanying laboratory course, RESTD 5115, provides an opportunity for hands-on experiences in a preclinical setting.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF with +/- Values

RESTD 5115 - DENTAL ANATOMY AND MORPHOLOGY LAB

Minimum Credits: 1

Maximum Credits: 1

In this course, students will be presented with the anatomy of the primary and permanent teeth on a practical level, focusing particularly on the size, shape, contours, and anatomic features of the individual permanent teeth, and teaches the student how to visualize and reproduce the contours clinically. The primary goal of this course is for the student to be able to identify the primary and permanent teeth, and to be able to visualize the size, shape, contours, and anatomic features of the individual permanent teeth both radiographically and in person. A secondary goal is to develop and practice manual dexterity skills that are essential to later courses and in the profession of dentistry. This course includes small group lab sessions.

Academic Career: Dental Medicine

Course Component: Practicum

Grade Component: Grad Letter Grade

RESTD 5118 - DENTAL ANATOMY AND MORPHOLOGY LAB

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Dental Medicine

Course Component: Practicum

Grade Component: ABCF with +/- Values

RESTD 5143 - PRINCIPLES OF OPERATIVE DENTISTRY 1

Minimum Credits: 2

Maximum Credits: 2

This amalgam restorations course considers the terminology, principles and procedures of the following basic concepts in clinical operative dentistry: 1. Moisture control and soft tissue management of the operating field, 2. Rotary and hand instrumentation, 3. Dental caries, 4. Cavity preparation and restoration of all teeth using amalgam alloy, 5. Pulpal protection - varnished, liners and bases, 6. Occlusion, and 7. Dental biomaterials amalgam.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF with +/- Values

RESTD 5147 - PRINCIPLES OF OPERATIVE DENTISTRY 1 LABORATORY

Minimum Credits: 1.5

Maximum Credits: 1.5

This course provides the opportunity to develop psychomotor skills in the following operative procedures: 1. Rubber dam isolation, 2. Instrumentation, 3. Dental caries detection, 4. Preparation of various amalgam cavity preparations, 5. Placement of pulpal protection, 6. Restoration and various cavity preparations with amalgam, and 7. Occlusal adjustments.

Academic Career: Dental Medicine

Course Component: Practicum

Grade Component: ABCF with +/- Values

RESTD 5172 - PRINCIPLES OF OPERATIVE DENTISTRY 2

Minimum Credits: 1

Maximum Credits: 1

In this course, students will be prepared with the operative dentistry knowledge and techniques to successfully restore the dentition utilizing composite resin materials. Additionally, the student will learn adjunctive esthetic information and alternative treatment modalities. This course will provide the foundational knowledge to allow the student to understand and apply the basic principles of preparation design, adhesion, and finishing of composite restorations in the pre-clinic environment. This course includes lectures and class discussions.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

RESTD 5176 - PRINCIPLES OF OPERATIVE DENTISTRY 2 LAB

Minimum Credits: 1.5

Maximum Credits: 1.5

This pre-clinical lab course is given in conjunction with the lecture course for composite resin restorations, RESTD 5172 Principles of Operative Dentistry 2. In this course, students will acquire the psychomotor and instructional skills in treating Class I, II, III, IV, V lesions using bonded composite restorative materials. Students will also learn to restore cuspal fractures and place sealants using bonded resin materials. The student will learn how to properly evaluate their finished restorations for form, function and esthetics.

Academic Career: Dental Medicine

Course Component: Practicum

Grade Component: ABCF

RESTD 5244 - GERIATRICS

Minimum Credits: 1

Maximum Credits: 1

Students will be introduced to the concepts of geriatrics and the multidisciplinary approach to the treatment of the geriatric patient in traditional and non-traditional settings. Guest lecturers will be invited to provide information germane to their specific fields.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

RESTD 5281 - PRINCIPLES OF OPERATIVE DENTISTRY 3

Minimum Credits: 1

Maximum Credits: 1

In this course, students will continue to develop their skills in operative dentistry by reviewing the amalgam and composite preparations and restorations, which were taught in the first year curriculum, and completing them on assigned typodont teeth. This course is primarily a pre-clinical lab course. Students will continue to develop psychomotor skills to properly prepare and restore teeth using both amalgam and composite restorative materials.

Academic Career: Dental Medicine

Course Component: Practicum

Grade Component: Grad HSU Basis

RESTD 5282 - OPERATIVE TECHNIQUES REVIEW

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Dental Medicine

Course Component: Practicum

Grade Component: Grad HSU Basis

RESTD 5313 - ENDODONTICS 3

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Dental Medicine

Course Component: Lecture
Grade Component: Grad Letter Grade

RESTD 5319 - CLINICAL RESTORATIVE DENTISTRY 1

Minimum Credits: 2

Maximum Credits: 2

This course will provide patient care in a clinical setting under faculty supervision. Treatment procedures will include amalgam restorations, composite restorations, castings and endodontic therapy.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad Letter Grade

RESTD 5342 - PRACTICE ADMINISTRATION

Minimum Credits: 1

Maximum Credits: 1

This course introduces students to the management concepts required in dental practice. Material is presented on managing the following areas of dental practice: personnel, insurance, equipment purchasing, legal responsibilities, accounting, computer usage, record keeping and other crucial areas. Although focusing primarily on private dental practice, alternative practice options are discussed, including HMOS, hospitals and publically funded dental services.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

RESTD 5348 - CLINICAL ENDODONTICS 1

Minimum Credits: 2

Maximum Credits: 2

This course will focus on endodontic procedures for the adult dental patient. Clinical experiences in the diagnosis and treatment planning will be provided.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad Letter Grade

RESTD 5349 - CLINICAL RESTORATIVE DENTISTRY 2

Minimum Credits: 2

Maximum Credits: 2

This course will provide patient care in a clinical setting under faculty supervision. Treatment procedures will include amalgam restorations, composite restorations, castings and endodontic therapy.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad Letter Grade

RESTD 5371 - PRACTICE MANAGEMENT

Minimum Credits: 1

Maximum Credits: 1

RESTD 5371 is a continuation of the RESTD 5342 Practice Administration course. The student will be exposed to technology used in a dental office, insurance plans and options for participation, marketing, and acquiring knowledge of how a dental practice functions. Students will apply the philosophies of practice management and understand different models of health care to a level of competence.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

RESTD 5375 - ESTHETIC RESTORATIVE DENTISTRY

Minimum Credits: 1

Maximum Credits: 1

According to a report published in the Journal of Health Affairs, consumer spending in dentistry, which was \$60 billion in 2002, surpassed \$84 billion in 2005, and government actuaries predict annual increases of 6.3 to 6.9% in expenditures to reach \$146.9 billion by 2014. It is now estimated that nearly 70% of the total consumer spending in dentistry is spent on esthetic dentistry. New concepts in esthetic dentistry involve more than merely providing porcelain veneers, they encompass a broad approach to the total esthetic needs of patients. "Esthetic Restorative Dentistry" builds on the sound principals of restorative dentistry presented through the student's first three years. This course introduces the student to the basic knowledge, materials, armamentarium, and clinical procedures that constitute the modalities of esthetic restorative dentistry. Students will understand how in combination each modality builds the foundation for interdisciplinary patient management. Students graduating from dental school in 2014 and beyond must have the opportunity to learn and explore the special methods of esthetic restorative dentistry as today's esthetic dentistry is supported by new developments, innovative techniques, and a wealth of new scientific data.

Academic Career: Dental Medicine

Course Component: Lecture

Grade Component: ABCF

RESTD 5379 - CLINICAL RESTORATIVE DENTISTRY 1

Minimum Credits: 2

Maximum Credits: 2

This course is designed to provide clinical experiences in the area of restorative dentistry for predoctoral dental students. By the end of the fourth year of the curriculum, students will be able to demonstrate competence in restorative dentistry for dental patients at the level of a general dentist and will participate in a variety of additional experiences to increase skills in restorative dentistry.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: ABCF

RESTD 5399 - ENDODONTIC EMERGENCIES

Minimum Credits: 3

Maximum Credits: 3

This course will provide the student the opportunity to evaluate, diagnose, treat or manage patients presenting with pulpal pathoses.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad Letter Grade

RESTD 5419 - CLINICAL RESTORATIVE DENTISTRY 4

Minimum Credits: 2

Maximum Credits: 2

This course will provide patient care in a clinical setting under faculty supervision. Treatment procedures will include amalgam restorations, composite resin restorations, porcelain restorations, castings and endodontic therapy.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad Letter Grade

RESTD 5448 - CLINICAL ENDODONTICS 2

Minimum Credits: 3

Maximum Credits: 3

This course will focus on endodontic procedures for the adult dental patient. Clinical experiences in the diagnosis and treatment planning will be provided.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad Letter Grade

RESTD 5449 - CLINICAL RESTORATIVE DENTISTRY 2

Minimum Credits: 2

Maximum Credits: 2

This course will provide patient care in a clinical setting under direct faculty supervision. Treatment procedures will include amalgam restorations, composite resin restorations, porcelain restorations, castings, and endodontic therapy.

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: ABCF

RESTD 5847 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 3

This directed study is designed for the undergraduate dental student who desires to pursue research interests in oral and maxillofacial radiology. The content of the course is specified by the student and approved by the course director. The teaching format is designed to teach the student specific knowledge or skills of research using enhanced faculty interaction and personal contact.

Academic Career: Dental Medicine

Course Component: Directed Studies

Grade Component: Grad HSU Basis

RESTD 5900 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 3

This course provides the student with the opportunity to independently originate, organize and complete a scientific investigation on a topic in restorative dentistry.

Academic Career: Dental Medicine

Course Component: Independent Study

Grade Component: Grad HSU Basis

RESTD 5923 - SPORTS DENTISTRY

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Dental Medicine

Course Component: Practicum

Grade Component: Grad HSU Basis

RESTD 5924 - ADVANCED COMPOSITE TECHNIQUES

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Dental Medicine

Course Component: Clinical

Grade Component: Grad HSU Basis

RESTD 5941 - ADVANCED ENDODONTICS

Minimum Credits: 3

Maximum Credits: 3

This course includes lectures, seminars and clinical practice. The lectures include advanced techniques in instrumentation and obturation of endodontic treatment of complex cases. Endodontic surgery techniques are reviewed.

Academic Career: DMED

Course Component: Seminar
Grade Component: Grad LG/SU3 Basis

Russian

RUSS 2104 - DEVELOPING ENHANCED RUSSIAN READING PROFICIENCY 1

Minimum Credits: 3

Maximum Credits: 3

Through guided intensive reading of authentic primary and secondary texts in Russian culture, enrolled graduate students will further develop their ability to read such texts comfortably and use them effectively in their academic and professional careers.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

RUSS 2105 - DEVELOPING ENHANCED RUSSIAN READING PROFICIENCY 2

Minimum Credits: 3

Maximum Credits: 3

Through guided intensive reading of authentic primary and secondary texts in Russian culture, enrolled graduate students will further develop their ability to read such texts comfortably and use them effectively in their academic and professional careers. This is the second course in the sequence.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

RUSS 2110 - INTRODUCTION TO THE STUDY OF LITERATURE 1

Minimum Credits: 3

Maximum Credits: 3

Open to all graduate students of literature. A certain emphasis will be placed on Russian literary history, criticism and theory but all readings will be available in Russian and English. Includes a variety of approaches to literature analyzed both in terms of historical perspective and underlying perceptions of human nature, and in terms of their methodological and theoretical contributions to the systematic study of literature.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Russian & East European Studies

RUSS 2113 - BAKHTINIAN CRITICISM

Minimum Credits: 3

Maximum Credits: 3

Aimed at graduate students with an interest in literature. Literary criticism and theory, communication, and philosophy, this course introduces them not only to Bakhtin's major works on language and the novel, but also to contemporary Bakhtinian readings of well-known Russian works of fiction.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

RUSS 2210 - STRUCTURE OF RUSSIAN

Minimum Credits: 3

Maximum Credits: 3

Required of Russian teaching assistants, this course approaches Russian inflectional and derivational morphology from two points of view simultaneously: how to describe it linguistically, and how to describe it to an English speaking elementary learner of Russian. Finer points of Russian sound and word structure are examined. The concepts of basic linguistic analysis are elaborated on the example of Russian material. This course is preparatory for the departmental comprehensive examination section on descriptive Russian linguistics.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Attributes: Russian & East European Studies

RUSS 2300 - PUSHKIN

Minimum Credits: 3

Maximum Credits: 3

This course studies the biography and all major works of the greatest Russian author (1799-1837). This graduate seminar is conducted in Russian.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

RUSS 2306 - DOSTOEVSKY

Minimum Credits: 3

Maximum Credits: 3

This is a graduate course conducted in Russian which covers the life and major works of Fyodor Dostoevsky.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

RUSS 2307 - CHEKHOV

Minimum Credits: 3

Maximum Credits: 3

The three major aspects of Chekhov's art will be examined: the humoristic stories and sketches of his youth, the typical Chekhovian story of his middle period, and his plays. Chekhov's place in the context of Russian literature and his importance as an original and modern playwright, as well as his lasting contribution to the understanding of modern characters and situations will be assessed. This is a graduate seminar conducted in Russian.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

RUSS 2308 - TOLSTOY

Minimum Credits: 3

Maximum Credits: 3

This is a graduate seminar on the literary works of Russian author Leo Tolstoy.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

RUSS 2310 - NABOKOV

Minimum Credits: 3

Maximum Credits: 3

A survey of the major writings of Vladimir Nabokov, including novels and short stories from both the Russian and American periods. Discussion topics will include: the semiotics of life-creation, art as perversity, author-hero dynamics, exile and nostalgia, bilingualism and translation, the violence of linguistic play, the manipulation of narrative desire; modernism and postmodernism.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Attributes: Russian & East European Studies

RUSS 2425 - PHILOSOPHY AND LITERATURE

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

RUSS 2464 - SPECIAL TOPICS

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

RUSS 2473 - EMPIRE AND NATION

Minimum Credits: 3

Maximum Credits: 3

Empire and nation examines selected literary and visual texts over four centuries with a concern for their engagement with social crises, specifically multiple collapse of the imperial structure and the so-called emergence of the nation state. Secondary texts include Gellner, Hroch, Anderson and Jameson.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

RUSS 2474 - NEOLIBERALISM AND CULTURAL PRODUCTION

Minimum Credits: 3

Maximum Credits: 3

We will examine this contested term as it circulates in debates about cultural practice since the late 1970s. Course segments are likely to include contrastive models of the concept; their ascribed affinities to Marxist and Weberian traditions; distinctive concepts ("shock doctrine," "thought collective," Comaroff's "occult"); key historical figures and institutions (Kojève, Polanyi, Schumpeter, Hayek, Mont Pelerin); and the term's contradictory symptoms under different ideological systems, such as post-socialist modernity. The intent is to move beyond two tendencies in current debates: 1.) The deployment of the term exclusively as moral judgment; and 2.) Its explanatory capacity for All the Things. Core texts will include Morowski, Harvey, and Klein, as well as critiques of Harvey (Abercrombie, Hindess). The course will ask participants to bring their fields of expertise (both regional and disciplinary) to these debates, situating their own departmental investments in relation not only to textual content, but also to production, distribution, and exhibition. While cinema (e.g. Jia Zhangke, Ken Loach, Aleksei Balabanov) may be a core cultural emphasis, the course welcomes contributions from the fields of art history, literature, music, as well as sociology, history, and anthropology.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

RUSS 2600 - RUSSIAN POETRY 19TH CENTURY

Minimum Credits: 3

Maximum Credits: 3

This graduate course will survey rich and vital poetic traditions of 19th century Russia, beginning with the verse of late Derzhavin, Zhukovsky, and Pushkin, reviewing the work of Baratynsky, Tiutchev, and Lermontov, and concluding with readings of Nekrasov and Fet.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Russian & East European Studies

RUSS 2624 - RUSSIAN LITERATURE IN MUSIC

Minimum Credits: 3

Maximum Credits: 3

This course explores Russian literature as interpreted in music. Students will read works of Russian poetry and prose, then examine the "transposition" of the works into media such as opera, ballet, and song cycle. The syllabus includes (among others) such authors as Mussorgsky, Tchaikovsky, Rimsky-Korsakov, and Desiatnikov.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

RUSS 2630 - RUSSIAN NOVEL 1

Minimum Credits: 3

Maximum Credits: 3

This graduate overview of 19th century Russian fiction concentrates on the Russian novel, examining the conventions of that genre, their evolution, and the circumstances prompting that evolution.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Russian & East European Studies

RUSS 2638 - RUSSIAN AND SOVIET CINEMA 1896-1934: LUMIERE TO LENIN

Minimum Credits: 3

Maximum Credits: 3

Although the Russian film industry does not begin to take shape until Aleksandra Drankov's Sten'ka Razin (1907), moving images were first introduced to the Russian empire in May 1896, when the Lumiere brothers both screened the first films in the empire and arranged to shoot the first film footage in the country - the coronation of Tsar Nikolai II. The course will examine the history of the russo-soviet film from 1896 through the displacement of the cult of Lenin by Stalin's image in the late 1930s. Films to be screened include Chardynin's and Protazanov's adaptations of queen of spades (1910 and 1917), Bauer's the revolutionary (1917), room's bed and sofa (1927), Alexandrov's circus (1936), and Kalatozov's Chkalov (1941). Special emphasis will be placed on the work of the soviet directors associated with "soviet expressive realism": Kuleshov, Eisenstein, Pudovkin, Vertov, and Dovzhenko.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

RUSS 2639 - SOVIET CINEMA 1934-1953: STALIN AT THE MOVIES

Minimum Credits: 3

Maximum Credits: 3

The imposition in 1934 of socialist realism as the exclusive method available to soviet cultural producers and the release of the "Vasil'ev brothers", Chapayev later that year permanently transformed the soviet film industry. Stalin established total control of the industry both by appointing his personal representatives to control all stages of film production and by consolidating himself as "spectator number one," not only prescreening all films prior to their release, but eventually by establishing himself as a dominant presence on the silver screen. Films to be screened include Alexandrov's circus (1934), Kozintsev and Trauberg's "maxim trilogy" (1934-38), Dovzhenko's Aerograd (1935), Dzigan's we are from Kronstadt (1936), Rmm's Lenin in October (1937), Lukov's two soldiers (1943), Eisenstein's Alexander Nevsky (1938) and Ivan the terrible (1944-46), pyr'ev's cossacks of the Kuban (1949), and Chiaureli's trilogy devoted to comrade Stalin (1946, 1949, and 1951).

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Russian & East European Studies

RUSS 2640 - POST STALINIST CINEMA

Minimum Credits: 3

Maximum Credits: 3

Stalin's death (1953) and the start of Khrushchev's destalinization campaign (1956) not only disrupted the stability of the pre-existing interdependence between the ruling political elite and the national film industry, but also fundamentally altered the interrelationship between the film industry and the Russo-Soviet viewing public. The course will examine the changes in this triangular model through the four major periods in Russo-Soviet history since the death of Stalin: 1953-64 (the thaw), 1964-1985 (stagnation), 1986-1991 (perestroika), and post-1991 (the re-emergence of the Russian national state). Films to be screened include Kalatozov's *The Cranes are Flying* (1957), Chukhrai's *Ballad of a Soldier* (1959), Tarkovskii's *Ivan's Childhood* (1962), Askol'Dov's *Commissar* (1967; 1987), Pichul's *Little Vera* (1988), Lungin's *Taxi Blues* (1990), Mikhalkov's *Burnt by the Sun* (1994), and Balabanov's *Cargo 200* (2007).

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Russian & East European Studies

RUSS 2641 - CENTRAL ASIAN CINEMA

Minimum Credits: 3

Maximum Credits: 3

This course will examine central Asian cinema between 1990 and the present. Although the course will examine films and the film industry in all five central Asian republics (Kazakhstan, Kryguzia, Tadzikistan, and Uzbekistan), the focus will be on the underlying aesthetics of regional cinema, rather than on a series of national cinemas.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Russian & East European Studies

RUSS 2645 - RUSSIAN FILM SYMPOSIUM

Minimum Credits: 3

Maximum Credits: 3

In addition to analyzing Russian films released between 2016 and 2019, the course will have a heavy concentration on the professional training of graduate students. This will include selecting a week-long schedule of films to be screened, handling arrangements for visa applications and airline tickets, hotel reservations, the writing of program notes, and much more. By the end of the course, students will be able to handle the logistics of inviting individual speakers to campus, as well as organizing a week-long conference that includes dozens of participants.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad SN Basis

RUSS 2700 - MEDIEVAL RUS'

Minimum Credits: 3

Maximum Credits: 3

This graduate course is a survey of old Russian literature beginning with the primary chronicle and concluding in the late 16th and early 17th centuries. Readings will include both primary materials and modern Russian translations of old Russian texts.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Russian & East European Studies

RUSS 2704 - SOVIET LITERATURE 1917-1958

Minimum Credits: 3

Maximum Credits: 3

This course covers the history of Soviet literature over a forty year period, in connection with the party's policy and influence on soviet cultural life. This is a graduate course conducted in Russian.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

RUSS 2780 - STALINIST CULTURE IN THE 1930'S

Minimum Credits: 3

Maximum Credits: 3

This course surveys the aesthetics, politics, thought, and everyday life of the Soviet 1930s. The course explores the conceptual foundations of Stalinist culture through the period's art, literature, film, journalism, and ruling ideology. A major focus of the class is Stalinism's frenzied, often contradictory construction of cultural identity. Examining both official discourse and the everyday realities of Soviet life, the course investigates how representations of the utopian project of building socialism were interconnected with Soviet citizens' actual experience. Graduate students are required to complete additional assignments for full credit.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

RUSS 2970 - TEACHING OF RUSSIAN

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

RUSS 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

Course Attributes: Russian & East European Studies

RUSS 2995 - PHD RUSSIAN READING

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Attributes: Russian & East European Studies

RUSS 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Attributes: Russian & East European Studies

Slavic Studies

SLAV 2209 - PROFESSIONALIZATION

Minimum Credits: 1

Maximum Credits: 1

Based on the instructor's two-decades-long experience on national committees with passing or failing hundreds of scholarship applications, and more at University level, this auxiliary course helps graduate students understand unrecognized factors in decision making about applications for scholarships and provides hands-on practice with designing and writing their own applications that may aid the committees in recognizing their values.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad SN Basis

SLAV 2210 - OLD CHURCH SLAVIC

Minimum Credits: 3

Maximum Credits: 3

This course is intended to enable the student to read old church literature which had a particularly great influence on the Russian literary language. The course embraces the relationship of old church Slavic, to Protoslavlic, external history and sources of old church Slavic, its phonology, morphology and syntax. The classes will be devoted to reading, translation, and analysis of the texts.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Russian & East European Studies

SLAV 2802 - IMAGINATIVE GEOGRAPHIES IMAGINATIVE GEOGRAPHIES IMAGINATIVE GEOGRAPHIES

Minimum Credits: 3

Maximum Credits: 3

Traced from Said's orientalism (part two, chapter one), this term alternates in academic discourse with "imagined geographies" and "imaginary geographies." Relatively indifferent to these distinctions, the seminar moves from Said, to (in all likelihood) in Derek Gregory (geographical imaginations), O.R. Dathorne (imagining the world), Michel de Certeau ("walking in the city"), Michel Foucault (on heterotopias), then to Samuel Huntington (clash of civilizations) and Halford Mackinder ("the geographical pivot of history"). Some primary/secondary readings will be specific to Slavic (the Petersburg text; Iurii Lotman's semiosphere); other primary/secondary readings will be tailored to the participants' disciplinary expertise. The seminar's key questions concern the ways in which apparently inert and straightforward accounts of geography are marshalled for projects of social coordination, ideological division, and narratives of belonging.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SLAV 2902 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 3

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Attributes: Russian & East European Studies

SLAV 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 3

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

Course Attributes: Russian & East European Studies

SLAV 3000 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1

Maximum Credits: 3

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Attributes: Russian & East European Studies

SLAV 3902 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 3

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Attributes: Russian & East European Studies

Social Welfare

SWWEL 2020 - CHILD AND FAMILY ADVOCACY

Minimum Credits: 3

Maximum Credits: 3

This is a practical skills course in legal advocacy for non-lawyers. The emphasis is on practical techniques and courtroom skills to enhance the professional effectiveness of social workers in the courtroom setting. Typical areas of discussion include rules of evidence, legal procedure, expert witnesses, interview techniques, cross-examination, law reform, case review and readings and the legal rights of children.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWRES 2021 and SWGEN 2098 and SWBEH 2063 and SWWEL 2081

SWWEL 2035 - GLOBAL PERSPECTIVES SOCIAL WORK

Minimum Credits: 3

Maximum Credits: 3

This seminar-style course is designed to provide students an opportunity to engage in an introductory exploration of global social issues/problems/developments and to global approaches to address these issues.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWRES 2021 and SWGEN 2098 and SWBEH 2063 and SWWEL 2081

SWWEL 2039 - SOCIAL POLICY AND GERONTOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course is designed to examine the dynamics and procedural steps in social policy making and implementation first in a general context and then more specifically in relation to the older population. The last half of the course is devoted to the identification of major issues in social policy for the aged and intensive analysis of selected policy decisions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWWEL 2081; SBPLAN: Direct Practice (Social Work-MSW)

SWWEL 2051 - ECONOMICS AND SOCIAL WORK

Minimum Credits: 3

Maximum Credits: 3

This course provides an understanding of basic economic theory, and discusses its application to social welfare policy.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWRES 2021 and SWGEN 2098 and SWBEH 2063 and SWWEL 2081

SWWEL 2056 - HEALTH SYSTEMS AND PUBLIC POLICY

Minimum Credits: 3

Maximum Credits: 3

Building on a background knowledge in social welfare, this course focuses on issues and problems in the U.S. healthcare system including the historical development of health care, the structure and function of the healthcare system, current and proposed financing mechanisms and the social, political and ethical issues which shape healthcare policy.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWWEL 2081; SBPLAN: Direct Practice (Social Work-MSW)

SWWEL 2057 - MENTAL HEALTH AND PUBLIC POLICY

Minimum Credits: 3

Maximum Credits: 3

Historical development of mental health policies and the structure of the mental health delivery system and the policies and legal base that guide it. Special emphasis is given to how policies affect the care of persons with chronic mental illness.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWWEL 2081; SBPLAN: Direct Practice (Social Work-MSW)

SWWEL 2059 - CHILD AND FAMILY POLICY

Minimum Credits: 3

Maximum Credits: 3

This course reviews the life of children in the U.S. From 1600 to present. It is based on the work of Robert Bremner and an analysis of early legislation and legal actions. It also deals with children in their problems of maturing, and the state of Pennsylvania's laws which deal with children. Each student is assigned to visit and report on a home, i.e. day care, emotionally disturbed, mentally retarded, foster care.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWWEL 2081; SBPLAN: Direct Practice (Social Work-MSW)

SWWEL 2081 - SOCIAL WELFARE

Minimum Credits: 3

Maximum Credits: 3

The course focuses on the historical development of the field of social welfare including major legislation. Current issues of poverty and related problems, the health care delivery system, and criminal justice are discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Social Work students only.

SWWEL 2087 - ORGANIZATIONS AND PUBLIC POLICY

Minimum Credits: 3

Maximum Credits: 3

Introduced as a new course in the COSA concentration in community practice, this seminar emphasizes and examines relationships between public policy and organizational behavior. Particularly attentive to the influence of political and economic variables on human service institutions. The course examines selected historical phenomena in order to better understand future prospects.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWWEL 2081; SBPLAN: COSA (Social Work-MS)

SWWEL 3030 - EVAL OF AMERICAN SOCIAL WELFARE

Minimum Credits: 3

Maximum Credits: 3

Emphasizes a conceptual and analytical approach to the study of American social welfare. Extending from the Elizabethan poor laws to the 1930s new deal, and to the present, it deals with social welfare in relation to a number of central themes in American society, including the interaction among the ideologies of individualism, voluntarism, and collectivism; the conflict between opportunity-mobility and security objectives; and the nature of the social reform and social control processes in a pluralistic society.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: School of Social Work students only.

SWWEL 3037 - SOCIAL POLICY ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

This course provides students with a basic understanding of the dimensions of public social policy and the acquisition of the skill required to use a conceptual model to analyze policy. Particular attention is paid to the value and ideological dimensions of social welfare policy.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Social Work students only.

SWWEL 3059 - CHILD AND FAMILY POLICY

Minimum Credits: 3

Maximum Credits: 3

This course reviews the life of children in the U.S. From 1600 to present. It is based on the work of Robert Bremner and an analysis of early legislation and legal actions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Social Work students only.

SWWEL 3060 - CHILD AND YOUTH POLICY

Minimum Credits: 3

Maximum Credits: 3

This course addresses key issues in child and youth policy through the critical analysis and application of social, cultural, philosophical, psychological, and biological theory. Starting from work of John Rawls, students will develop an understanding of various philosophical frameworks pertaining to issues of equality, distribution, and liberty and will use these principles to articulate a conception of social justice to guide child and youth policy. The class will then move to consider the role of psychological and biological theories and their relationship to and meaning for child and youth policy. Following this discussion, the class will turn to critical social and cultural theories and will debate the implications of these

perspectives for the ways in which we think about and treat young people.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Social Work Continuing Educ

SWCED 2004 - INTRODUCTION TO INTERGENERATIONAL PROGRAMS

Minimum Credits: 2

Maximum Credits: 2

This course is an on-line, interactive experience based on the 13-year success of generations together intergenerational training program at the University of Pittsburgh. The on-line course is designed to help you develop the skills needed for success in the intergenerational field. Students read course materials, do on-line assignments, discuss the content with fellow students and instructors, and follow step-by-step procedures to complete the individual units. After you have completed the course, you will have a better understanding of skills needed to develop intergenerational programs and how to apply them and be able to: explain the rationale for intergenerational programs as a social intervention model. Formulate a design/plan for an intergenerational program. Develop a process to engage community support for intergenerational programming. Develop the basic skills to implement intergenerational program components. Recruit, train, and manage participants and staff in intergenerational programming. Evaluate an intergenerational program.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: School of Social Work students only.

Social Work General

SWGEN 2005 - POVERTY AND INCOME INEQUALITY: SOCIAL RESPONSES

Minimum Credits: 3

Maximum Credits: 3

The course focuses on the nature and extent of poverty and income inequality in the United States including its causes and consequences as well as the resulting political and public policy debates and governmental efforts to combat it. The course provides a broad social science approach to understanding the intersection of gender, race, and class with poverty and income inequality. Competing theories of poverty are discussed and their relationship to different policies are assessed. The course continues with the analysis of a range of social policy debates and reform options that might further reduce poverty and income inequality. The course concludes with a discussion about the nature of social and economic justice and the role social workers and professional social work currently play and could play in taking a social action role to addressing poverty and income inequality.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: SUBPLAN: Direct Practice

SWGEN 2007 - SOCIAL WORK AND THE LAW

Minimum Credits: 3

Maximum Credits: 3

This course will provide students with a basic understanding of the law, legal processes, and legal systems as they relate to social work practice and an introduction to the field of forensic social work. The course will challenge students to think about the variety of ways that social work practice, social policy, and law intersect. In particular, it will focus on specific aspects of the intersection between law, policy, and practice, including: the significance of courts and case law to issues of social justice, the intersection of social work and law on issues of significance to social workers, models of legal reasoning/decision making, the role of social workers in legal proceedings, the role of social workers in using the law for social reform or protection of civil rights, the use of social science by courts, legal regulations and case law that influence social work practice, and tensions between the law and social work values and ethics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWGEN 2098 and SWBEH 2063 and SWWEL 2081

SWGEN 2010 - SOCIAL WORK WITH SERVICE MEMBERS, VETERANS, AND THEIR FAMILIES

Minimum Credits: 3

Maximum Credits: 3

This generalist practice course is for social work students and other helping professional students interested in working with service members, veterans, and their families. It will provide an overview of the policies and programs, resources, culture, treatment issues, and special needs of these populations, especially at this time and in the wake of our military conflicts. This course will address the following areas identified in the NASW Standards for Social Work Practice with Service Members, Veterans, and their Families: social work policies and programs; social work values, ethics, and cultural competencies, treatment and practice issues; families and children issues; community, organizational, and policy advocacy.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWGEN 2098 and SWBEH 2063 and SWWEL 2081

SWGEN 2034 - SOCIAL WORK PRACTICE WITH DIVERSE POPULATIONS

Minimum Credits: 3

Maximum Credits: 3

This course focuses on issues of cultural diversity and oppression. Students are prepared to practice with, and on behalf of, diverse populations using empowerment as a guiding frame of reference.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Social Work students only.

SWGEN 2058 - FEMINIST SOCIAL WORK

Minimum Credits: 3

Maximum Credits: 3

This course focuses on gender and social work, beginning with a critical examination of the concept of feminist practice, with attention to oppression, power, and privilege in helping relationships and in women's lives more broadly. It explores meanings of gender as it intersects with race/ethnicity, class, sexuality, age, and ability in the lives of women in general and specifically as social workers and clients. Taught in a seminar format, this course examines topics such as work, welfare, family, violence, justice system involvement, health, mental health, and women as agents of change and is appropriate for students concentrating in micro or macro levels of practice.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWGEN 2098 and SWBEH 2063 and SWWEL 2081

SWGEN 2062 - ADVOCACY AND LOBBYING

Minimum Credits: 3

Maximum Credits: 3

This course will provide an overview of how a nonprofit organization can engage in effective public policy advocacy and lobbying on behalf of its mission and the people it serves. Advocacy includes a broad range of activities, which attempt to influence a specific policy, legislative, regulatory or implementation outcome. Social workers play critical roles in the advocacy process, policy analysis, issue development, public education, constituency organizing, lobbying, voter engagement, and creating an entire advocacy campaign. This course will focus on the best practices to deepen your understanding of advocacy tools, processes, and models.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Social Work students only.

SWGEN 2080 - RACE AND SOCIAL PROBLEMS

Minimum Credits: 3

Maximum Credits: 3

This course covers the history and evolution of the role of race in the economics, politics, media portrayals, educational systems, law enforcement, and overall social fabric of the United States. The course details historical eras and major mechanisms of racial oppression, including: slavery, reconstruction-era terror and voter disenfranchisement, 20th century economic policies, mass incarceration, and frames of political and social thought that have shaped and perpetuate the racial hierarchy of the US today. This course strives to help students understand why we see the current racial inequalities that we do in the contemporary US, particularly given the rich civic and cultural histories of West African and Native American societies. It also challenges students to develop ways to address racial injustices where they exist. Enrollment preference is given to social work students, but registrants from across the university are welcome with approval of the instructor.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: SWGEN 2098 and SWBEH 2063 and SWWEL 2081

SWGEN 2088 - SPECIAL TOPICS

Minimum Credits: 1

Maximum Credits: 3

Given the changing nature of social work practice and social welfare policy, the MSW program occasionally offers courses in new and/or unique content. When offered, this course is designed to provide skill and knowledge content not covered in other MSW courses.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

SWGEN 2097 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 6

A student-initiated educational experience, guided by a faculty member that significantly supplements the social work curriculum and conforms to academic course content expectations.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

SWGEN 2098 - GENERALIST SOCIAL WORK PRACTICE

Minimum Credits: 3

Maximum Credits: 3

This course is designed to serve as foundation for specialization by providing students with the knowledge, values, and skills needed to engage in the generalist practice of social work. Professional social work activity related to various social problems (poverty, racism, sexism), system size (individual, family, group, organization, community, society), and locations of practice (host setting, the urban environment, for example) will be emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Social Work students only.

SWGEN 2099 - GENERALIST FIELDWORK

Minimum Credits: 1

Maximum Credits: 6

This practicum will provide students with opportunities to develop an awareness of self in process of intervention; gain experience in application of knowledge, value and ethics, and practice skills; use oral and written communication consistent with language of the profession; and use professional supervision to enhance learning.

Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad SN Basis
Course Requirements: CREQ: SWGEN 2098

SWGEN 3025 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 6

A doctoral course in which the student defines the topic area and obtains approval for it from a member of the faculty who serves as his/her mentor.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

SWGEN 3039 - COMPREHENSIVE STUDY

Minimum Credits: 1

Maximum Credits: 9

This would be limited to students who have completed all courses but have not yet passed the exam, or have two or fewer courses to take and need to be full-time. Students may register for up to nine credits, and may register twice at most. The advisor will serve as faculty of record.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

SWGEN 3044 - THEORY 1

Minimum Credits: 3

Maximum Credits: 3

The general issues involved in applicability of social science theory provides a framework for an exploration of selected social psychological theories. Concepts from role theory, interrelated with socialization and behavioral theories, are presented and analyzed. Students will then apply selected theoretical concepts to a social problem area of their choice, in order to assess the theory's contribution to an understanding of the problem.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Social Work students only.

SWGEN 3053 - THEORY 2

Minimum Credits: 3

Maximum Credits: 3

This course covers macro social science perspectives relevant to social work: economic, organizational and social control aspects of society. Classical theories (Marx, Weber, and Durkheim) are studied and applied to particular social problems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Social Work students only.

SWGEN 3066 - SEMINAR IN SOCIAL WORK EDUCATION

Minimum Credits: 3

Maximum Credits: 3

History of social work education, accreditation, and design of foundation curriculum. Selecting educational objectives, teaching methods, evaluation of student performance, and careers in social work education.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Social Work students only.

SWGEN 3077 - MULTICULTURAL GROUPS IN CONTEXT: A RESEARCH PERSPECTIVE

Minimum Credits: 3

Maximum Credits: 3

This seminar presents relevant theory and research describing the ethno cultural context of multicultural families, groups, and individuals; and the way in which culture, diversity, sexual and racial identity impacts the social strata of different groups in our society. Consistent with the mission of professional social work, emphasis is placed on bi-racial, Hispanics, native Americans, and other diverse population in our society. The course examines societal issues which impact race, cultural, class, and sexual orientation. The course is designed to increase student awareness of the multidimensional aspects of race/ethnicity, gender, sexual orientation, and socioeconomic status and other multicultural issues in research with individuals, families, and groups.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

SWGEN 3088 - SPECIAL TOPICS

Minimum Credits: 3

Maximum Credits: 3

The Ph.D. program occasionally offers courses/seminars on research, theory, and/or policy in specific substantive areas. These are areas in which there is significant current research and practice energy that extends beyond the regular curriculum. Typically, these offerings reflect the research and scholarship program of the faculty sponsor.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Social Work students only.

Social Work Research

SWRES 2009 - ORGANIZATIONAL AND COMMUNITY DEVELOPMENT RESEARCH

Minimum Credits: 3

Maximum Credits: 3

This course is the second level, required research course for all COSA students. Examination of variables which influence organizational development and maintenance, adaptation and change, integration and innovation, and goal setting and planning will provide the focus for the course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWRES 2021; CREQ: SWCOSA 2099; SBPLAN: COSA (Social Work-MS)

SWRES 2021 - GENERALIST SOCIAL WORK RESEARCH

Minimum Credits: 3

Maximum Credits: 3

This course is designed to familiarize students with the basic elements of research and their implication for social work practice. Students will gain knowledge of the various components of research methodology, including the formulation of a researchable question, strategies of research design, questionnaire construction, and data analysis and interpretation. Lab sessions will allow students to develop their skills in the various topics covered in lecture.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Social Work students only.

SWRES 2023 - DIRECTED STUDY IN RESEARCH

Minimum Credits: 3

Maximum Credits: 3

A supervised experience in designing, implementing, and reporting an individually defined empirical research project. This course provides research experience for advanced research students.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

SWRES 2033 - EVALUATIVE RESEARCH SOCL SERVS

Minimum Credits: 3

Maximum Credits: 3

This course explores major issues and knowledge needed for evaluating the effects of social programs. Links to practice issues of accountability, program monitoring, and program planning will be emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWRES 2021; CREQ: SWINT 2099 or SWCOSA 2099; PROG: School of Social Work

SWRES 2045 - QUALITATIVE RESEARCH

Minimum Credits: 3

Maximum Credits: 3

This course will introduce students to selected methods of qualitative research. These methods are applicable to investigating questions which arise in social work practice situations and can be used to evaluate interpersonal practice. Qualitative designs, data acquisition strategies, and analytic techniques, including the use of computers, will be examined through both formal descriptions and studies that exemplify their use.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWRES 2021; CREQ: SWINT 2099 or SWCOSA 2099; PROG: School of Social Work

SWRES 2047 - COMMUNITY BASED PARTICIPATORY RESEARCH

Minimum Credits: 3

Maximum Credits: 3

This course is intended for students primarily focused on community organizing who want to better understand theories, principles and methods of applied, action research with communities and community partners, as well as how Community-based Participatory Research (CBPR) is used in community planning and organizing to address local issues and social needs. This course is proposed to be coordinated with COSA field placements in the east end of Pittsburgh, especially Homewood, and will serve as an integrated field seminar for these students.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWRES 2021; CREQ: SWINT 2099 or SWCOSA 2099; PROG: School of Social Work

SWRES 2051 - SINGLE SUBJECT RESEARCH

Minimum Credits: 3

Maximum Credits: 3

This course examines the feasibility of using single-subject methodology to evaluate effectiveness in social work practice. Single-subject research designs are examined in terms of self-monitoring and external monitoring approaches. Different social work contexts are illustrated in order to demonstrate contextual situations to which single-subject designs may be applied. Each student is expected to carry out a self-monitoring project or use single-subject research in work with a client.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: SWRES 2021; CREQ: SWINT 2099 or SWCOSA 2099; PROG: School of Social Work

SWRES 3020 - RESEARCH METHODS 1

Minimum Credits: 3

Maximum Credits: 3

Basic design issues are explored and related to specific survey research skills, such as sampling, questionnaire construction, and measurement, issues, and data collection. Alternative research designs will also be explored. The relationship of research design and methods of casual inference will be emphasized.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Social Work students only.

SWRES 3021 - MULTIVARIATE ANALYSIS

Minimum Credits: 4

Maximum Credits: 4

A class research project will be designed and implemented. Alternative data analysis strategies will be learned and applied to the project data.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Social Work students only.

SWRES 3022 - RESEARCH METHODS: CAPSTONE SEMINAR 1

Minimum Credits: 1

Maximum Credits: 1

Research Capstone 1 involves instruction in the developmental process and refining of a research question and conceptualization attached to (1) data collected as part of the students' GSA experience, or (2) secondary data available to the student. If neither of these sources of data is relevant, the student should register for 2-3 credits of directed study to enable the collection of new data that will be the basis for later data analysis and manuscript preparation to be conducted in research capstone 2 (SWRES 3023, 3 credits, Spring term). The Capstone 1 experience involves implementation of skills in the preparation and writing of an introduction section for an APA-style empirical research paper. The end product for this term is a well-written introduction for the study that will be completed in the Capstone 2 course.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: School of Social Work students only.

SWRES 3023 - RESEARCH METHODS: CAPSTONE SEMINAR 2

Minimum Credits: 3

Maximum Credits: 3

In the Spring term of the capstone sequence, the student will complete the data analysis and write the method, results, and discussion sections of the manuscript. Included in this will be instruction in the preparation of tables and figures in APA style and format. Some lecture time may be devoted to statistical and psychometric procedures. Some instruction will be individualized to address the specific methodological and analytic issues raised within each student's study purpose. Each section of the manuscript will be reviewed and evaluated with feedback guiding subsequent drafts resulting in a submission-ready paper. The goal of Capstone 2 is to have a final paper ready for submission to a peer-review journal by the end of the term.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Social Work students only.

SWRES 3024 - DIRECTED STUDY-RESEARCH PRACTCM

Minimum Credits: 3

Maximum Credits: 3

Provides students an opportunity to work with faculty on research projects carrying out specific research skills leading to publication of findings.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SU3 Basis

SWRES 3029 - INFERNTL STAT SOCL WORKERS

Minimum Credits: 3

Maximum Credits: 3

This course deals with bivariate statistical procedures (e.g. t-tests, one-way analysis of variance, correlation and regression) applied to social work and social research problems. Solutions to the research/statistical problems are achieved by use of both mainframe computer (primarily SPSSX) and microcomputer programs.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: School of Social Work students only.

SWRES 3040 - DISSERTATION RESEARCH

Minimum Credits: 1

Maximum Credits: 9

The doctoral dissertation represents a new, creative effort at a level higher than that expected in the competency paper. A doctoral student may register for dissertation research credits after successful completion of the competency, during any semester in which he/she is working on a dissertation and has completed course requirements.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Sociology

SOC 2035 - RACE & ETHNICITY

Minimum Credits: 3

Maximum Credits: 3

This course introduces graduate students to race and ethnicity. Students will be exposed to theories and empirical research in the field. The course will also encourage students to refine and extend their thinking on a series of important topics in the recent literature.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SOC 2036 - BODY AND SOCIETY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

SOC 2101 - SOCIOLOGICAL THEORY CLASSICAL

Minimum Credits: 3

Maximum Credits: 3

The course provides an opportunity for in-depth study of selected writings of Karl Marx, Max Weber, Emile Durkheim and at least one other of the

"classical originators" of the sociological discipline (Georg Simmel or Alexis de Tocqueville, for example). With appropriate flexibility depending on the "fourth figure" selected, the primary issues chosen for comparative examination are conceptions of the nature of knowledge, modes of theoretical reasoning, and principal substantive concerns addressed by these writers over the course of their lives.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SOC 2102 - SOCIOLOGICAL THEORY POST CLASSICAL

Minimum Credits: 3

Maximum Credits: 3

This course surveys the major works of post-classical and contemporary sociological theory. These are discussed from the standpoint of how they built upon, revised and extended the classics and how they are relevant to us today. Relevant selections from classical sociological theory are also covered.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Sociology (MA or PHD)

SOC 2201 - INTRODUCTION TO SOCIAL STATISTICS

Minimum Credits: 3

Maximum Credits: 3

This course provides an introduction to social statistics. Topics include descriptive statistics, frequency distributions, hypothesis tests, bivariate associations, and data visualization. This course emphasizes the application of statistics to the social sciences and requires no prior knowledge of statistics. Students will leave the course with a broader understanding of how statistics can be utilized in social scientific research.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SOC 2202 - QUANTITATIVE METHODS

Minimum Credits: 3

Maximum Credits: 3

Complementing courses on qualitative methods, computer methods and statistics, this course will provide an overview of quantitative research methods in the social sciences. Topics will include specification of researchable questions, experimental and quasi-experimental research designs, and will concentrate on survey research issues such as sampling, measurement, questionnaire construction and item writing, and collection and organization of data. The issues will be illustrated by sociological literature.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Sociology (MA or PHD)

SOC 2203 - QUALITATIVE METHODS

Minimum Credits: 3

Maximum Credits: 3

This course deals with the methods of qualitative social inquiry. Students study specific qualitative techniques, such as the interview. Participant observation, analysis of documents, and unstructured observation, problems of doing research in natural settings are also considered.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Sociology (MA or PHD)

SOC 2204 - APPLIED REGRESSION ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

This course studies the set of statistical methods called regression analysis. It solidifies and extends students quantitative and statistical data analysis skills. The course focuses primarily on linear regression, including modeling techniques for continuous, binary, ordinal, and count data. Students will leave the course with the tools necessary to analyze a variety of social science data. This course assumes some knowledge of statistics (descriptive statistics, frequency distributions, hypothesis tests, and bivariate associations). To register, students must have taken Introduction to Social Statistics (SOC 2201) or an equivalent class.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SOC 2205 - RESEARCH DESIGN

Minimum Credits: 3

Maximum Credits: 3

Sociology uses many forms of research methods. These range from large scale quantitative surveys to in depth qualitative participant observation studies. Designing a research project involves selecting methods appropriate for the research problem, taking account of resources, what is already known, and other factors. This course will cover the conceptual, philosophical, and technical issues that sociologists must deal with to design a research project.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SOC 2251 - THEORIES OF GENDER AND SEXUALITY

Minimum Credits: 3

Maximum Credits: 3

This course will provide an overview of important tendencies and controversies in gender and sexuality studies, emphasizing emerging directions in scholarship as well as foundational readings. Gender and sexuality studies are interdisciplinary fields in conversation with feminist theory and queer theory as well as a host of academic disciplines. Drawing on readings from a variety of disciplines (including anthropology, history, law, economics, philosophy, and literary studies) and sampling a range of methodologies, this course will work through some of the key movements and problems that have shaped and continue to shape contemporary thinking about gender and sexuality. Readings are likely to include works by Lila Abu-Lughod, Judith Butler, Nancy Chodorow, Patricia Hill Collins, R.W. Connell, Michel Foucault, Nancy Fraser, Linda Gordon, Judith Halberstam, Chandra Mohanty, Uma Narayan, and Joan Scott.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SU3 Basis

SOC 2301 - ENVIRONMENTAL SOCIOLOGY

Minimum Credits: 3

Maximum Credits: 3

The course seeks an understanding of the evolution of human societies in their physical environments and resource bases. The ways in which humans use energy and matter is crucial. The time frame for the course is that of human history. Harsh and benign environments will be considered as well as the rise and fall of civilizations. Throughout, the role of technology will be kept central in an understanding of the interface between a society and its environment.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SOC 2303 - POLITICAL SOCIOLOGY

Minimum Credits: 3

Maximum Credits: 3

The variety of political arrangements in the twenty-first century presents a number of puzzles that will make up the subject matter of this course. Are differing forms of government to be explained by levels of economic development, institutional histories, the actions of social movements,

transnational constraints or slow-changing national political cultures? Is the state an autonomous actor or the creature of other social forces? Is "legitimacy" a useful concept? Why has it been difficult to agree on what "democracy" is? Are regime changes consequences of some sort of "structural" change, effective actions by regime opponents, or simply consequences of rulers' blunders?

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Russian & East European Studies

SOC 2306 - SOCIOLOGY OF REVOLUTION

Minimum Credits: 3

Maximum Credits: 3

An inquiry into various theories, frameworks and models elaborated by social scientists to explain the origins, dynamics and outcomes of this most complex matrix of social change.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Latin American Studies, Russian & East European Studies

SOC 2311 - POLITICS AND CULTURE

Minimum Credits: 3

Maximum Credits: 3

This course introduces graduate students to politics and culture. Students will be exposed to theories and empirical research in the field. The course will also encourage students to refine and extend their thinking on a series of important topics in the recent literature.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SOC 2313 - RACE AND THE CITY

Minimum Credits: 3

Maximum Credits: 3

Race in the city is a seminar based writing/research intensive course focusing on the study of current and historical race relations in urban areas with a special interest in Pittsburgh. The course will examine how race in the city is related to economic, political and cultural forces. Students will complete projects using both qualitative and quantitative methods. This course is a practical introduction to theoretical and methodological issues in urban sociology and race theory. Contemporary and traditional literature will be discussed.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SOC 2314 - SOCIOLOGY OF EDUCATION

Minimum Credits: 3

Maximum Credits: 3

This course surveys the classic and contemporary literature on schools and socialization. The relevance of sociological theory and research to education policy debate is also highlighted. Students will increase their understanding of the forces shaping learning and development that are beyond the classroom and are embedded in the larger social context.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

SOC 2321 - SOURCES AND METHODS IN EAST ASIA

Minimum Credits: 3

Maximum Credits: 3

This course is designed to train students in research on original source material, as part of the graduate studies training in Chinese history.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Attributes: Asian Studies

SOC 2341 - SOCIAL MOVEMENTS

Minimum Credits: 3

Maximum Credits: 3

Various theories and models to study social movements are examined. Emphasis is placed on structural conditions that contributed to the emergency of the movements, their development over time and what changes, if any, are brought about to the social system in which the movements occurred.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Global Studies, Russian & East European Studies

SOC 2342 - CULTURAL SOCIOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course involves discussion of the main trends in the sociological consideration of systems and patterns of beliefs, values and symbols and the social vehicles in terms of which culture is produced, sustained and interrupted. It is particularly concerned with the theoretical issue of the place of culture in sociological analysis, on the one hand, and interpretations of contemporary cultural phenomena, on the other. Thus the course has both theoretical and empirical components.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SOC 2350 - GENDER AND POLITICS

Minimum Credits: 3

Maximum Credits: 3

This course introduces graduate students to the study of gender and politics. Students will be exposed to theories and empirical research in the field. The course will also encourage students to refine and extend their thinking on a series of important topics in the recent literature.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SOC 2402 - ORGANIZATIONS

Minimum Credits: 3

Maximum Credits: 3

This course introduces graduate students to organizations. Students will be exposed to theories and empirical research in the field. The course will also encourage students to refine and extend their thinking on a series of important topics in the recent literature.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SOC 2408 - SPACE, POWER, AND INEQUALITY

Minimum Credits: 3

Maximum Credits: 3

This course examines the intersections of spatiality, power, and social inequality. Place will be examined as a site of social interaction and the exercise of power. Topics will range from considerations of the micro-scale of personal life and the body, to mid-scale questions about group boundaries and the negotiation of spatial dimensions of social life, to macro-scale issues of built environments, territorial organization, ecosystems,

and the global economic political order.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SOC 2432 - GENDER EQUALITY AND THE UNITED NATIONS

Minimum Credits: 1.5

Maximum Credits: 1.5

In this year-long transdisciplinary course, students will collaborate directly with the United Nations Development Program (UNDP) and other partner institutions on policy-relevant research on gender inequality in public institutions worldwide. Students will develop their skills in data collection, analysis, and reporting. Students' research will feed into an ongoing Pitt-UNDP collaboration and support gender equality as part of the United Nations 2030 Agenda for Sustainable Development. Students will have professional opportunities to interact with policymakers and practitioners at international and national levels, and are expected to present their research at the UN Secretariat in New York City during the spring semester. This course operates in conjunction with an internship program that places select students as junior researchers in partner institutions during the summer following the course.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

SOC 2465 - SOCIOLOGY OF GLOBALIZATION

Minimum Credits: 3

Maximum Credits: 3

The course is designed as a broad overview of sociological analysis that extends beyond traditionally accepted national and local boundaries. It provides a perspective on the discipline that portrays human society as a nested collection of interdependent societies. In particular, the course draws from world-systems analysis, world society, and other relevant approaches as well as from related disciplines such as anthropology, geography, and political science to consider how the 'development project' of the 20th century has evolved over time. The impacts of global economic integration on cultural and institutional change, gender relations, inequality, climate change, and on changing identities and forms of collective action (including social movements) are phenomena we explore in the course. The course is designed for students who simply want to learn how globalization and global institutions like the world bank, IMF, and United Nations are impacting the experiences of people around the world as well as for those who expect to do further research in the field.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SOC 2902 - DIRECTED STUDY FOR MA STUDENTS

Minimum Credits: 1

Maximum Credits: 12

Registration is limited to students in good academic standing who wish to study or carry out a project in an area not normally available in a regular course. The work must be under the direct supervision of a faculty member.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

SOC 2990 - INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 12

All graduate study not under the direct supervision of a specific faculty member. Especially intended for those who must be registered to fulfill TA/TF requirements but no longer need formal course work. Must be approved by the student's formally validated committee chairperson at the time of registration.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

SOC 3191 - SOCIAL STRATIFICATION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SOC 3291 - TOPICS IN POLITICS AND CULTURE

Minimum Credits: 3

Maximum Credits: 3

This course explores selected topics in politics and culture. The specific content of this course will vary from term to term. Background requirements, if any, will be announced with each offering of this course.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SOC 3292 - TRADITIONS AND SOCIAL CHANGE

Minimum Credits: 3

Maximum Credits: 3

The course explores one of the least explored areas of social theory, namely the idea of "tradition" from a global and comparative perspective. It combines both theoretical and empirical materials from different societies and different time periods. It asks questions about how dynamics of social changes are affected by specific traditions; the extent to which traditions are real or imagined social realities; how "traditional" people debate their own traditions; the factors that make something new appear tolerable; and the way by which trajectories of social change are affected by various traditions. The goal is to contribute to a comparative global understanding of modernization processes, as well as explore factors that are tied to what we call novelty, creativity, and innovation.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SOC 3391 - TOPICS IN SOCIOLOGY OF CULTURE

Minimum Credits: 3

Maximum Credits: 3

This course explores selected topics in sociology of culture. The specific content of this course will vary from term to term. Background requirements, if any, will be announced with each offering of this course.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SOC 3397 - TOPICS IN SOCIAL MOVEMENTS & CULTURE

Minimum Credits: 3

Maximum Credits: 3

Humor in politics and protest: this graduate seminar will take an interdisciplinary, comparative, and historical approach to examine the role of humor in politics and protest. We will look at three broad categories of humorous expression: street theater and performance, commentators and satire, and social psychological functions of humor for developing group cohesion and collective identity. Specific cases are likely to include the impact and import of the Colbert Report and John Stewart show on U.S. politics, political cartoons in NYC history, carnival in Brazil and the Caribbean, the Orange Revolution in Poland, contemporary activist actions and groups in the global justice movement, and sexist jokes and sexual harassment. The course will contextualize humor within a theoretical framework of social psychology and sociology of emotions through a critical lens sensitive to issues of power and control.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SOC 3398 - TOPICS IN SOCIAL MOVEMENTS

Minimum Credits: 3

Maximum Credits: 3

The specific content of this course will vary from term to term. This course will focus on intensive study of important areas of social movement research and theory. Examples of such content are strategic action in social movements; the structure-agency debate in social movements; new theorizing in social movements; gender and social movements; and race and social movements. Background requirements, if any, will be announced with each offering of the course.

Academic Career: Graduate

Course Component: Seminar

Grade Component: LG/SNC Elective Basis

SOC 3400 - QUANTITATIVE ANALYSIS FOR PUBLICATION

Minimum Credits: 3

Maximum Credits: 3

This course is a research practicum, where students work intensively on a research project using quantitative methods. Students may enter the class with their own research question and data to analyze, or they may work with other students and/or the instructor on a collaborative project. This course is designed to advance students' skills in research design, data analysis, and writing up quantitative results. The course goal is for students to develop a sole- or co-authored manuscript for publication.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SOC 3491 - TOPICS IN SOCIAL STRATIFICATION

Minimum Credits: 3

Maximum Credits: 3

This course explores special topics in social stratification.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SOC 3493 - TOPICS IN SOCIOLOGY OF RACE & ETHNICITY

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SOC 3591 - TOPICS IN SOCIOLOGY OF GENDER

Minimum Credits: 3

Maximum Credits: 3

This course explores selected topics in sociology of gender. The specific content of this course will vary from term to term. Background requirements, if any, will be announced with each offering of this course.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SOC 3593 - TOPICS IN GLOBAL & TRANSNATIONAL SOCIOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course explores selected topics in global and transnational sociology. The specific content of this course will vary from term to term. Background requirements, if any, will be announced with each offering of this course.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SOC 3595 - TOPICS IN ORGANIZATIONAL SOCIOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course explores selected topics in organizational sociology. The specific content of this course will vary from term to term. Background requirements, if any, will be announced with each offering of this course.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SOC 3597 - TOPICS IN URBAN SOCIOLOGY

Minimum Credits: 3

Maximum Credits: 3

This course explores selected topics in urban sociology. The specific content of this course will vary from term to term. Background requirements, if any, will be announced with each offering of this course.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SOC 3902 - DIRECTED STUDY FOR PHD STUDENTS

Minimum Credits: 1

Maximum Credits: 12

Registration is limited to students in good academic standing who wish to study or carry out a project in an area not normally available in a regular course. The work must be under the directed supervision of a faculty member. The student is required to fill out departmental form out lining the study program and have it approved by the appropriate faculty person.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

SOC 3903 - CMPRHNSV EXAMINATION PREPARATION

Minimum Credits: 1

Maximum Credits: 6

Comprehensive examination preparation.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad SN Basis

Spanish

SPAN 2224 - SPECIAL TOPICS IN CULTURAL ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

This course allows students to do in-depth research in various aspects of contemporary culture.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis
Course Attributes: Latin American Studies

SPAN 2225 - SEMINAR:SPECIAL TOPICS CULTURAL ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

This course provides students with the opportunity to do in depth research in various aspects of contemporary culture and to present it both orally and in written form.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SPAN 2226 - READINGS IN CRITICAL THEORY

Minimum Credits: 3

Maximum Credits: 3

Readings in critical theory concerns contemporary discourses about ideology, rhetoric, cultural institutions, power/ knowledge, desire and the subject. Each year a different area or topic is chosen.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Global Studies, Latin American Studies, West European Studies

SPAN 2307 - METHODS OF TEACHING SPANISH

Minimum Credits: 3

Maximum Credits: 3

A course designed for those who plan to teach Spanish. Main focus is on practical information of how best (method and technique) to teach the language. Topics include: theory of learning, approaches, activities, dialogs and drills, the role of grammar, the lab, testing, vocabulary, and the like. Practice teaching, including videotaping.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Latin American Studies

SPAN 2404 - PRE-COLUMBIAN TOPICS

Minimum Credits: 3

Maximum Credits: 3

This course deals with specific topics on various aspects of the Mayan, Aztec and Quechuan cultures.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

SPAN 2410 - DISCOVERY AND CONQUEST

Minimum Credits: 3

Maximum Credits: 3

This course offers an introductory survey of the Spanish and Latin American literature of the sixteenth and early seventeenth centuries through some of the main texts of the period.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Latin American Studies

SPAN 2422 - COLONIAL TOPICS

Minimum Credits: 3

Maximum Credits: 3

This course deals with the basic texts of the Cronistas and other writers of the Colonia, concentrating on an in-depth study of their ideological points of view.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Latin American Studies

SPAN 2428 - LATIN AMERICAN 19THC TOPICS

Minimum Credits: 3

Maximum Credits: 3

This course deals with various topics ranging from romanticism to positivism to modernism, in an attempt to develop a concept of the changing cultural and economic climates in which literature was produced in the second half of the nineteenth century.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Latin American Studies

SPAN 2429 - SEM LATIN AMERICAN 19THC TOPICS

Minimum Credits: 3

Maximum Credits: 3

This seminar offers students the opportunity to do original research in the various areas of romanticism, positivism and modernism, in an attempt to develop a better understanding of the various ideological currents in which Latin American literature developed in the second half of the nineteenth century.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SPAN 2444 - VANGUARD TOPICS

Minimum Credits: 3

Maximum Credits: 3

This course deals in depth with specific aspects of vanguard literature such as formal and linguistic innovation, poetic theory and imagery, movements and tendencies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

SPAN 2445 - SEMINAR: VANGUARD

Minimum Credits: 3

Maximum Credits: 3

This course offers students the opportunity to do research in various aspects of vanguard literature and thought.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SPAN 2450 - CONTEM LATIN AMERICAN NARRATIVE

Minimum Credits: 3

Maximum Credits: 3

This course deals with Latin American narrative since 1945, treating in depth the narrative production of the boom and the post-boom periods.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Latin American Studies

SPAN 2452 - CONTEM LATIN AMERICAN FILM

Minimum Credits: 3

Maximum Credits: 3

This course surveys a representative sampling of recent Latin American film, primarily feature films made for commercial distribution, but also socio-political documentary.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

SPAN 2460 - LATIN AMERICAN DRAMA

Minimum Credits: 3

Maximum Credits: 3

This course studies representative examples of contemporary Latin American drama from a literary as well as a sociocultural point of view.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

SPAN 2461 - LATIN AMERICAN NOVEL

Minimum Credits: 3

Maximum Credits: 3

This course deals with the theory and development of the novel as seen through various exemplary texts of several periods, with emphasis on the boom and post-boom periods.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Latin American Studies

SPAN 2462 - LATIN AMERICAN POETRY

Minimum Credits: 3

Maximum Credits: 3

This course will deal with representative contemporary poets of various Latin American countries as well as specific movements and tendencies of the twentieth century.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Latin American Studies

SPAN 2463 - LATIN AMERICAN SHORT STORY

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the origins and development of the short story in Latin American literature through the analysis of selected texts from romanticism to the post boom.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

SPAN 2464 - LATIN AMERICAN 20THC TOPICS

Minimum Credits: 3

Maximum Credits: 3

This course will deal with specific topics of contemporary Latin American culture, using primarily literary but also other types of texts, including periodicals, film and television productions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Latin American Studies

SPAN 2465 - SEMINAR: 20TH CENTURY TOPICS

Minimum Credits: 3

Maximum Credits: 3

This course will allow students to do research in topics of interest to them, involving primarily literary texts but not necessarily restricted to these types of documents.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SPAN 2467 - TESTIMONIO AND ETHNOGRAPHIC NARRATIVE

Minimum Credits: 3

Maximum Credits: 3

This seminar will deal in depth with the question of testimony (testimonial narrative) and other forms of what is sometimes called ethnographic literature. We will interrogate these texts from a set of theoretical problems about subalternity and representation developed in the work of subaltern studies and postcolonial studies, feminist criticism and the concern in recent cultural anthropology with the problem of "writing culture".

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: Latin American Studies

SPAN 2585 - BEYOND THE REVOLUTION: ARTS, LITERATURE AND PERFORMANCE IN POST-REVOLUTIONARY CUBA 1959-PRESENT

Minimum Credits: 3

Maximum Credits: 3

This course will analyze the development of the Cuban cultural field under the Revolution's socio-political project. The analysis will focus on the dialogue established between fundamental literary texts, visual art, and performance, and the specific historical circumstances.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

SPAN 2634 - BAROQUE TOPICS

Minimum Credits: 3

Maximum Credits: 3

This course deals in-depth with various Baroque topics and builds on a prior survey of baroque literature.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Attributes: Latin American Studies, West European Studies

SPAN 2635 - SEMINAR: BAROQUE

Minimum Credits: 3

Maximum Credits: 3

This seminar deals in-depth with various Baroque topics.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SPAN 2657 - 19TH CENTURY TOPICS

Minimum Credits: 3

Maximum Credits: 3

This course deals with various nineteenth century topics, including romanticism, positivism and early modernism, with special emphasis on national and continental movements and tendencies.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

SPAN 2695 - SEMINAR: 20TH CENTURY

Minimum Credits: 3

Maximum Credits: 3

This seminar deals in depth with various topics of the literature and culture of the Franco and post-Franco periods.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SPAN 2704 - SPEC TOPICS LITERARY CRITICISM

Minimum Credits: 3

Maximum Credits: 3

This course deals with specific critical approaches such as structuralism, reader-response criticism and various post-structuralist and post-modern critical approaches.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

SPAN 2705 - SEMINAR: LITERARY CRITICISM

Minimum Credits: 3

Maximum Credits: 3

This seminar deals in-depth with specific critical approaches such as structuralism, reader-response criticism and various post-structuralist and post-modern critical approaches.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

SPAN 2902 - MA DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 3

Students work individually with faculty members on projects or areas defined by them in consultation with their director.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

SPAN 2910 - COMPREHENSIVE EXAMINATION MA

Minimum Credits: 3

Maximum Credits: 3

This course is intended for students taking the ma comprehensive/Ph.D. preliminary examination.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

SPAN 2950 - SPANISH TEACHING PRACTICUM

Minimum Credits: 1

Maximum Credits: 6

This practicum provides graduate students in the department of Hispanic languages and literatures the opportunity to gain teaching experience at another institution of education. In addition to teaching, the student will evaluate the approach/method used at the institution in question and meet at regular intervals with the Spanish language coordinator at the University of Pittsburgh to discuss his/her experiences and observations.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

SPAN 2990 - MA COMPREHENSIVE INDEPENDENT

Minimum Credits: 1

Maximum Credits: 3

Students work independently on projects or areas of their own definition in preparation for the ma comprehensive examination and the PhD preliminary examination.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

Course Attributes: West European Studies

SPAN 3000 - PHD DISSERTATION

Minimum Credits: 1

Maximum Credits: 12

Students work individually under the guidance of their dissertation director in preparation for and during the writing of the dissertation.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Course Attributes: West European Studies

SPAN 3902 - PHD DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 3

Students work individually with faculty members on projects or areas defined by them in consultation with their director.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

SPAN 3910 - COMPREHENSIVE EXAMINATION, PH.D

Minimum Credits: 1

Maximum Credits: 6

This course is intended for Ph.D. candidates the term they present themselves for their Ph.D. comprehensive examination.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

Course Attributes: West European Studies

SPAN 3990 - PHD INDEPENDENT STUDY

Minimum Credits: 1

Maximum Credits: 3

Students work independently on projects or areas of their own definition to develop their dissertation topic and in preparation for the dissertation overview.

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis

Course Attributes: West European Studies

Statistics

STAT 0200 - BASIC APPLIED STATISTICS

Minimum Credits: 4

Maximum Credits: 4

This course teaches methods of descriptive and inferential statistics. Topics include data collection and description, hypothesis testing, correlation and regression the analysis of variance, and contingency tables. Students will learn how to use a statistical computer package.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: LG/SNC Elective Basis

STAT 1000 - APPLIED STATISTICAL METHODS

Minimum Credits: 4

Maximum Credits: 4

This course is an intensive introduction to statistical methods. It is designed for students who want to do data analysis and to study further ideas in applied statistics beyond this course. The topics covered include descriptive statistics, elementary probability, random sampling, controlled experiments, hypothesis testing, regression and the analysis of variance. Emphasis will be placed on the statistical reasoning underlying the methods. Students will also become proficient at the use of a statistical software package.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: LG/SNC Elective Basis

STAT 1151 - INTRODUCTION TO PROBABILITY

Minimum Credits: 3

Maximum Credits: 3

This course presents at both a theoretical and applied level the basic probability concepts required for statistical inference. Topics include set theory and basic probability, independence and Bayes' theorem, discrete random variables and their distributions--Bernoulli, Binomial, Poisson, and geometric, continuous random variables and their distributions--uniform, exponential, gamma, beta, and normal, transformation of random variables, moment and moment generating functions, multivariate discrete distribution, marginal and conditional distribution and independent variables.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: LG/SNC Elective Basis

Course Requirements: PREQ: MATH 0230 or 0235 or 0240 or 0245

STAT 1152 - INTRODUCTION TO MATHEMATICAL STATISTICS

Minimum Credits: 3

Maximum Credits: 3

This course introduces the elementary concepts of statistical inference. Topics include functions of random variable, sampling distributions, decision criterion, estimation, hypothesis testing, regression, analysis of variance, and non-parametric methods.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: LG/SNC Elective Basis

Course Requirements: PREQ: STAT 1151

STAT 2001 - RESEARCH AND THESIS FOR MS DEGREE

Minimum Credits: 1

Maximum Credits: 6

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

STAT 2020 - TEACHING SEMINAR

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

STAT 2131 - APPLIED STATISTICAL METHODS 1

Minimum Credits: 3

Maximum Credits: 3

This introductory graduate level course on applied statistics covers a wide variety of problems. We begin with simple data description and go on to standard estimation and testing problems. We then study various types of linear models. We make extensive use of the computer; the student will learn BMDP and Minitab.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

STAT 2132 - APPLIED STATISTICAL METHODS 2

Minimum Credits: 3

Maximum Credits: 3

This course is a continuation of STAT 2131.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: STAT 2131

STAT 2200 - APPLIED NONPARAMETRIC STATISTICS

Minimum Credits: 3

Maximum Credits: 3

The purpose of this course will be to prepare students to use standard nonparametric tests for problems that frequently occur in applications. The Wilcoxon, Fisher (sign), Ansari-Bradley, Miller (jackknife), Kruskal-Wallis, Kendall, and Kolmogorov-Smirnov tests will be discussed. Minitab subroutines will be used to facilitate computation. Students will additionally be doing data and other projects utilizing course techniques.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

STAT 2210 - APPLIED CATEGORICAL DATA ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

The purpose of this course is to provide contingency table techniques for research workers in the social sciences, medical sciences and other areas where it is necessary to investigate relationships between qualitative variables. Course deals with the Chi-square test and standard 2x2 and RXC contingency tables, as well as log-linear and other special types of contingency tables analysis. Students will additionally be doing data and other projects utilizing course techniques.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

STAT 2211 - CATEGORICAL DATA ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

This course presents techniques for analyzing categorical data such as contingency tables and log linear models.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

STAT 2220 - APPLIED REGRESSION

Minimum Credits: 3

Maximum Credits: 3

This course covers simple linear regression (one variable) and one way analysis of variance followed by more complicated regression models. More complex ANOVA models are treated if time permits. Some computer applications will usually be considered. Students will additionally be doing data and other projects utilizing course techniques.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

STAT 2221 - ADVANCED APPLIED MULTIVARIATE ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

This course is concerned with statistical methods for describing and analyzing multivariate data.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

STAT 2230 - APPLIED EXPERIMENTAL DESIGN

Minimum Credits: 3

Maximum Credits: 3

This course teaches students to design valid statistical experiments and to analyze them. Among the designs considered are: completely randomized designs, randomized block designs, Latin lemmas, factorial designs, and complete block designs. Students will additionally be doing data and other projects utilizing course techniques.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: STAT 0200 or 1000 or 1100 or 1152; MIN GRADE: STAT 0200 B-

STAT 2240 - APPLIED SAMPLING

Minimum Credits: 3

Maximum Credits: 3

This course considers basic applied principles and approaches for conducting a sample survey. The following will be discussed: how to design a survey, how to analyze a survey with attention paid to different types of survey techniques and corresponding statistical methods. The course will provide survey skills for the social sciences, psychology, economics, marketing and management, and health sciences. Students will additionally be doing data and other projects utilizing course techniques.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

STAT 2250 - STATISTICAL QUALITY CONTROL

Minimum Credits: 3

Maximum Credits: 3

This course is involved with statistical methods for quality and process control. It is intended for all students who will use statistics in an industrial setting. Introductory topics include probability models and statistical estimation for quality. The main focus will be on control charts and tolerances. Acceptance sampling will also be discussed. A final but quite important topic will be Taguchi methods. Students will additionally be doing data and other projects utilizing course techniques.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

STAT 2260 - PRINCIPLES OF DATA SCIENCE

Minimum Credits: 3

Maximum Credits: 3

This course is a gentle introduction to data science. Data science is an emerging interdisciplinary field stemming from statistics, mathematics and computer science. At its core, data science involves using automated methods to analyze massive amounts of data and to extract knowledge from them. The objective of this course is to provide students with a principled introduction to data science that properly combines inferential thinking and computational thinking. Students will learn the fundamental pipeline of data science, ranging from data acquisition, data clean-up, data exploration and visualization, modeling and inference, to professional reporting.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

STAT 2261 - SURVIVAL ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

This course is designed to cover the design and analysis of clinical trials.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

STAT 2270 - DATA MINING

Minimum Credits: 3

Maximum Credits: 3

Data mining is a collection of tools to discover patterns and relationships in data, often large observational databases. This course covers some of the main methods of data mining.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2292 - TOPICS IN APPLIED STATISTICS 2

Minimum Credits: 3

Maximum Credits: 3

Various topics concerning the applications of statistics will be taught on an irregular basis depending on faculty interests and students' needs. Example of possible topics include re-sampling techniques in statistics; statistical graphics; cluster analysis; and classification methods.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

STAT 2300 - STATISTICAL PACKAGES

Minimum Credits: 3

Maximum Credits: 3

This course will cover a variety of topics concerning computing and statistics. Basic statistical analysis packages such as BMPD, SPSS, Minitab, and IMSL will be discussed and compared. Other computational issues that will be discussed include simulation, graphics, elementary database management, and certain stand-alone statistical programs. Students will additionally be doing data and other projects utilizing course techniques.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

STAT 2310 - APPLIED MULTIVARIATE ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

We start with the basic concepts of regression and correlation. After developing the necessary linear algebra, we will study the multivariate normal and then go on to do one or more of the following: cluster analysis, discriminant analysis, directional data, and factor analysis. We will make use of the Minitab and BMDP computer packages. Students will additionally be doing data and other projects utilizing course techniques.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

STAT 2320 - APPLIED TIME SERIES

Minimum Credits: 3

Maximum Credits: 3

The objective of the course is to present at the elementary level, a unified and reasonably complete exposition of statistical methods used in time series analysis. Serious consideration is given to both time and frequency domain approaches. Real data from a number of subject fields will be analyzed as they occur in the exposition. Students will additionally be doing data and other projects utilizing course techniques.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: STAT 2220

STAT 2321 - APPLIED ADVANCED TIME SERIES

Minimum Credits: 3

Maximum Credits: 3

This course is an attempt to provide a uniform coverage of both time domain and frequency domain time series methods which can be easily understood by students with varied backgrounds.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2360 - STATISTICAL LEARNING AND DATA SCIENCE

Minimum Credits: 3

Maximum Credits: 3

This course is designed to provide a broad introduction to the field of data science and to expose students to many of the statistical tools most commonly used by modern data scientists. We will explore a wide variety of models and algorithms in a data-driven fashion. Topics will include modeling techniques ranging from classic statistical modeling (e.g. linear and logistic regression) to modern statistical learning (e.g. regularization and lasso) to fundamental machine learning (e.g. random forests and support vector machines). Particular attention will be given to the sorts of scientific questions that can be asked and answered within the different frameworks. Students will have the opportunity to utilize modern, interesting datasets to both provide data-driven analytical solutions and also to formally assess the uncertainty in making such determinations. The R language will be used extensively for statistical computing. Some prior knowledge or experience with R or related programming languages is helpful but not essential.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

STAT 2381 - SUPERVISED STATISTICAL CONSULTING

Minimum Credits: 1

Maximum Credits: 6

In this course students will consult with clients in the consulting center. The consulting will be under the supervision of experienced consultants. Students will be taught how to provide statistical methods in conjunction with real problems and how to analyze and report the results.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: STAT 2132

STAT 2391 - ADVANCES IN APPLIED STATISTICS 1

Minimum Credits: 3

Maximum Credits: 3

Foundations as well as recent developments in applied statistics will be discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

STAT 2392 - ADVANCES IN APPLIED STATISTICS 2

Minimum Credits: 3

Maximum Credits: 3

Foundations as well as recent developments in applied statistics will be discussed.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

STAT 2521 - TIME SERIES 1

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the theoretical aspects of time series analysis. In this course we discuss the probabilistic foundations of time series in both the time and frequency domains. Students should have a strong background in mathematical statistics, but the course does not assume a prior knowledge of time series analysis.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 2630 - INTERMEDIATE PROBABILITY

Minimum Credits: 3

Maximum Credits: 3

This course is the first half of a two term sequence in mathematical statistics intended for undergraduate students and graduate applied statistics majors. Topics to be covered include probability concepts, random variable, discrete and continuous variables, joint distributions, functions of random variables, and some sampling distributions

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

STAT 2631 - THEORY OF STATISTICS 1

Minimum Credits: 3

Maximum Credits: 3

This is an introductory graduate course in the theory of statistical estimation. The following topics will be covered. The use of orthogonal transformations in statistical distribution theory, distribution of quadratic forms, the theory of linear estimation, the general theory of estimation and estimation from a decision theoretic point of view.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

STAT 2640 - INTERMEDIATE MATHEMATICAL STATISTICAL

Minimum Credits: 3

Maximum Credits: 3

This course is the second half of a two term course. Topics to be covered include estimation, inference, linear models, and an introduction to bayesian estimation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

STAT 2641 - ASYMPTOTIC METHODS IN STATISTICS

Minimum Credits: 3

Maximum Credits: 3

This course deals with the concepts and technical tools that are useful for the study of asymptotic approximations in statistics. Topics include Laplace and saddle point methods, the limiting behavior of maximum likelihood and Bayes estimators and likelihood ratio test statistics, Edgeworth and Cornish-fisher expansions, efficiency, influence functions, the jackknife and the bootstrap.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

STAT 2661 - LINEAR MODELS THEORY 1

Minimum Credits: 3

Maximum Credits: 3

This course will follow a co-ordinate free approach to the general linear model. As much as possible proofs will be done from a geometric perspective. Topics include matrix theory for statistics, estimation, hypothesis testing, distribution theory, generalized inverses.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

STAT 2691 - NONPARAMETRIC THEORY

Minimum Credits: 3

Maximum Credits: 3

This course focuses on the statistical analysis of data when no parametric assumptions are made.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

STAT 2711 - PROBABILITY THEORY 1

Minimum Credits: 3

Maximum Credits: 3

This course begins with an introduction to Lebasque integral. Then distribution functions, probability measures and random variables are introduced. Convergence concepts and topics from the laws of large numbers and random series are also covered.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

STAT 2712 - PROBABILITY THEORY 2

Minimum Credits: 3

Maximum Credits: 3

This is the continuation of STAT 2711.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: 2711

STAT 2730 - STOCHASTIC PROCESSES

Minimum Credits: 3

Maximum Credits: 3

This course provides an introduction to stochastic processes and its applications. The major topics are Markov chains, Poisson processes, Brownian motion, and branching processes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

STAT 2751 - RELIABILITY THEORY 1

Minimum Credits: 3

Maximum Credits: 3

This course will cover basic concepts in reliability theory.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

STAT 2900 - INTERNSHIP

Minimum Credits: 1

Maximum Credits: 3

Under faculty supervision, the student will participate in a statistics project.

Academic Career: Graduate

Course Component: Internship
Grade Component: Grad SN Basis

STAT 2991 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

STAT 3001 - RESEARCH AND DISSERTATION PHD

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Thesis Research
Grade Component: Grad SN Basis

STAT 3131 - TOPICS APPLIED STATISTICS 1

Minimum Credits: 3
Maximum Credits: 3
Foundations as well as recent developments in applied statistics will be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

STAT 3132 - TOPICS APPLIED STATISTICS 2

Minimum Credits: 3
Maximum Credits: 3
Foundations as well as recent developments in applied statistics will be discussed.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: [(STAT 2131 and 2132) or (BIOST 2049)] and [(STAT 1631 and 1632) or (STAT 2630 and 2640) or (STAT 2631) or (BIOST 2043 and 2044)]

STAT 3341 - ADVANCED MODERN STATISTICAL COMPUTING 1

Minimum Credits: 3
Maximum Credits: 3
Topics include: nonparametric regression modeling, generalized additive models, robust statistical methods, general applications of randomization and resampling techniques.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: PREQ: STAT 2631

STAT 3521 - TOPICS IN TIME SERIES 1

Minimum Credits: 3
Maximum Credits: 3
In this course we will study linear and nonlinear state space models, which includes models used in finance such as stochastic volatility models. We

will also discuss Monte Carlo methods that are necessary for inference in complicated nonlinear processes.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: STAT 1632

STAT 3694 - TOPICS IN ADVANCED STATISTICS 4

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

STAT 3901 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

Strategic Planning & Policy

BSPP 2013 - ACQUISTN AND DIVESTMENT ANALYS

Minimum Credits: 2

Maximum Credits: 2

Based on current concepts of corporate business portfolios, this course analyzes the reasons for shifting the portfolio mix and the resulting implementation issues.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BSPP 2016 - STRATEGIC VISIONING FOR A GLOBAL FUTURE

Minimum Credits: 2

Maximum Credits: 2

As globalization gathers pace across the business landscape, senior managers must learn to cope with increasing levels of strategic uncertainty. Globally contestable markets, radical technological and business process innovation, and shifting consumer preferences combine to stress-test corporations' strategic planning and execution capabilities. In particular, there is a need for new models of strategy and competition--incorporating concepts such as real options, scenario thinking, non-market factors, and "new game" strategies (e.g., "bottom of the pyramid" approaches). Accordingly, this course provides participants with a set of rigorous tools and frameworks for making sense of today's high-ambiguity global environment.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BSPP 2060 - INDEP STUDY STRATGY PLNNG CONTRL

Minimum Credits: 1

Maximum Credits: 6

Academic Career: Graduate

Course Component: Independent Study
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BSPP 2061 - INDEPENDENT STUDY IN STRATEGIC PLANNING 2

Minimum Credits: 1
Maximum Credits: 9
Self designed elective course in strategic planning.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BSPP 2111 - COMMERCIALIZING NEW TECHNOLOGIES

Minimum Credits: 3
Maximum Credits: 3
This course covers theory, conceptual frameworks, and tools used to formulate strategies for commercializing new technologies. The analytical frameworks cover elements of commercialization strategy that are equally critical to start-ups and to corporate technology ventures. In addition, we discuss some of the key challenges that differ for start-ups versus established firms. The primary deliverable in the course is a professional quality project which evaluates the commercialization alternatives for an emerging technology. Your project team will be paired with a local inventor, unless you prefer to evaluate a technology of special interest to your team. Experienced entrepreneurs and experts in financing new technology ventures will also address the class.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SU3 Basis
Course Requirements: Katz Grad School of Business students only.

BSPP 2112 - LEADING ORGANIZATIONS TO INNOVATE SMARTER

Minimum Credits: 1.5
Maximum Credits: 1.5
This course addresses the critical role of a firm's top management in guiding a firm toward more positive innovation outcomes. We specifically focus on the role of executive leadership in developing a firm's capability for breakthrough innovation 'a primary source of sustained competitive advantage and economic growth. We distinguish between what leaders need to do during invention and innovation, and emphasize barriers that hinder established firms' capabilities to produce breakthrough innovations. We examine how strategic leaders can augment a firm's ability to 'innovate smarter' by better utilizing the diversity of expertise that resides within the organization and within the firm's partnerships. The concepts we'll discuss are grounded in decades of research on creativity and technological innovation, as well as strategic management, leadership, and teams. We'll discuss how strategic leaders apply these concepts today.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis
Course Requirements: Katz Grad School of Business students only.

BSPP 2328 - THE BUSINESS OF HUMANITY - STRATEGIC MANAGEMENT

Minimum Credits: 3
Maximum Credits: 3
This course focuses on strategic management in business contexts of high uncertainty and extreme complexity created by the interaction of (i) the inevitability of increasing globalization, (ii) the importance of innovation to ensure sustainable competitive advantage and (iii) the emerging social and economic imperative of building business models that focus on shared value. The business of humanity project at the KATZ graduate school of business has researched the responses of businesses across the world to these challenges. The course will cover (i) the radically different strategic planning processes and analytical techniques, (ii) the new rules of strategy, (iii) the dynamic organizational structures and (iv) the new leadership models that are responsive to the imperative and potential of meeting fundamental human and societal needs. These processes, rules, techniques and models have been demonstrated to be effective in dealing with technological disruptions, extreme price-point pressures in growth sectors, rising

societal expectations and wicked problems

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BSEO 2407 or BSPP 2409; PROG: Joseph M. Katz Grad Sch Bus

BSPP 2409 - STRATEGIC MANAGEMENT

Minimum Credits: 2

Maximum Credits: 2

"Strategy" in the context of management, focuses on creating a harmonious relationship between separate units within an organization, and between a firm and its environment. The core strategic management course explores this classic concept of strategy and how it can be adapted to today's changing and turbulent environments. While the course adopts the perspective of a general manager (e.g. Head of a strategic business unit), it provides critical insight to functional managers who must align their departments' activities with the firm's overall objectives and approach to creating and capturing value (i.e. Its competitive strategy). The strategic management course employs a multi-method pedagogy. Students learn a set of perspectives, conceptual frameworks, and tools - drawn from industrial organization economics and the behavioral sciences and sociology, with which to understand the opportunities and challenges involved in developing world-class capabilities for competing effectively in globally-linked economies. Through case studies, we explore how a firm's competitive strategy shapes the way it engages customers, suppliers, competitors, and others comprising its value net. Through project assignments, we investigate how competitive advantage can be quantified using publicly available data. Together, the multiple modes of inquiry will provide insight into why competitive advantage is fundamental to a firm's long-term success; how the various activities in a firm's value chain can contribute to competitive advantage; and why, although industries support many competitive strategies, each firm tends to employ only one at a time.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: (BACC 2401 and BECN 2401) and (BFIN 2006 or BFIN 2409 or BMKT 2411 or BMKT 2409); PROG: Joseph M. Katz Grad Sch Bus

BSPP 3010 - INDEP STUDY STRATGC PLNG POLICY

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad HSU Basis

BSPP 3011 - STRATEGIC PLANNING SYSTEMS

Minimum Credits: 3

Maximum Credits: 3

Analyzes the strategic planning process in terms of the varying combinations of subsystems which may be required for different organizational purposes. Research regarding both the design and evaluation of planning systems will be studied with the objective of developing improved models of the underlying processes.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: Katz Grad School of Business students only.

BSPP 3012 - RESEARCH IN COMPETITIVE STRATEGY

Minimum Credits: 3

Maximum Credits: 3

This course draws on a growing body of theoretical and empirical research which examines relationships between an organization's environment, its strategy, and performance outcomes. Topics include theoretical concepts of the environment and their empirical counterparts, market definitions, strategic alliances, competitive information flows, competitive interactions and responses, industry evolution, and the role of environmental analysts. Special attention is given to competitive intelligence processes. There is an explicit balance of theoretical and practitioner material. The course

complements the research in corporate strategy seminar by focusing on business level competitive dynamics.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BSPP 3013 - FOUNDATIONS OF STRATEGY RESEARCH

Minimum Credits: 3

Maximum Credits: 3

Examines various streams of research which have contributed to our understanding of competitive behavior at both the business unit and corporate levels of diversified organizations. Prior studies are critiqued as a means of developing proposals for improved research designs.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BSPP 3014 - RESEARCH IN CORPORATE STRATEGY

Minimum Credits: 3

Maximum Credits: 3

In this course we will focus on a core sub-field of strategy, corporate strategy, which has the following defining question: "what businesses should the firm compete in, and how should resources be allocated across those businesses?" Corporate strategy comprises an inter-related set of three key phenomena and associated research; value creation (e.g., Diversification and vertical integration), scope (e.g., Mergers and acquisitions), and execution (e.g., Role of the corporate office). While corporate strategy is often studied purely as a "content" field, we will adopt an integrative content-process orientation in this course. Our approach will also be evidence-based, in that we'll make a conscious attempt to understand and use systematic review tools, such as meta-analyses, to arrive at a sophisticated understanding of the corporate strategy literature.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BSPP 3015 - WORKSHOP IN STRATEGIC PLANNING & POLICY

Minimum Credits: 3

Maximum Credits: 3

Provides a systematic forum for the presentation and development of current research topics by faculty, doctoral students, and visiting scholars. Interaction among participants with diverse interests is intended to enhance the quality of research programs pursued within the field.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

Course Requirements: Katz Grad School of Business students only.

BSPP 3018 - THEORY BUILDING IN MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

The development and analysis of theory is a critical skill for academic scholars to develop. In this course we will explore the components of a theory, discuss the latest developments in theory development, and apply theory analysis to the field of management. The course is designed to complement research design and statistics courses.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BSPP 3019 - SEMINAR IN ENTREPRENEURSHIP

Minimum Credits: 3

Maximum Credits: 3

Study of entrepreneurship research literature to develop an understanding of and appreciation for the key concepts, theories, issues, debates, contributions, and research streams in this literature.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

BSPP 3099 - READINGS STRATEGIC PLANNING & POLICY

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

Strategy Environment & Organizations

BSEO 2000 - STRATEGY SEMINAR

Minimum Credits: 2

Maximum Credits: 2

This seminar covers practical frameworks for strategic problem solving and develops analytical and communication skills for addressing complex projects in consulting and other industry contexts. Using projects to tackle complex strategy or performance-improvement challenges shouldn't just be the domain of a few thousand highly-paid strategy consultants. Projects are increasingly at the center of problem-solving and innovation for all executives. This seminar will focus on key fundamentals of the end-to-end consulting (project) process. Students will be exposed to a variety of cutting edge analytical tools and techniques. Particular emphasis will be put on best practices in structured problem-solving, work planning, and executive communication - capabilities that are at the core of the top strategy houses' own internal training and development programs. This course will be of interest to future management consultants, but also more broadly to professionals who might expect future internal strategic projects or task force assignments.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BSEO 2012 - SOCIAL ENTREPRENEURSHIP

Minimum Credits: 2

Maximum Credits: 2

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BSEO 2033 - MANAGING THE NATURAL ENVIRONMENT

Minimum Credits: 1.5

Maximum Credits: 1.5

This course focuses on the management of strategic and compliance issues related to the natural environment of the business firm.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BSEO 2034 - SUSTAINABILITY AND CORPORATE RESPONSIBILITY

Minimum Credits: 2

Maximum Credits: 2

This course will address such topics as managerial approaches to the ESG issues and opportunities that occur across business processes, sustainability and social responsibility as business opportunities, environmental management systems (the 14001 standards), social responsibility guidance (ISO 26000) and reporting, and methods of dealing with stakeholders concerned about the firm' ESG performance. It introduces students to sustainable business management practices and to the role of the private sector in global sustainability development and environmental initiatives. Throughout the course, the emphasis will be on real-world managerial experience and guidance, based on numerous current cases.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BSEO 2315 - BUSINESS LAW

Minimum Credits: 3

Maximum Credits: 3

The primary objectives of this course are: (1) to identify the many types of business actions which require decision makers to analyze ethical issues; and (2) to teach students when, why, and how ethical issues should be made a part of the decision-making process.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: Katz Grad School of Business students only.

BSEO 2316 - BUSINESS LAW

Minimum Credits: 3

Maximum Credits: 3

The primary objective of this course is to discuss key topics of business actions and topics central to the objective of today's executive.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BSEO 2401 - BUSINESS ETHICS & SOCIAL PERFORM

Minimum Credits: 2

Maximum Credits: 2

This course examines concepts, issues, and tools related to the management of ethics and social responsibility in business. Students learn how to recognize and respond to ethical problems, to understand their personal responsibilities as business managers, to evaluate various ethical frameworks, to apply a process of moral decision making to ethical problems, to grasp relationships between ethical behavior and organizational structure and processes and to manage the ethical and social problems and opportunities arising from dimensions of the business environment.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BSEO 2407 - STRATEGIC MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

At the end of the course, students will be able to: (1) do a strategic assessment of the firm and its environment (2) identify the various strategic choices a firm can make given the strategic assessment (3) implement processes and methods to enact strategic choices.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: BACC 2401 and BMKT 2411 and BECN 2401 and BFIN 2006; PROG: Katz Graduate School of Business

BSEO 2500 - BENCHTOP TO BEDSIDE

Minimum Credits: 3

Maximum Credits: 3

This 10-week course is designed to teach research scientists how to navigate the path necessary to bring a basic science discovery out of the university and into the clinic. Participants will learn the criteria used by the private sector to assess the potential of discoveries that have therapeutic or diagnostic applications. They will understand how proof-of-concept and validation experiments define the application, increase value, and reduce risk. The course will focus on the importance of intellectual property protection as the engine that creates a barrier to entry for competition and also enables investment from the private sector to fund the climb over regulatory and reimbursement hurdles to reach patients. This course is open to all scientific researchers and those interested in gaining knowledge of the commercial development process. The core faculty for the course will include OED staff members, and numerous guest speakers and panelists from the scientific and entrepreneurial community.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BSEO 2506 - COMPETING EMERGING ECONOMIES

Minimum Credits: 2

Maximum Credits: 2

This course will introduce students to concepts and frameworks designed to help managers make decisions critical to formulating and implementing global strategies, such as Ghemawat's cage model and 3a global strategy framework, porter's national diamond model, and Khanna's work on institutional voids. Through a combination of case studies and country overviews, students will analyze specific companies, industries, and countries in order to develop recommendations pertaining to whether, when, and how to enter a particular country, and how to prepare for management challenges associated with implementing a firm's competitive strategy in a new country. The course will specifically introduce students to the opportunities and challenges associated with transferring competitive strategies established in developed markets to emerging economies, such as Brazil, China, India and Russia. Hands-on homework assignments will assure that students become familiar with valuable sources of information on emerging markets.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BSEO 2509 - BUSINESS AND POLITICS

Minimum Credits: 2

Maximum Credits: 2

The financial crisis, international negotiations toward a climate change agreement, and crises in such industries as pharmaceuticals and even toy manufacturing have highlighted the increasing interdependence of business and government, as well as the means by which business gains strategic benefits from government regulation. This course will examine methods and patterns of business influence on government, policy-making on issues affecting business, the performance of regulatory agencies, and the behaviors of groups and trade associations in politics. The course begins with an extended case study that asks, what caused the current financial crisis that some call "the great recession"? The crisis had multiple, often interacting causes, and involved both public sector and private sector failures. Besides examining the bases of the crisis, we will ask what institutional reforms, and what critical decisions, might have ameliorated the crisis, and might prevent a future crisis. The course will examine both regulatory failure patterns and the means by which firms gain strategic, competitive advantage through shaping government decisions and programs. In examining techniques of lobbying, the course will focus on the U.S. setting and identify both effective and ineffective methods of lobbying. By the end of the course, students should have obtained a good working knowledge of the U.S. regulatory system, the major instruments of regulation, and the typical interactive patterns of regulators and regulated parties.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BSEO 2511 - MGMNT OF STRATEGIC ALLIANCES 1

Minimum Credits: 2

Maximum Credits: 2

Strategic alliances and cooperative relationships between two or more firms is rapidly becoming a common feature of a firm's competitive environment. The purpose of this course, therefore is to examine the nature of both domestic and international alliances, the reasons behind their formation, and the issues related to their management.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BSEO 2521 - ENTREP AND NEW VENTURE INIT 1

Minimum Credits: 1.5

Maximum Credits: 1.5

Describes the entrepreneurial process from developing a framework for analyzing prospective new ventures to examining typical problems in the early life of new ventures as well as exploring some potential areas for future entrepreneurial activity.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BSEO 2525 - COMPETITIVE INTELLIGENCE

Minimum Credits: 2

Maximum Credits: 2

Analyses of various market structures and the related generic strategies which yield various risks and benefits.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: Katz Grad School of Business students only.

BSEO 2531 - ENTREP & NEW VENTURE INITIATION

Minimum Credits: 3

Maximum Credits: 3

Describes the entrepreneurial process from developing a framework for analyzing prospective new ventures to examining typical problems in the early life of new ventures as well as exploring some potential areas for future entrepreneurial activity.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BACC 2401 and BMKT 2409 and BFIN 2409; PROG: Katz Graduate School of Business

BSEO 2538 - STRATEGIC LEADERSHIP

Minimum Credits: 1.5

Maximum Credits: 1.5

This course covers leadership theory, with a particular emphasis on executive leadership. Course topics include the following: leadership skills development, charismatic and transformational leadership, leadership of organizational change, strategic vision, and contingency theories of leadership. The course involves a combination of theory, case studies, and guest lectures.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SU3 Basis

Course Requirements: PREQ: BOAH 2401 or 2409; PROG: Katz Grad School of Business(PKATZ)

BSEO 2553 - STRATEGIC MANAGEMENT OF ACQUISITIONS AND DIVESTMENT

Minimum Credits: 2

Maximum Credits: 2

Given the frequency and magnitude of mergers and acquisitions (M&A) activity, most Pitt MBAS can expect their careers to be impacted by M&A transactions sooner or later - whether as analysts in the pre-merger, phase, as managers or consultants in charge of implementing the merger, or simply as professionals whose career trajectories are inevitably shaped by the event. In order to help you prepare for these roles, acquisitions and divestment will address the strategic and organizational challenges of integrating companies so as to realize the promise of value creation. Building on the premise that the real work of M&A begins after the deal is signed, this course will utilize current research findings, case studies, and practitioner experiences to equip you with a working knowledge of effective post-merger integration. At a time that most companies realize that M&A's have a poor track record of success precisely due to poor post-merger integration, the educational experience in this course will provide you with a valuable skill set. The course should be of special interest to students interested in management consulting careers, or who expect to have significant general management responsibilities in their jobs, or who want to be knowledgeable about M&A events that are likely to affect their careers sooner or later.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: Katz Grad School of Business students only.

BSEO 2578 - SUSTAINABLE BUSINESS STRATEGY

Minimum Credits: 1.5

Maximum Credits: 1.5

This course is designed to enhance your ability to understand current challenges and opportunities in sustainability worldwide. Sustainability is of great interest to multiple stakeholders including customers, employees, investors, regulators and activists. Much of the recent attention to sustainability is attributable to its "business case" or the notion that when done right, sustainability initiatives can not only affect positive social or environmental change but also contribute to competitive advantage, reputational gains, etc., and overall to a company's bottom line in the process. Although this kind of - triple bottom line - thinking is powerful and would benefit both businesses and society immensely, achieving this symbiotic relationship between business, society and the environment requires a strategic understanding of when, why and how sustainability initiatives create value. The Sustainable Business course will provide you with the requisite knowledge so that you emerge as leaders who will leverage the power of business to create social and environmental value. The course will blend theory and practice in a way that emphasizes both critical thinking and experiential learning. This will be accomplished through multiple components. First, through case studies and articles, you will be exposed to theories and principles that can be applied to formulate, implement and evaluate sustainability initiatives through the entire value chain - from procurement to disposal. The second, interrelated component will highlight experiential learning. Via a series of projects and mini-workshops, you will analyze the sustainability performance of companies to discover firsthand the mechanisms by which sustainability initiatives yield both business and social returns.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

BSEO 2901 - STRATEGY, MISSION AND VALUES

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Business Administration (EMBA-MBA)

Study Abroad

FSX 2990 - STUDY ABROAD

Minimum Credits: 1

Maximum Credits: 9

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad SN Basis
Course Attributes: Non-Pitt Class

Supply Chain Management

BUSSCM 1760 - DATA MINING

Minimum Credits: 3

Maximum Credits: 3

Data mining is the process of extracting useful information and knowledge from a set of data. Mining is typically done on data sets too large to be analyzed by hand, but the same techniques are applicable to small, complex data. This course is an introduction to the most popular methods used in managerial data mining, and provides experience in using commercial software to explore real data sets. Models considered include those from statistics, machine learning, and artificial intelligence, such as discriminate analysis, logistic regression, clustering, neural nets, tree/rule induction, and association rule modeling. This course is methods-oriented, as opposed to being methodology-oriented, so students learn about when and how to use techniques and how to interpret their output rather than the details about how those techniques work. A laptop computer is required.

Academic Career: Undergraduate

Course Component: Lecture

Grade Component: Letter Grade

Course Requirements: PREQ: STAT 1100 and BUSQOM 1080; PLAN: Accounting, Finance, General Management, Global Management, Marketing, Business Information Systems, Human Resources Management, Supply Chain Management, Undeclared CBA majors

Surgery

SURG 5100 - MD-OMS RESIDENCY (7 MONTHS)

Minimum Credits: 0

Maximum Credits: 0

This program is multi-disciplinary incorporating basic physiology, pharmacology, microbiology, histology, anatomy and physical diagnosis. This rotation permits the medical student oral and maxillofacial surgery resident to gain insight as to how the basic sciences effect the overall body with emphasis on the head and neck region. Early exposure to ambulatory patients stresses the underlying pathophysiologic process of the presenting disease. Student evaluation is based on several written examinations and participation in small group problem-based conferences.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 1

SURG 5323 - PLASTIC SURGERY PRECEPTORSHIP

Minimum Credits: 0

Maximum Credits: 0

This four-week elective will provide the student with a preliminary exposure to the specialty of plastic and reconstructive surgery. This preceptorship allows an opportunity to observe and have minor involvement in the clinical care of patients on the service. In addition to direct attending and resident interaction, education is obtained from weekly teaching conferences. Emphasis will be placed on the scope and interaction of plastic surgery with other specialties and the various methods of reconstruction available for each type of deformity. Areas to be experienced will include reconstructive techniques in traumatic, congenital, neoplastic and cosmetic deformity as well as the basic biology of wound healing and wound management

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

SURG 5345 - SURGERY CLERKSHIP REPEAT

Minimum Credits: 0

Maximum Credits: 0

This course will be registered when the necessity to record a student's unsuccessful makeup is required. The course will be used only in those instances when the clerkship is repeated in a shorter or longer time frame than the previous course taken and failed. The specific title given the course will reflect the number of weeks repeated.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

SURG 5360 - ORAL-MAXILLOFACIAL SURGERY

Minimum Credits: 0

Maximum Credits: 0

Four-week junior clerkship conducted as a resident in oral- maxillofacial surgery available only to the oral-maxillofacial surgical resident who is a student in the school of medicine. Responsibilities include: admission, first surgical assist, primary management of post-operative care, emergency room call for mf trauma, daily rounds with house staff and attending physicians, attendance at all postgraduate teaching rounds and conferences held by the department of plastic and oral-maxillofacial surgery.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

SURG 5371 - SURGERY AND PERIOPERATIVE CARE

Minimum Credits: 0

Maximum Credits: 0

Eight-week rotation with students participating in general surgery and anesthesiology. Goals of clerkship include developing skills to evaluate patients in the perioperative period and optimize their medical conditions in preparation for surgery. Students will learn natural history of common surgical diseases and proper operative management and post-operative treatment. The utilization of pathology and radiology services will be used to help determine correct diagnoses and therapeutic methodology. A brief exposure will be provided to pediatric and plastic surgery specialties.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

SURG 5372 - SURGERY AND PERIOPERATIVE CARE CLERKSHIP

Minimum Credits: 0

Maximum Credits: 0

Six-week rotation with students participating in general surgery. Goals of clerkship include developing skills to evaluate patients in the perioperative period and optimize their medical conditions in preparation for surgery. Students will learn natural history of common surgical diseases and proper operative management and post-operative treatment. The utilization of pathology and radiology services will be used to help determine correct diagnoses and therapeutic methodology. A brief exposure will be provided to pediatric and plastic surgery specialties. Registration must accompany registration in MSANE 5372

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

SURG 5375 - SURGICAL SPECIALTIES

Minimum Credits: 0

Maximum Credits: 0

Four-week course designed to teach the essentials, knowledge and skills in the management of common diseases in the specialties of otorhinolaryngology, orthopedics, ophthalmology and urology. Learning accomplished through didactic lectures, prepared written syllabi, case reports, multi-media computerized instruction and clinical experience in offices of university faculty. Assessment of student performance accomplished through a multiple-choice examination, objective evaluation of clinical skills, and estimation of clinical expertise in the ambulatory setting.

Academic Career: Medical School
Course Component: Clinical
Grade Component: H/HS/S/LS/U
Course Attributes: School of Medicine Year 3

SURG 5401 - SURGERY ACTING INTERNSHIP

Minimum Credits: 0

Maximum Credits: 0

Four-week clerkship, conducted as an acting internship in general surgery. Responsibilities: patient evaluating, primary management of pre- and postop care, night call for unit with primary responsibility for assessment of acute clinical problems and extensive daily operating room experience. Daily rounds with house staff and attendings. Attend postgrad teaching rounds and conferences held by the department of surgery.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

SURG 5402 - EXTRAMURAL ACTING INTERNSHIP

Minimum Credits: 0

Maximum Credits: 0

Students will register for this course when participating in a surgery acting internship at an institution outside of the university of Pittsburgh school of medicine. This experience will not fulfill the required acting internship experience to meet graduation requirements.

Academic Career: Medical School

Course Component: Clinical

Grade Component: Grad LG/SU5

Course Attributes: School of Medicine Year 4

SURG 5403 - SURGERY ACTING INTERNSHIP FOR MD/ORAL MAXILLOFACIAL PROGRAM

Minimum Credits: 0

Maximum Credits: 0

This four-week course is conducted as an acting internship on the endocrine service. Students eligible to register for this course will be participants in the professional medicine/oral maxillofacial surgery combined program (md/oms). Participants will have responsibility for patient evaluating, primary management of pre- and post-op care, night call for unit with primary responsibility for assessment of acute clinical problems and extensive daily operating room experience. There will be daily rounds with housestaff and attendings. Attendance at the postgrad teaching rounds and conferences held by the department of surgery is expected.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

SURG 5410 - GENERAL SURGERY ELECTIVE

Minimum Credits: 0

Maximum Credits: 0

Four-week clerkship offered at a private area medical facility student works directly with a surgical resident and attending surgeons. Responsibilities: preoperative diagnosis, intraoperative surgical assisting and post-op care. Daily rounds with house staff and attendings. Attend surgical conference and is requested in advance to participate by way of case presentation or prepared problem discussion. Student "night call" approximately every fourth night corresponding to the surgical resident on service.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

SURG 5411 - SURGERY INTERNSHIP PREPARATION COURSE

Minimum Credits: 0

Maximum Credits: 0

This 4-week rotation was developed especially for 4th-year medical students matching into surgical specialties, including general surgery, vascular surgery, cardiothoracic surgery, plastic surgery, OB/GYN, and urology. Participants will have the opportunity to work with surgical specialists and residents in order to develop skill sets that are necessary for successful matriculation into a surgical internship. The course consists of interactive didactics, simulation, and technical skills practice. A wide range of topics will be covered, including management of emergencies on the surgical ward, discharging patients, dosing common medications, wound care, suturing, use of radiologic tests, placement of chest tubes and central lines, and many others. This course provides a unique opportunity for students to attain the tools needed for the transition into surgical internship with confidence, with the intention of improving patient safety, decreasing surgical intern anxiety, and improving surgical resident efficiency.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

SURG 5420 - COMMUNITY HOSPITAL CLERKSHIP

Minimum Credits: 0

Maximum Credits: 0

Four-week elective provides student with exposure to general surgery as practiced outside the university environment, in suburban or rural community hospital. Elective is structured as a preceptorship. Student will evaluate patient problems, be involved in daily patient management, assist in operating room, and attend outpatient office hours with precepting surgeon. Room and board is provided at hospital outside Pittsburgh.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

SURG 5430 - NEOPLASTIC DISEASE ELECTIVE

Minimum Credits: 0

Maximum Credits: 0

Four-week elective in oncology. Through the national surgical adjuvant breast project headquartered at Scaife Hall, student will study in depth, contemporary theories of tumor biology from clinical and laboratory perspective. Outpatient clinics and/or exposure, but major focus is conducting cooperative clinical studies regarding the management of patients with breast or colon cancer.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

SURG 5440 - PEDIATRIC SURGERY ELECTIVE

Minimum Credits: 0

Maximum Credits: 0

Four-week elective tailored to fully integrate a student into a specific position of the house staff. Student serves as an intern, with participation in all clinics, rounds, conferences and capabilities. Time spent each week seeing patients. Special adaptations of program to particular requests can be made, including part pediatric medicine and part pediatric surgery. Will learn differences between childhood and adult diseases, take pediatric history and do complete physical.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

SURG 5482 - RENAL, PANCREATIC AND LIVER TRANSPLANTATION

Minimum Credits: 0

Maximum Credits: 0

This is a four (4) week elective for medical students interested in learning about renal, pancreatic or liver transplantation. The student will have an opportunity to participate as a member of a busy transplant team. They will be involved in the evaluation and treatment of a large number of patients

referred here with hepatic or renal disease for consideration of resection or transplantation therapy, or patients with type i diabetes mellitus for pancreas transplantation. They will attend the various conferences and, if possible, pre-and post-transplant clinics. Students will be offered the opportunity to scrub in the operating room on both living and deceased donor transplants. There will be no mandatory call; however, students should be aware of the fact that many transplantations occur at night or on the weekends. The student can participate in the post-operative care of transplant patients, including experience in the surgical ICU. Both through selected reading materials that offer an introductory exposure to transplantation, and through participation in patient care and rounds, students will learn the basic principles of evaluation and management both pre- and post-transplantation, immune-suppression, and infectious prophylaxis.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

SURG 5485 - BIOLOGICAL AND GENE THERAPY

Minimum Credits: 0

Maximum Credits: 0

This 4-week elective will provide an opportunity to study contemporary theories of tumor biology and tumor immunology both from a clinical and laboratory perspective. While outpatient clinics will be part of the experience, the major focus will be the rewards and challenges of conducting clinical studies regarding the management of patients with various tumors managed with biologic therapies.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

SURG 5486 - SURGICAL SPECIALTIES

Minimum Credits: 0

Maximum Credits: 0

This is a four week course. The student may select two areas of special interest, and will spend two weeks on each selected specialty. Available specialties are; cardiothoracic surgery, orthopedics, neurological surgery, plastics & reconstructive surgery, urological surgery, vascular surgery, and magee surgical oncology. The student will gain clinical exposure through attending clinics, participating in daily inpatient rounds, and in the operating rooms. Instruction will be by the residents and attending surgeons on the selected services. Performance will be evaluated on a number of criteria including knowledge, patient evaluation and management planning, motivation, responsibility, and interpersonal actions. The purpose of this course is to allow students to explore possible areas of interest for which they might not get exposure in the standard curriculum. The student is expected to learn to perform a basic history and physical evaluation of patients as required by each specific service. Each student should be able to discuss the service specific approach to patient management.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

SURG 5490 - ORAL-MAXILLOFACIAL SURGERY

Minimum Credits: 0

Maximum Credits: 0

Four-week clerkship conducted as a resident in oral-maxillofacial surgery available only to the oral-maxillofacial surgical resident who is a student in the school of medicine. Responsibilities include: admission, evaluation, first surgical assist, primary management of postoperative care, emergency room call for mf trauma, daily rounds with house staff and attending physicians, attendance at all postgraduate teaching rounds and conference held by the department of plastic and oral-maxillofacial surgery.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

SURG 5650 - SURGICAL SPECIAL STUDIES

Minimum Credits: 0

Maximum Credits: 0

An individualized course of study may be arranged with the department of surgery to fit the student's needs. The student will meet with a department faculty person to design a clinical course of study for a four-week period of time. A written proposal must be approved by the faculty member as well as the student's scheduling advisor. When approvals have been received, the school registrar will schedule the course and notify the department student coordinator.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

SURG 5700 - SURGICAL LIFE SCIENCES

Minimum Credits: 0

Maximum Credits: 0

A four week elective combining anatomic dissection, imaging modalities, and clinical pathology in a systematic manner. The course will be divided into four areas, each lasting one week. Thoracic anatomy, digestive tract anatomy, musculoskeletal and gynecological/genitourinary anatomy. The course includes lectures in anatomy, pathology and imaging modalities and precepted anatomical dissections. Exposures will vary and include seeing patients and follow their evaluation and treatment.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

SURG 5884 - HISTORY OF MEDICINE

Minimum Credits: 0

Maximum Credits: 0

Four-week elective. Student examines various aspects of the history of medicine, from the beginning of medical practice into the 1980s, read selected group of historical monographs and participate in in-depth discussions with members of a group of interested senior faculty, and write a short research paper.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

SURG 5885 - SURGICAL RESEARCH

Minimum Credits: 0

Maximum Credits: 0

Student will be given the opportunity to learn research techniques and to participate in research in progress in surgical laboratory or in special circumstances, to carry on an independent project. Attendance at seminars and discussion groups is encouraged.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

SURG 5900 - EXTRAMURAL GENERAL SURGERY

Minimum Credits: 0

Maximum Credits: 0

A clinical experience in general surgery may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.

Academic Career: Medical School

Course Component: Lecture

Grade Component: H/HS/S/LS/U

SURG 5902 - INDEPENDENT STUDY

Minimum Credits: 0

Maximum Credits: 0

The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Telecommunications

TELCOM 2000 - INTRODUCTION TO TELECOMMUNICATIONS

Minimum Credits: 3

Maximum Credits: 3

Introduction to telecommunications for non-TELCOM majors. Top-down orientation relates networking technologies to organizational goals and needs. Data communications and internet technologies and basic system performance analysis. TCP/IP, LANs, WANs, internetworking, and signals and communications media.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PLAN: Information Science (MSI) or Telecommunications (MST)

TELCOM 2010 - COMPUTER NETWORKING LABORATORY

Minimum Credits: 3

Maximum Credits: 3

The objective of this lab-based course is to gain knowledge of fundamental computer networking issues through hands-on experiments with network equipment and services. The sequence of labs start at the physical layer and progress up the protocol stack to the application layer. Topics covered are signal generation and analysis at the physical layer, ethernet and wlan performance and management, ip address planning and management, ip router configuration including RIP, OSPF, BGP, MPLS protocols, TCP connection control, stateful packet filtering, network monitoring and management, signaling protocols for voip services, and web-based services configuration.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: School of Information Science; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

TELCOM 2011 - TELECOMMUNICATIONS SEMINAR

Minimum Credits: 1

Maximum Credits: 1

Exposure to the latest issues in the telecommunications industry and research through talks by invited experts.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

TELCOM 2100 - FUNDAMENTALS OF TELECOMMUNICATIONS

Minimum Credits: 3

Maximum Credits: 3

Fundamentals of network technology based on a layered protocol stack. Telephone network and internet architecture. Summary of upper layer protocols (HTTP, SMTP), transport protocols (UDP, TCP), and network protocols (IP). Analysis of link layer protocols and their performance. Overview of local area networks (CSMA/CD and CSMA/CA). Introduction to cables and signals.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

TELCOM 2110 - NETWORK DESIGN

Minimum Credits: 3

Maximum Credits: 3

Methods and techniques for the design of computer/telecommunication networks. Management and business perspectives on network design, estimation of traffic demand and application requirements, network cost analysis, topological design, capacity assignment, graph theory and optimization based design algorithms, virtual network design, network design tools, wireless network design issues, availability analysis and survivable network design.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: TELCOM 2000 or 2100 or INFSCI 1070 or (PLAN: Telecommunications TELCOM-MST/TCOMM-MST or Telecommunications Certificate TELCOM-AC/TCOMM-AC or Info Science PHD w/TELE option PHDTEL-TR)

TELCOM 2120 - NETWORK PERFORMANCE

Minimum Credits: 3

Maximum Credits: 3

Introduction to techniques for performance modeling and analysis of computer systems and communication networks. Analysis of measurements, discrete event simulation and queuing theory.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: TELCOM 2000 or 2100 or INFSCI 1070 or (PLAN: Telecommunications (TELCOM-MST/TCOMM-MST) or Telecommunications Certificate (TELCOM-AC/TCOMM-AC) or Info Science PHD w/TELE option (PHDTEL-TR))

TELCOM 2125 - NETWORK SCIENCE AND ANALYSIS

Minimum Credits: 3

Maximum Credits: 3

This course explores networks as a primary metaphor and mechanism for a variety of information-related phenomena. The advancement of interconnected information and communication technologies has made networks one of the dominant ways of analyzing the use and flow of information among individuals, institutions, and societies. The course starts with the basics of graph theory and moves to understand network structures such as social networks, ecological webs, it and infrastructure systems, telecommunications networks, and market distribution and allocation structures. As a prerequisite, students should have a command of mathematics through linear and matrix algebra at the Undergraduate level.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PLAN: Telecommunications (TELCOM-MST/TCOMM-MST) or Telecommunications Certificate (TELCOM-AC/TCOMM-AC) or Info Science PHD w/ TELE option (PHDTEL-TR)

TELCOM 2215 - UNIFIED COMMUNICATIONS

Minimum Credits: 3

Maximum Credits: 3

After describing how humans communicate orally and visually, this course goes on to describe the technology and network architectures that provide

audio and video telecommunications using conventional circuit-switched telephony, newer packet-switched "internet telephony" (VOIP), and streaming video over the internet. Basic knowledge of the physical layer is helpful, but students must be familiar with TCP/IP.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

TELCOM 2227 - INTERNET TELEPHONY

Minimum Credits: 3

Maximum Credits: 3

Technology for offering telephony over an internet including: voice-over-IP end points and protocols, end-to-end delay, telephony signaling protocols, gateways and network components, telephone service provision, multi-point, network issues, and the future. Presents market, policy, and economic issues; differentiates VoIP on public or private internets.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: (TELCOM 2000 or 2100 or INFSCI 1070) and 2200 or (PLAN: Telecommunications (TELCOM-MST/TCOMM-MST) or Telecommunications Certificate (TELCOM-AC/TCOMM-AC) or Info Science PHD w/TELE option (PHDTEL-TR))

TELCOM 2310 - APPLICATIONS OF NETWORKS

Minimum Credits: 3

Maximum Credits: 3

Foundational principles, architectures, and techniques employed in computer networks. Protocols and mechanisms used in the internet TCP/IP protocol suite, including the operation of both wide-area and local-area networks. Special emphasis on analysis of network and transport layer protocols.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: (TELCOM 2000 or 2100 or INFSCI 1070); or (PLAN: Telecommunications (TELCOM-MST/TCOMM-MST) or Telecommunications Certificate (TELCOM-AC/TCOMM-AC) or Info Science PHD w/TELE option (PHDTEL-TR)) or (SUBPLAN: Telecommunications (TELCOM-TR))

TELCOM 2321 - WIDE AREA NETWORKS

Minimum Credits: 3

Maximum Credits: 3

Basic principles of broadband networks. Protocols suitable for broadband networks, with emphasis on atm. Other technologies, such as frame relay and SMDS. Design issues for high speed networks including network characterization, application performance guarantees, traffic policing and congestion control.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: (NFSCI 1071 or TELCOM 2310) and TELCOM 2100; CREQ: TELCOM 2120; PROG: School of Information Science or Sch Computing and Information

TELCOM 2326 - ADVANCED TOPICS IN DATABASE MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

Advanced graduate course on database systems. Key issues that typically arise in the context of large-scale enterprise database management in heterogeneous wide-area environments including distributed and non-relational database systems, network-centric data management, web-based information systems, heterogeneous databases, information integration, and wireless data management.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: INFSCI 2710 or (PLAN: Telecommunications (TELCOM-MST/TCOMM-MST) or Telecommunications Certificate (TELCOM-AC/TCOMM-AC) or Info Science PHD w/TELE option (PHDTEL-TR))

TELCOM 2420 - PROJECT MANAGEMENT

Minimum Credits: 3

Maximum Credits: 3

Techniques and tools to assist in the managing process. Uses case study approach.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

TELCOM 2700 - INTRODUCTION TO WIRELESS NETWORKS

Minimum Credits: 3

Maximum Credits: 3

For students with a basic background of telecommunications who are not for telecom majors. Principles of wireless communications and how they differ from wired communications. Fundamental concepts including: transmission and mitigation techniques (e.g., Modulation and coding, propagation, interference and antennas) for wireless systems, multiplexing techniques, wireless system architectures, mobility management, security, protocols and location technology. Systems include: cellular phone networks (e.g., Cdma2000, umts), wireless local area networks (e.g., Ieee 802.11G), personal area networks (e.g., Bluetooth), fixed point broadband wireless (e.g., WiMAX) and satellite systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: (TELCOM 2000 or 2100 or INFSCI 1070) or (PLAN: Telecommunications (TELCOM-MST/TCOMM-MST) or Telecommunications Certificate (TELCOM-AC/TCOMM-AC) or Info Science PHD w/TELE option (PHDTEL-TR))

TELCOM 2727 - APPLICATION DEVELOPMENT FOR MOBILE DEVICES

Minimum Credits: 3

Maximum Credits: 3

Focus on information system applications that run on top of wireless infrastructure such as multimedia messaging, mobile inventory control, location aware services including wireless technologies (gsm, cdma2000, umts, 802.11, Bluetooth), mobile information systems and applications (m-business, location-based services, wireless crn), wireless information system challenges and architectures (security, reliability, mobility, power conservation, gateways, proxies), mobile application protocols (SMS, ems, mms, wap), thin and thick client mobile application development (wml, vxml, Java, j2me, j2ee, .Netcf, c#), and business case studies of mobile applications.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: [(INFSCI 0017 or 0015 or CS 0401) and INFSCI 1052] or [PLAN: Telecommunications (TELCOM-MST/TCOMM-MST) or Telecommunications Certificate (TELCOM-AC/TCOMM-AC) or Information Science PHD (ISCI-PHD)]

TELCOM 2810 - INFORMATION SECURITY AND PRIVACY

Minimum Credits: 3

Maximum Credits: 3

Fundamental issues and first principles of security and information assurance (confidentiality/privacy, integrity, authentication, identification, authorization, availability, access control). Business issues of risk analysis and management of resources. Issues in information systems security; analysis, design, and coding of information systems/ networks for security; techniques for building secure organizational systems; e-commerce related security issues; policy, legal and ethical issues in security.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

TELCOM 2811 - HACKING FOR DEFENSE

Minimum Credits: 3

Maximum Credits: 3

This course will teach students how to build products and services using lean methods. This will be done by solving real-world military and intelligence community problems. The course uses the lean launchpad platform for entrepreneurship. This is a highly customer-centered hypothesis-test approach to developing a mission modes, and is particularly well-suited for technology startups. It incorporates customer needs and user testing to build a minimum viable prototype. At the conclusion of the course, students will be able to understand the problems/needs of searching for product-market fit; understand all the stakeholders, deployment issues, costs, resources, and ultimate mission value; deliver minimum viable products that match customer needs in an extremely short time; produce a repeatable model that can be used to launch other potential technology solutions.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad Letter Grade

TELCOM 2813 - SECURITY MANAGEMENT AND COMPUTER FORENSICS

Minimum Credits: 3

Maximum Credits: 3

Security management in information systems and networks. Intrusion detection systems, anomaly detection, network forensics, application logging, auditing and data management, contingency planning, digital immune systems; alarm and responses; security standards; ethical and legal issues in information; cyber-evidence.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: (TELCOM 2810 or 2821 or INFSCI 2150) or (PLAN: Telecommunications (TELCOM-MST/TCOMM-MST) or Telecommunications Certificate (TELCOM-AC/TCOMM-AC) or Info Science PHD w/TELE option (PHDTEL-TR))

TELCOM 2820 - CRYPTOGRAPHY

Minimum Credits: 3

Maximum Credits: 3

Principles of number theory, cryptographic algorithms and cryptanalysis. Steganography, block and stream ciphers, secret key encryption (des, res, re-n), primes, random numbers, factoring, and discrete logarithms. Public key encryption (rsa, Diffie-Helman, elliptical curve cryptography, n'tru); key management, hash functions (md5, sha-1, ripemd-160, HMAC).

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: (TELCOM 2000 or 2100 or INFSCI 1070) or (PLAN: Telecommunications (TELCOM-MST/TCOMM-MST) or Telecommunications Certificate (TELCOM-AC/TCOMM-AC) or Info Science PHD w/TELE option (PHDTEL-TR))

TELCOM 2821 - NETWORK SECURITY

Minimum Credits: 3

Maximum Credits: 3

Principles of network security and management. Review of network vulnerabilities, security at the link, network and transport layers; dial-up security (pap, chap, radius, diameter), ipsec, ssl, and vpns. Email security (PGP, S/MIME); Kerberos; x.509 Certificates; AAA and Mobile IP; SNMP security; firewalls; filters and gateways; policies and implementation of firewall policies; state full firewalls; fire wall appliances.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: (TELCOM 2810 or 2820 or INFSCI 2150) and (TELCOM 2000 or 2100 or IS 1070) or (PLAN:

Telecommunications (TELCOM-MST/TCOMM-MST) or Telecommunications Certificate (TELCOM-AC/TCOMM-AC) or Info Science PHD w/TELE option (PHDTEL-TR))

TELCOM 2825 - INFORMATION SYSTEMS AND NETWORK INFRASTRUCTURE PROTECTION

Minimum Credits: 3

Maximum Credits: 3

Techniques for the protection and survivability of information systems and networks. Critical infrastructure definition, risk management, vulnerability and risk analysis, fault and attack trees, availability analysis, traffic restoration schemes and survivable network design and management techniques; critical infrastructure simulation, CIP policy and legal issues, SCADA systems.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: (TELCOM 2000 or 2100 or 2810 or INFSCI 1070 or 2150) or (PLAN: Telecommunications (TELCOM-MST/TCOMM-MST) or Telecommunications Certificate (TELCOM-AC/TCOMM-AC) or Info Science PHD w/TELE option (PHDTEL-TR))

TELCOM 2829 - ADVANCED CRYPTOGRAPHY

Minimum Credits: 3

Maximum Credits: 3

Algorithm complexity, advanced number theory (Galois fields, quadratic residues, zero knowledge schemes, one-time signatures), efficient implementation of encryption schemes in hardware and software and other advanced topics in cryptography.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: (TELCOM 2820 or INFSCI 2170) or (PLAN: Telecommunications (TELCOM-MST/TCOMM-MST) or Telecommunications Certificate (TELCOM-AC/TCOMM-AC) or Info Science PHD w/TELE option (PHDTEL-TR))

TELCOM 2830 - CAPSTONE IN SECURITY

Minimum Credits: 3

Maximum Credits: 3

Integrative class for master's students in their final semester of the SAIS track. Combination of business and technical case studies and group projects. Case studies focus on business/economics aspects of providing information assurance and how this service impacts technology. Group projects involve design and development of a prototype secure and survivable information system including application development, system deployment, system optimization and system economics.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PREQ: (TELCOM 2810 or INFSCI 2150) and TELCOM 2821 or (PLAN: Telecommunications (TELCOM-MST/TCOMM-MST) or Telecommunications Certificate (TELCOM-AC/TCOMM-AC) or Info Science PHD w/TELE option (PHDTEL-TR))

TELCOM 2921 - INDEPENDENT STUDY IN NETWORKING

Minimum Credits: 1

Maximum Credits: 3

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad LG/SNC Basis

TELCOM 2922 - INDEPENDENT STUDY IN COMMUNICATION SYSTEMS

Minimum Credits: 1

Maximum Credits: 3

Academic Career: Graduate

Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

TELCOM 2923 - INDEPENDENT STUDY: COMPUTER COMMUNICATION

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

TELCOM 2924 - INDEPENDENT STUDY: TELECOMMUNICATIONS ADMINISTRATION

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

TELCOM 2925 - INDEPENDENT STUDY: TELECOMMUNICATIONS ECONOMICS AND POLICY

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

TELCOM 2926 - INDEPENDENT STUDY: HUMAN COMMUNICATION

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

TELCOM 2927 - INDEPENDENT STUDY IN WIRELESS COMMUNICATION

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

TELCOM 2928 - INDEPENDENT STUDY SECURITY ASSURED INFORMATION SYSTEMS

Minimum Credits: 1
Maximum Credits: 3
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad LG/SNC Basis

TELCOM 2931 - SPECIAL TOPICS IN NETWORKING

Minimum Credits: 3

Maximum Credits: 3

Selected relevant subjects in networking, either as a traditional course or as a survey of new literature. Content varies depending on student and instructor interest.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science or Sch Computing and Information; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

TELCOM 2937 - SPECIAL TOPICS IN WIRELESS NETWORKS

Minimum Credits: 3

Maximum Credits: 3

Selected relevant subjects in wireless telecommunications, either as traditional course or as survey of new literature. Content varies depending on student and instructor interest.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Requirements: PROG: School of Information Science; PLAN: Excluded Plans = Library & Information Science (MLIS, PHD, CERT-Advanced)

TELCOM 2940 - PRACTICUM

Minimum Credits: 1

Maximum Credits: 3

For students who desire experience in applying the knowledge and skills acquired in their course work and laboratory sessions. Students are responsible for arranging a practicum with a business or organization.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad SN Basis

TELCOM 2941 - MASTER'S THESIS

Minimum Credits: 3

Maximum Credits: 6

The thesis is a report of original, theoretical, or laboratory work suitable for publication.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

TELCOM 2982 - TELECOMMUNICATIONS COOPERATIVE PROGRAM

Minimum Credits: 1

Maximum Credits: 1

Academic Career: Graduate

Course Component: Independent Study

Grade Component: Grad HSU Basis

Theatre Arts

THEA 2000 - RESEARCH AND THESIS MASTER'S DEGREE

Minimum Credits: 1

Maximum Credits: 12

Individual research designed by the MA students in connection with their Master's Degree Thesis.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

THEA 2100 - PEDAGOGY AND PROFESSIONALIZATION

Minimum Credits: 3

Maximum Credits: 3

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad Letter Grade

THEA 2110 - SECONDARY EMPHASIS - PEDAGOGY

Minimum Credits: 1

Maximum Credits: 3

The student will focus on an area of specialization designed to supplement foundational performance pedagogy. Under supervision and advisement from faculty, the student will choose an area of specialization (which may include voice, movement, advanced acting techniques, stage combat, directing, etc.) Based on their own present experiences and create a strategy and timeline for completion of chosen goals. The quantity of knowledge and experience to be achieved will be discussed between the advisor and student at the beginning of the course. The student will meet with their advisory on a regular basis and write a research or response paper summarizing and analyzing their experience.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

THEA 2120 - PRODUCTION MENTORSHIP

Minimum Credits: 1

Maximum Credits: 6

The student will serve as actor, director, coach or other supportive function of a main-stage production at the University of Pittsburgh. This role will include active mentorship and teaching of undergraduate performers. Under supervision and advisement from faculty, the student will create a syllabus outlining their own research questions for their mentorship role on the production and how it may inform their own pedagogical practices. The student will write a research or response paper summarizing and analyzing their experience.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

THEA 2135 - COURSE DEVELOPMENT

Minimum Credits: 3

Maximum Credits: 3

Course content to be decided between teacher and student.

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

THEA 2145 - DIRECTED STUDY

Minimum Credits: 1

Maximum Credits: 3

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

THEA 2147 - TECHNIQUES PERFORMANCE PEDAGOGY

Minimum Credits: 3

Maximum Credits: 3

Techniques in Performance Pedagogy is designed for graduate students to address the unique needs of teaching theatre performance at the college level. Students will examine various Stanislavski-based training methods and compare those methods with physical and/or ensemble-based methodologies as they apply to university training programs (in a BA, BFA or MFA program). Students will formulate their own style and teaching philosophy as they develop lesson plans, create innovative pedagogical exercises, conduct warm up sessions, coach acting scenes and develop methods of grading performance work. In addition, students will create a sample master class in order to be competitive on the academic job market.

Academic Career: Graduate

Course Component: Seminar

Grade Component: Grad LG/SNC Basis

THEA 2149 - PROFESSIONAL ORIENTATION

Minimum Credits: 1

Maximum Credits: 3

Experimental learning credits based outside of the university. Focus on some aspect of performance that substantiates the pedagogical experience.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

THEA 2150 - DIRECTED STUDY-ACTING

Minimum Credits: 1

Maximum Credits: 3

Faculty directed supervision in the study of the theory, preparation and execution of acting in the theatre.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

THEA 2155 - DIRECTED STUDY - PEDAGOGY

Minimum Credits: 1

Maximum Credits: 3

Faculty directed supervision in the study of the theory and practice of education in the theatre.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad Letter Grade

THEA 2160 - DIRECTED STUDY-DIRECTING

Minimum Credits: 1

Maximum Credits: 3

Faculty directed supervision in the study of the theory, preparation and execution of directing in the theatre.

Academic Career: Graduate

Course Component: Directed Studies

Grade Component: Grad LG/SNC Basis

THEA 2161 - GRADUATE DIRECTING

Minimum Credits: 4

Maximum Credits: 4

This course will include a review and diagnostic to determine the level of the student's work.

Academic Career: Graduate

Course Component: Lecture
Grade Component: Grad LG/SNC Basis

THEA 2168 - NEW PLAY PRACTICUM

Minimum Credits: 3
Maximum Credits: 3

The New Play Practicum is an advanced course designed for theatre artists (playwrights, directors, actors, mainly though there is room for stage management duties) to try the new scripts produced by students in Playwriting 2 and in some cases from Playwriting 1. The scripts will be assigned in class, table-workshopped at first, and then assigned to teams. Most rehearsals will take place outside of class with the aim of presenting seated readings or staged readings as we can in lunchtime venues throughout the term. Teamwork is key. Each student will have several practical assignments; written assignments will be tailored to each student's needs.

Academic Career: Graduate
Course Component: Practicum
Grade Component: Grad LG/SNC Basis
Course Attributes: Capstone Course

THEA 2170 - DIRECTED STUDY-SET, COSTUME, LIGHTS

Minimum Credits: 1
Maximum Credits: 9

Faculty directed supervision in the study of theory, preparation, and execution of design for the theatre.

Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

THEA 2200 - DIRECTED STUDY-HISTORY,LITERATURE,CRITICISM,THEORY

Minimum Credits: 1
Maximum Credits: 12

Faculty directed supervision in the study of history, literature, criticism and theory of the theatre.

Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad LG/SNC Basis

THEA 2201 - MATERIALS AND METHOD RESEARCH FOR THEATRE

Minimum Credits: 3
Maximum Credits: 3

Materials and Methods aims to introduce the research methods and tools appropriate for scholarly work in theatre and performance studies. Throughout the semester, students will be introduced to several of the primary genres of scholarly writing in the field and significant theoretical orientations current and controversial.

Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad Letter Grade

THEA 2202 - THEORIES OF THEATRE AND DRAMA

Minimum Credits: 3
Maximum Credits: 3

This course covers a specialized topic in Theatre Arts. Topics vary every semester. Current course descriptions can be found in the notes section.

Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

THEA 2204 - THEORIES OF ACTING AND DIRECTING

Minimum Credits: 3

Maximum Credits: 5

Students hone, diversify and/or solidify their directing craft through tude staging assignments and personalized, practical projects designed in consultation with the instructor. Students will engage with foundational director-driven, directing and devising texts in our field, from Brecht, Artuad, and Growtoski to Aikalitis, Bogart, and others, with particular attention to both practical and pedagogical application as well as critical evaluations of methods, cultural institutions, and representation. Students will gain facility with expectations of academic institutions and programs including, but not limited to: moving between roles of director, coach and acting teacher in production; scaffolding connections between rehearsal, performance and studio work; collaborating within an academic department; mobilizing community-academic and/or interdisciplinary engagement through production work; practice as research; and standards for documenting, narrating and framing directorial work across institutional environments and positions (ie, as an MFA, a PhD, an MFA-PhD; at R1, liberal arts and/or community colleges).

Academic Career: Graduate

Course Component: Practicum

Grade Component: Grad Letter Grade

THEA 2205 - WORLD THEATRE: 500 BCE TO 1640

Minimum Credits: 3

Maximum Credits: 3

World Theatre 500 BC to 1640 investigates histories of theatre and performance (scripts, embodiment, design, audiences, conventions, cultural functions, etc.) Within local and global social, artistic and political contexts, from classical Athens to Edo Japan, colonial Mexico city to Shakespeare's globe. The course focuses on evidence and interpretation as well as historical causation.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

THEA 2206 - WORLD THEATRE: 1640 TO 1890

Minimum Credits: 3

Maximum Credits: 3

This course is the second in a world theatre history sequence designed to explore the development of dramatic forms and theatre practices from the 5th century B.C.E. to the present. In World Theatre: 1640 to 1890 we will discuss the history of theatre arts 'which includes looking at drama, design, performance traditions and audiences--from the comedies of Restoration England to emerging realism of Buchner, Zola and Ibsen. Framed by questions of documentary interpretation and historical causation, the course will analyze the larger contexts of theatrical events, including social and political history, as well as the development of non-theatrical art forms. In addition, we will discuss some contemporary scholarship examining these theatrical events.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis

Course Attributes: West European Studies

THEA 2207 - WORLD THEATRE: 1890-Present

Minimum Credits: 3

Maximum Credits: 3

This is the third in a world theatre history sequence designed to explore the development of dramatic forms and theatre practices from the 5th century B.C.E. to 1970. In world theatre: 1890 to 1970, we will discuss the history of the theatrical arts which includes looking at drama, design, performance traditions and audiences' from the late dramas of Ibsen to the plays of Beckett and Pinter. Framed by questions of documentary interpretation and historical causation, the course will analyze the larger contexts of theatrical events, including social and political history, as well as the development of non-theatrical art forms. Our focus will be on western theatre with occasional references to non-western forms of performance and production. In addition, we will discuss some contemporary scholarship examining these theatrical events.

Academic Career: Graduate

Course Component: Lecture

Grade Component: Grad LG/SNC Basis
Course Attributes: West European Studies

THEA 2210 - DRAMATIC STRUCTURE

Minimum Credits: 3
Maximum Credits: 3
This will be a study of the structure of drama.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

THEA 2216 - ADVANCED THEORY AND METHODOLOGY

Minimum Credits: 3
Maximum Credits: 3
This course covers a specialized topic in Theatre Arts. Topics vary every semester. Current course descriptions can be found in the notes section.
Academic Career: Graduate
Course Component: Seminar
Grade Component: Grad LG/SNC Basis
Course Attributes: Asian Studies

THEA 2220 - PLAYWRITING 2

Minimum Credits: 3
Maximum Credits: 3
Playwriting II advances beyond and builds upon the craft exercises and 20 page one acts of Playwriting I to workshop students' ongoing projects. This work might take the form of a brace or trio of one acts, an hour long portion of a full length play, or other projects to be approved by the instructor. Workshop method. Revision required.
Academic Career: Graduate
Course Component: Lecture
Grade Component: Grad LG/SNC Basis

THEA 2980 - COMPREHENSIVE EXAM PREP

Minimum Credits: 1
Maximum Credits: 9
Academic Career: Graduate
Course Component: Directed Studies
Grade Component: Grad Letter Grade

THEA 2990 - INDEPENDENT STUDY

Minimum Credits: 1
Maximum Credits: 12
The instructor and the student will work together concerning the course content.
Academic Career: Graduate
Course Component: Independent Study
Grade Component: Grad SN Basis

THEA 2991 - PROFESSIONAL INTERNSHIP-PLAYWRITING

Minimum Credits: 1
Maximum Credits: 6
Internships for highly qualified graduate students accepted for work appropriate to their degree programs at professional theatres or other

professional producing organizations. Supervised jointly by the department and the participating institution.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad LG/SNC Basis

THEA 2992 - PROFESSIONAL INTERNSHIP-DRAMATURGY

Minimum Credits: 1

Maximum Credits: 6

Internships for highly qualified graduate students accepted for work appropriate to their degree programs at professional theatres or other professional producing organizations. Supervised jointly by the department and the participating institution.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad LG/SNC Basis

THEA 2993 - PROFESSIONAL INTERNSHIP-DIRECTING

Minimum Credits: 1

Maximum Credits: 6

Internships for highly qualified graduate students accepted for work appropriate to their degree programs at professional theatres or other professional producing organizations. Supervised jointly by the department and the participating institution.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad LG/SNC Basis

THEA 2994 - PROFESSIONAL INTERNSHIP-ACTING

Minimum Credits: 1

Maximum Credits: 6

Internships for highly qualified graduate students accepted for work appropriate to their degree programs at professional theatres or other professional producing organizations. Supervised jointly by the department and the participating institution.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad LG/SNC Basis

THEA 2995 - PROFESSIONAL INTERNSHIP-DESIGN

Minimum Credits: 1

Maximum Credits: 6

Internships for highly qualified graduate students accepted for work appropriate to their degree programs at professional theatres or other professional producing organizations. Supervised jointly by the department and the participating institution.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad LG/SNC Basis

THEA 2996 - PROFESSNL INTERNSHIP-STAGE MANAGEMENT

Minimum Credits: 1

Maximum Credits: 6

Internships for highly qualified graduate students accepted for work appropriate to their degree programs at professional theatres or other professional producing organizations. Supervised jointly by the department and the participating institution.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad LG/SNC Basis

THEA 2997 - PROFESSIONAL INTERNSHIP-THEATER BUSINESS MANGEMENT

Minimum Credits: 1

Maximum Credits: 6

Internships for highly qualified graduate students accepted for work appropriate to their degree programs at professional theatres or other professional producing organizations. Supervised jointly by the department and the participating institution.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad LG/SNC Basis

THEA 2998 - PROFESSIONAL INTERNSHIP-TECHNOLOGY

Minimum Credits: 1

Maximum Credits: 6

Internships for highly qualified graduate students accepted for work appropriate to their degree programs at professional theatres or other professional producing organizations. Supervised jointly by the department and the participating institution.

Academic Career: Graduate

Course Component: Internship

Grade Component: Grad LG/SNC Basis

THEA 3000 - DISSERTATION RESEARCH PHD DEGREE

Minimum Credits: 1

Maximum Credits: 12

Individual research designed by the Ph.D. student in connection with his or her dissertation.

Academic Career: Graduate

Course Component: Thesis Research

Grade Component: Grad SN Basis

Urology

URLGY 5321 - UROLOGIC ONCOLOGY

Minimum Credits: 0

Maximum Credits: 0

This four-week elective is intended for the less experienced medical student to provide a hands-on experience in a surgical specialty. Students will be exposed to the urology service working closely with both attending and resident staff. Time will be spent in the outpatient clinic, operating room, and on the inpatient floors to provide exposure to all aspects of the practice of urologic surgery. The focus is on urologic oncology but students will also have exposure to patients with a wide range of general urologic diseases. The course objectives are: to learn to take a urologic history and perform a focused urologic physical examination; to develop experience in the performance of basic urologic procedures, possibly even to include cystoscopy; to become familiar with the proper evaluation and treatment of common urologic diseases such as prostate cancer, bladder cancer, benign prostatic hyperplasia, and urolithiasis; and to develop expertise in the role and interpretation of a wide array of imaging studies utilized in urology.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 3

URLGY 5470 - UROLOGICAL SURGERY (ADULT)

Minimum Credits: 0

Maximum Credits: 0

Four-week clinical clerkships in urology. Rotations through more than one hospital may be elected. The clerkship stresses inpatient and outpatient experience as an acting intern.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

URLGY 5471 - PEDIATRIC UROLOGICAL SURGERY

Minimum Credits: 0

Maximum Credits: 0

Four-week clinical elective. Student closely involved in evaluation and care of both inpatient and outpatient. Weekly pediatric urology/pediatric surgery/radiology conference will be attended in addition to weekly conferences. Student may participate in lab research.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

URLGY 5650 - INDIVIDUALIZED CLINICAL COURSE

Minimum Credits: 0

Maximum Credits: 0

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

URLGY 5810 - UROLOGY RESEARCH

Minimum Credits: 0

Maximum Credits: 0

This four-week elective will allow the student to gain valuable experience in urological surgery. The student will be given the opportunity to learn research techniques and to participate in research in progress.

Academic Career: Medical School

Course Component: Directed Studies

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

URLGY 5899 - INDEPENDENT STUDY IN UROLOGY

Minimum Credits: 0

Maximum Credits: 0

The purpose of this course is to provide the student with the opportunity to participate in ongoing clinical or laboratory research under the direction of a faculty preceptor. The student in collaboration with the faculty will develop a learning contract which includes objectives for the independent study method for student/faculty evaluation and timetable for completing the experience.

Academic Career: Medical School

Course Component: Independent Study

Grade Component: H/HS/S/LS/U

Course Attributes: School of Medicine Year 4

URLGY 5900 - EXTRAMURAL UROLOGIC SURGERY

Minimum Credits: 0

Maximum Credits: 0

A clinical experience in urologic surgery may be arranged at an institution other than the University of Pittsburgh School of Medicine. Arrangements must be made in accordance with the process set out in the upset course catalog with all appropriate approvals to be received before the course may be added to the student schedule for credit.

Academic Career: Medical School

Course Component: Clinical

Grade Component: H/HS/S/LS/U

